



<i>Title:</i> TOS Protocol and Procedure: BRD – Breeding Landbird Abundance and Diversity		<i>Date:</i> 04/17/2024
<i>NEON Doc. #:</i> NEON.DOC.014041	<i>Author:</i> R. Esposito	<i>Revision:</i> L

TOS PROTOCOL AND PROCEDURE: BRD – BREEDING LANDBIRD ABUNDANCE AND DIVERSITY

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Change Record

REVISION	DATE	ECO #	DESCRIPTION OF CHANGE
A_DRAFT	10/03/2011	ECO-00280	Initial Draft Release
B_DRAFT	01/13/2014	ECO-01140	Draft release. Will be finalized in next rev.
C	03/17/2014	ECO-01667	Production release, template change, and other changes as detailed in Appendix C (rev C only)
D	04/10/2014	ECO-01792	Updated Appendix F with site-specific information
E	12/15/2014	ECO-02535	Migration to new protocol template
F	03/16/2015	ECO-02653	Added site-specific appendices for new sites
G	08/11/2015	ECO-03048	Added site-specific appendices for new sites; Modified sampling window timing; Added descriptions of habitat codes used on datasheet; Removed identification qualifier information; Corrected Maximo number for handheld weather station.
H	04/13/2017	ECO-03810	Updated references to RMBO to the organization's new name 'Bird Conservancy of the Rockies'; updated their protocol reference to latest 2015 version; removed unknown bird codes; added site-specific appendices for new sites; clarified instructions; added siteID field to datasheet; removed daily sampling windows; added seasonal sampling dates to site-specific appendices where available; removed camera and photographing instructions; moved cluster information from an appendix into Field Sampling SOP; added clarifying language to reflect external contractors implementing the work; added criteria for reallocation of sampling plots
J	03/28/2018	ECO-05406	Change Toolik to only being sampled once per season, despite having individually distributed points; Reducing maximum number of grids per site to 10; Adding requirements for minimum number of points sampled per site; added species lists for BARR and PUUM; added sampling window for MLBS; changed AK sampling windows based on ABR feedback, RMNP windows based on Bird Conservancy of the Rockies feedback, and D17 windows based on Point Blue feedback; changed data transcription review to 100%.



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K	12/04/2020	ECO-06542	Added updated sampling windows as new Appendix C, updated order of content based on new protocol template, added missed sampling documentation, added quiz guidelines, restored full reference list
L	04/17/2024	ECO-07079	<ul style="list-style-type: none"> • Updated to new template (NEON.DOC.050006 Rev L) • Updated NEON logo • Created new datasheet for single point array sites • Updated Figure 1 illustrating point sampling method to accurately reflect distance sampling. • Section 2.4: Updated landbird definition, added definition of TOS Distributed Plot. • Section 3.2 Updated Figure 2 with simplified point naming convention (1-9). Added information about bird point count locations relative to other NEON plot types. • SOP A: Updated list of problematic bird species codes. • SOP B: Step 4 Defined singing and calling detection methods. Clarified to include the number of individuals in the cluster size for all observations (even if they are not clusters). Clarified not to use clusters for singing males. • SOP B: Step 9 Added navigation guidance to avoid other NEON plot types. • Appendix A.1. Updated Datasheet Field Definitions to include single point array datasheet ‘Visit’ definition. • Appendix A.2: Sampling Overview added. • Appendix A.3: Differences Between NEON and IMBCR Sampling Methods added. • Appendix A.4: Habitat Codes and Descriptions separated from earlier sections. Updated habitat code descriptions, added Tundra (TU) habitat code. • Appendix D: Updated Site bird species lists based on NEON data. Removed “landbird” designation from tables.

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1 OVERVIEW

1.1 Background

Breeding landbirds were chosen to be a component of NEON’s suite of biodiversity measurements (Kao et al. 2012) because breeding birds have: (a) proven useful in large-scale modeling of climate change impacts (Stralberg et al. 2009, Tingley et al. 2012); (b) are consumers of other NEON taxa (i.e., insects, plants); (c) serve as reservoirs for mosquito-borne diseases of interest to NEON (e.g., West Nile Virus; LaDeau et al. 2007, McKenzie and Goulet 2010); (d) can be impacted by nest predation by small mammals (also a NEON target taxon; Schmidt et al. 2008); (e) are vulnerable to climate change (Gardali et al. 2012); and (f) respond strongly to land-use change (Luther et al. 2008, Newbold et al. 2012, Jongsomjit et al. 2012). Moreover, the long history of data collection at the regional and national scales allows for the integration of NEON sampling into larger datasets to examine regional and continental-scale and decadal-scale trends (e.g., Bart et al. 1995, Saracco et al. 2008).

There are over 650 species of breeding birds in North America, and many approaches have been developed to sample them given their diversity of habits and habitats (Bibby et al. 2000, Fancy and Sauer 2000). As a result of this diversity, no single sampling method can be used with equal efficacy on songbirds, seabirds, waterfowl, and raptors (e.g., Ralph et al. 1993, Fancy and Sauer 2000). The breeding bird component of the NEON Terrestrial Observation System (TOS) is designed to sample birds that are diurnal and resident in or migrating through terrestrial habitats, commonly referred to as landbirds. This group is primarily composed of songbirds; however, landbird sampling does not exclude other types of birds that are observed in terrestrial habitats such as waterfowl or raptors. The most common methods for sampling breeding birds are spot mapping of territories, area searches of specific sites, strip transects along predetermined routes, nest searches, and point counts (Ralph et al. 1993, Nur et al. 1999), as well as mist-netting for marking and recapture.

Of the available methods, point counts are the most commonly used for sampling birds (Bibby et al. 2000, Rosenstock et al. 2002), and they have been described as ‘the most efficient and data rich method of counting birds’ (Ralph et al. 1993). Point counts involve an observer standing at a point for a predetermined amount of time (typically 3-20 minutes), typically during the peak of singing activity that occurs in the early morning, and recording all of the individuals seen or heard (Ralph et al. 1995; **Figure 1**). The original design for NEON bird sampling formulated by the group of experts known as the Tiger team included point counts as the method of choice (Hansen 2008). Acoustic monitoring is being considered as a complementary method to collect data on bird diversity and phenology (e.g., Celis-Murillo et al. 2009, Blumstein et al. 2011), but this method contingent on additional funding and advances in machine learning algorithms to automate species identification of bird songs and calls.

The advantages of point counts include: (1) minimal disturbance to the birds; (2) provides data on a diversity of species (Hutto and Young 2002); and (3) provides comparability with many other datasets. The major disadvantages of point counts are: (1) the need for highly skilled observers for only a limited portion of the year; (2) the challenges associated with processing all of the necessary data in a 3 – 20

minute count; and (3) the fact that the detectability of birds is not constant across space, time, and species (Rosenstock et al. 2002). Detectability is significantly affected by: (1) observers who significantly vary in visual and auditory acuity and experience (Sauer et al. 1994); (2) environmental variables such as weather, light conditions, vegetation, and topography; and (3) the physical and behavioral variation within and among species (Rosenstock et al. 2002). Variation in detectability is ameliorated by the use of statistical methods that have been developed to account for this issue (e.g., distance sampling - Box 1). Given the need for highly skilled observers, the NEON bird protocol is conducted by contracted local experts rather than by the NEON field technicians who execute the majority of NEON protocols.

The objective of the NEON breeding landbird sampling program is to provide robust estimates of species diversity, abundance, and density. To that end, point counts that are randomly distributed in the areas of interest (i.e., not along roadsides) and that use techniques that account for variation in detectability are the recommended sampling methods (e.g., Nur et al. 1999, Bibby et al. 2000, Fancy and Sauer 2000, Rosenstock et al. 2002). Distance sampling is one such technique, and it involves recording distance from the observer to the bird. Distance data are then used in statistical analyses designed to adjust the count of birds that were present but undetected (Box 1).

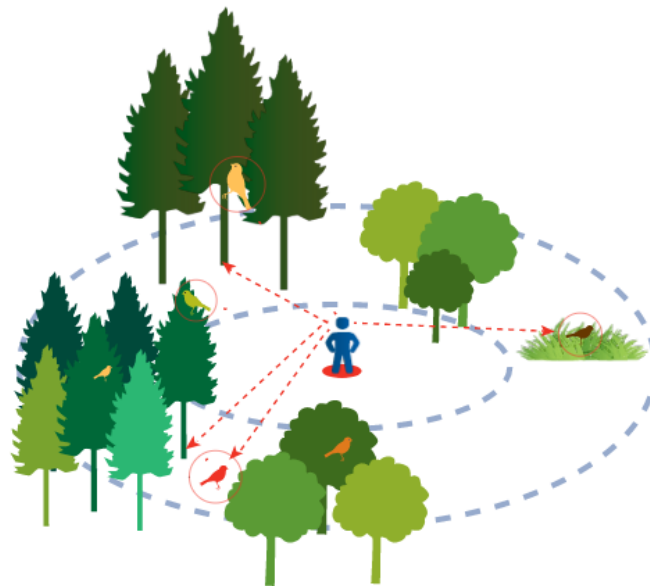


Figure 1. Schematic depicting the point count method of sampling birds. In distance sampling, the horizontal distances from the observer to each bird (represented by dashed red lines), as well as the species, sex, and age, are recorded.

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Box 1. Overview of Distance Sampling (Excerpted from White et al. 2014)

Distance sampling theory was developed to account for the decreasing probability of detecting an object of interest (e.g., a bird) with increasing distance from the observer to the object (Buckland et al. 2001). The detection probability is used to adjust the count of birds to account for birds that were present but undetected. Application of distance theory requires that five critical assumptions be met: 1) all birds at and near the sampling location (distance = 0) are detected; 2) distances of birds are measured accurately; 3) birds do not move in response to the observer’s presence (Buckland et al. 2001, Thomas et al. 2010); 4) cluster sizes are recorded without error; and 5) the sampling units are representative of the entire survey region (Buckland et al. 2008).

1.2 Scope

This document provides a change-controlled version of Observatory protocols and procedures. Documentation of content changes (i.e., changes in particular tasks or safety practices) will occur via this change-controlled document, not through field manuals or training materials.

1.2.1 NEON Science Requirements and Data Products

This protocol fulfills Observatory science requirements that reside in NEON’s Dynamic Object-Oriented Requirements System (DOORS). Copies of approved science requirements have been exported from DOORS and are available in NEON’s document repository, or upon request.

Execution of this protocol procures samples and/or generates raw data satisfying NEON Observatory scientific requirements. These data and samples are used to create NEON data products, and are documented in the NEON Scientific Data Products Catalog (RD[03]).

1.3 Acknowledgments

Thanks to Richard Podolsky, Courtney Meier, and Dave Schimel who wrote the first versions of this protocol. The method is heavily adapted from the Bird Conservancy of the Rockies 2015 field protocol for spatially balanced sampling of landbird populations (Hanni et al. 2011), in combination with the Integrated Monitoring for Bird Conservation Regions (IMBCR) program (White et al. 2014). The protocol was also informed by the breeding landbird abundance and diversity working group (Richard Chandler, Tom Gardali, Allen Hurlbert, Ken Pollock, Kathryn Purcell, Ted Simons, and Susan Skagen).

2 RELATED DOCUMENTS AND ACRONYMS

2.1 Applicable Documents

Applicable documents contain higher-level information that is implemented in the current document. Examples include designs, plans, or standards.

AD[01]	NEON.DOC.004300	EHS Safety Policy and Program Manual
AD[02]	NEON.DOC.004316	Operations Field Safety and Security Plan
AD[03]	NEON.DOC.000724	Domain Chemical Hygiene Plan and Biosafety Manual
AD[04]	NEON.DOC.050005	Field Operations Job Instruction Training Plan
AD[05]	NEON.DOC.000916	TOS Science Design for Breeding Landbird Abundance and Diversity
AD[06]	NEON.DOC.004104	NEON Science Data Quality Plan

2.2 Reference Documents

Reference documents contain information that supports or complements the current document. Examples include related protocols, datasheets, or general-information references.

RD[01]	NEON.DOC.000008	NEON Acronym List
RD[02]	NEON.DOC.000243	NEON Glossary of Terms
RD[03]	NEON.DOC.002652	NEON Data Products Catalog
RD[04]	NEON.DOC.001584	Datasheets for TOS Protocol and Procedure: Breeding Landbird Abundance & Diversity
RD[05]	NEON.DOC.001271	AOS/TOS Protocol and Procedure: DMP – Data Management
RD[06]	NEON.DOC.003282	NEON Protocol and Procedure: SIM – Site Management and Disturbance Data Collection
RD[07]	NEON.DOC.005247	AOS/TOS Standard Operating Procedure: NEON Aquatic and Terrestrial Site Navigation

2.3 Acronyms

All acronyms used in this document are defined in RD[01].

2.4 Definitions

Landbird: Birds that are diurnal and resident in or migrating through terrestrial habitats, including any birds that are observed in these habitats, such as waterfowl or raptors (Rich et. al 2004). Landbirds are typically censused during the first half of the breeding season, when birds are “most active, paired, on territories, and vocal” (Ralph et al. 1993). For the purposes of this document, ‘bird’ and ‘breeding landbird’ are used interchangeably.

TOS Distributed plot: 40 x 40 m plot where NEON TOS sampling for plants, soils, microbes, and insects takes place. Bird grids are collocated within TOS Distributed plots.

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3 METHOD

3.1 Point Count Method

Breeding landbirds are sampled using the point count method. Point counting entails one or more observers going to pre-established points and recording all the birds heard and/or seen during a set period of time (**Figure 1**). The NEON point count method is adapted from the Bird Conservancy of the Rockies’ 2015 field protocol for spatially balanced sampling of landbird populations (Hanni et al. 2011). Point counts are six minutes long following a two-minute settling-in period, with each minute tracked by the observer. All birds are recorded to species and sex, whenever possible, and the horizontal distance to each individual or flock is measured with a laser rangefinder.

3.2 Spatial Distribution of Point Counts

As a guiding principle, bird sampling is stratified such that grid positions achieve representative coverage of vegetation types as defined by the National Land Cover Database. To increase efficiency, point counts are distributed in a 9 point 0.56 km² gridded area, in a 3 x 3 array, with 250m spacing between points (**Figure 2**). Ideally, Bird Grids are placed with the centroid (point 5 in **Figure 2**) directly above or below the outer 40m edge of a Distributed Base Plot that is collocated with a Mammal Grid and Tick Plot, each approximately 150m in a random direction. When this placement is not possible, as is often the case due to access issues or other constraints, Bird Grids are established to include these collocated plots somewhere inside the 500m by 500m grid. If constraints prevent any collocation, then Bird Grids are established following a random sampling list.

There are 5-10 Bird Grids at most NEON sites. At sites that cannot accommodate a minimum of 5 grids, points are distributed randomly throughout the site and collocated with Distributed Base Plots, with a minimum distance of 250m between points to achieve these sample sizes. These are the minimum requirements to characterize spatial variability across the site. All bird points that are not in grids are located at the outer southwest corner of a 40m by 40m Distributed Base Plot. Note that the nine points within a grid are labeled 1-9 (**Figure 2**), whereas points not located within a grid always have a pointID of “21”.

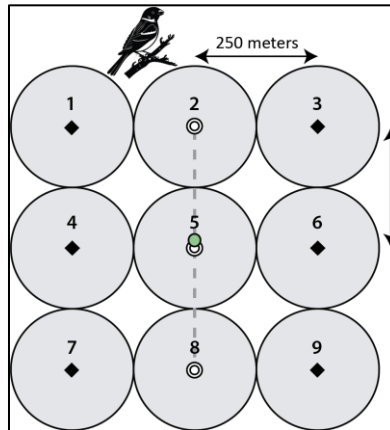


Figure 2. Design of the point count grid, consisting of 9 points separated by a minimum of 250 m. The sampling area is 0.56 km². The center of the grid is just offset from a Distributed plot (green circle), where plants, soils, microbes, and insects may also be sampled.

3.3 Timing of Point Counts

The sampling window for breeding birds for each site corresponds to when most of the birds encountered will likely be resident, breeding birds, rather than species that either over-winter or migrate through during the spring or fall. Breeding season dates and corresponding optimal survey windows are informed by local experts. Sampling windows for all sites can be found in Appendix C. Repeat sampling is used primarily at small sites to increase the number of detections and meet detection function assumptions. Standard Operating Procedures (SOPs) in Section 7 of this document provide detailed step-by-step directions, contingency plans, sampling tips, and best practices for implementing this sampling procedure. To properly collect and process samples, field personnel **must** follow the protocol and associated SOPs.

The value of NEON data hinges on consistent implementation of this protocol across all NEON domains for the life of the project. It is therefore essential that field personnel carry out this protocol as outlined in this document. This represents a particular challenge for this protocol, as it will be implemented by contracted local experts rather than by NEON field staff. In the event that local conditions create uncertainty about carrying out these steps, it is critical that field personnel document the problem and communicate it to NEON Headquarters.

Quality assurance is performed on data collected via these procedures according to the NEON Science Data Quality Plan (AD[06]); see SOP D for more details.

4 SAMPLING SCHEDULE

4.1 Sampling Frequency and Timing

Sampling occurs once or twice per breeding season at each point at a site, depending on the size of the site (**Table 1**).

Table 1. Summary of temporal and spatial sampling design.

Relative site area	Point arrays	Number of arrays	Repeated sampling	Time between Onset and Cessation of Sampling
Large	9-pt grids	5 - 10	No	≥ 2 days, ≤ 14 days
Small	Single points	5 - 25	Yes – 2x per season	≥ 2 days, ≤ 21 days

At sites that can accommodate the minimum of five 9-point grids, points within each grid are sampled once per season. At these sites, the sampling window must span a minimum of 2 days (i.e., all grids at a site should not be sampled on the same day) and a maximum of 14 days. For example, at a site with 10 grids, two grids could be sampled on each of 5 consecutive days or five grids could be sampled on day 1 and the remaining five on day 2 or day 14, etc.

At sites that cannot accommodate the minimum of five 9-point grids, points are sampled twice within a season (except for Toolik, due to significant logistical issues, where points are sampled only once). At these smaller sites, points should be sampled with a minimum of 1 day between sampling bouts and no longer than 21 days (see **Table 1** above).

At all sites except those in Alaska, point counts are conducted only during the early morning, beginning 30 minutes before sunrise and once there is sufficient light to visually identify birds, and ending no later than 5 hours after official sunrise, depending on the weather and other ambient conditions. In Alaska, timing follows the guidelines provided by the Alaska Landbird Monitoring Survey (Handel et al. 2021). The guidelines state that the first count of the day should be started no earlier than 0300 Alaska Standard Time in the Arctic and within 30 min after sunrise, if possible, elsewhere in the state. A later start time may be permitted if the terrain cannot be traversed safely before sunrise or if bird communities are comprised primarily of shorebird species which are not as sensitive to dawn timing. The last count of the day at Alaskan sites should be completed no later than 4-5 hr after the first count began, since bird activity declines markedly after that time in most areas.

4.2 Criteria for Determining Onset and Cessation of Sampling

Breeding season dates are informed by local experts. Sampling timing is provided in the site-specific appendices to this protocol. All sampling must occur within the window provided.

4.3 Timing for Laboratory Processing and Analysis

There is no lab work or processing associated with this protocol, so no timing details are provided.

4.4 Sampling Timing Contingencies

Audible detection of birds can be limited because of vegetation, as well as high ambient noise from such sources as the wind or from other species such as insects or frogs. Similarly, visual detection of birds can be hampered from dust, low clouds, flying snow, fog, or rain. When ambient conditions significantly inhibit detectability, sampling should not be conducted.

- No bird sampling shall occur during significant precipitation events or in dense fog.
- No bird sampling shall occur in winds greater than 25 mph (40 kph), as determined with a handheld anemometer.

Sampling can be resumed as soon as conditions allow for effective detections as long as sampling occurs within the morning sampling window within the specified breeding season window. All points on a grid do not have to be sampled on the same day, but it is preferable to complete sampling for a single grid within a window of 7 days. When unexpected field conditions require deviations from this protocol, the field implementation guidance in **Table 2** must be followed to ensure quality standards are met.

Table 2. Contingent decisions for NEON breeding landbird sampling protocol.

Delay	Action	Outcome for Data Products
Hours	Continue with sampling if there is still time in the daily sampling window. Otherwise, skip sampling for the day.	Fewer sampling points could result in less precise estimation of breeding bird species richness, diversity, or density.
1-14 (large site) or 21 (small site) days	Add additional days of sampling within the survey window (Appendix C) to sample all points, preferably within 7 days of beginning the grid.	
14 (large site) or 21 (small site) days or more	Contact NEON Science and the Bird Contractor for guidance.	Species richness due to changes in seasonal phenology could be influenced by significant changes in temporal sampling window. Not completing all plots impacts diversity metrics and target sample size.

4.5 Missed or Incomplete Sampling

Sampling according to the schedule is not always possible, and multiple factors may impede work in the field at one or more plots or sampling locations. For example:

- Logistics – e.g., insufficient staff or equipment
- Environment – e.g., deep snow, flooding, inclement weather, or
- Management activities – e.g., controlled burns, pesticide application

Instances such as those listed above must be documented to track plot conditions and to inform end users of NEON data availability.

To Report Missed or Incomplete Sampling:

1. Indicate the plotID, pointID, and reason that a point could not be sampled in the ‘POINTS UNABLE TO SAMPLE & WHY’ box on the datasheet (RD[04]). It is not necessary to record when a point could not be sampled on a particular day if sampling occurs on a subsequent day; rather, the intent is to document points that are not sampled during any given year.

Reasons for missed sampling are indicated in **Table 3**; these should be used in the ‘Completed’ field on the ‘Points Completed’ page of the data entry app. These will be communicated to NEON Science to populate the **Sampling Impractical Remarks** field in the NEON database.

Table 3. Protocol-specific Sampling Impractical reasons. If more than one is applicable, choose the dominant reason sampling was missed.

Sampling Impractical Reason Code	Sampling Impractical Reason Description
P	Private Property - Denied Permission
N	Private Property - No contact with landowner
U	Terrain Unsafe (could not safely approach to within 25 m of point)
R	Can't cross River
S	Snowpack impassible
H	Running water near point - unable to Hear
W	Weather (rain or wind)
G	No GPS reception, cannot find point
T	Ran out of Time (five hours past sunrise or noticeably decreased bird activity)
O	Other

4.6 Estimated Time

The time required to complete the bird surveys will vary depending on factors such as skill level, environmental conditions, and distance between sampling plots. See below for a guideline of approximate sampling times. If a task is taking significantly longer than the estimated time, please inform NEON Science.



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Each point count will last for 6 minutes plus an additional 2-minute settling-in period. Travel time between points will likely average 15 minutes (250 m). If an experienced two-person team travels together to survey one grid and each samples approximately half of the points in the grid:

- Observer 1 – 5 points = within grid travel time of 60 minutes and 40 minutes of sampling
- Observer 2 – 4 points = within grid travel time of 45 minutes and 32 minutes of sampling
- Total time per grid per team of 2 = 100 minutes
Estimate with inter-grid travel time = 2 grids completed per 2-person team per sampling morning.



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5 SAFETY

This document identifies procedure-specific safety hazards and associated safety requirements. It does not describe general safety practices or site-specific safety practices.

Personnel working at a NEON site must be compliant with safe field work practices as outlined in the Operations Field Safety and Security Plan (AD[02]) and EHS Safety Policy and Program Manual (AD[01]). Additional safety issues associated with this field procedure are outlined below. The Field Operations Manager and the Lead Field Technician have primary authority to stop work activities based on unsafe field conditions; however, all employees have the responsibility and right to stop their work in unsafe conditions.



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6 PERSONNEL

6.1 Training Requirements

All technicians conducting bird surveys on NEON sites must complete safety training and protocol-specific training as required in the NEON Field Operations Job Instruction Training Plan (AD[04]).

Training for all field personnel should minimally include the following components:

1. Safety overview for fieldwork in the ecosystem in which they will be sampling.
2. Personnel who have been identified to conduct bird sampling will be provided with study materials, including field guides and song recordings, as soon as possible after hiring.
3. A workshop including lectures and field work will be conducted for 1-7 days (depending on the experience of the observers) prior to the onset of field sampling to provide an overview of the procedures and the goals of the sampling. Hands-on work with the sampling equipment and review of common bird species for a domain will be included. A quiz of the observers’ knowledge of birds by sight and song will be administered and scored at the end of the workshop. Only observers that score >90% on the final test will be deemed sampling-ready.
4. During the field-based training, observers that need additional training will shadow experienced ornithologists, followed by the experienced ornithologists performing spot checks on these observers.
5. All observers will practice measuring known distances to objects with the laser rangefinders until they can reliably measure distances up to 150 meters to an accuracy of ±5 meters.

6.2 Specialized Skills and Verification

All field ornithologists should have the following expertise:

- Demonstrated knowledge and experience identifying the species of birds that occur at a particular site both visually and aurally.
- Prior experience conducting avian field surveys, with preference given for personnel with experience conducting breeding bird surveys, particularly in a similar region.

Bird identification quizzes will be administered and scored by the Contractor throughout the season, to assess and confirm the skills of each observer. All observers shall take a minimum of one quiz at the beginning of the season. The individual quiz scores for each observer should be reported to NEON for publication.

7 STANDARD OPERATING PROCEDURES

SOP A Preparing for Sampling

See Appendix B and Appendix E for equipment and task checklists.



1. Familiarize yourself with the species codes before going into the field. Species that often cause problems include:

- **American Goldfinch** (AGOL not AMGO)
- **Bank Swallow** (BANS not BASW)
- **Barn Owl** (BANO not BAOW)
- **Barn Swallow** (BARS not BASW)
- **Barred Owl** (BADO not BDOW)
- **Black-throated Gray Warbler** (BTYW not BTGW)
- **Broad-tailed Hummingbird** (BTHU not BTLH)
- **Cackling Goose** (CACG not CAGO)
- **Cactus Wren** (CACW not CAWR)
- **Canada Goose** (CANG not CAGO)
- **Canyon Towhee** (CANT not CATO)
- **Canyon Wren** (CANW not CAWR)
- **Cedar Waxwing** (CEDW not CEWA)
- **Lark Bunting** (LARB not LABU)
- **Lazuli Bunting** (LAZB not LABU)
- **MacGillivray's Warbler** (MGWA not MAWA)
- **Northern Shoveler** (NSHO not NOSH)
- **Red-winged Blackbird** (RWBL not RWBB).
- **Ring-necked Pheasant** (RNEP not RNPH)
- **Sagebrush Sparrow** (SABS not SASP)
- **Savannah Sparrow** (SAVS not SASP)
- **Tree Swallow** (TRES not TRSW)
- **Western Wood-Pewee** (WEWP not WWPE)

2. Clean and check binoculars to make sure they are in good working condition.
3. Check, charge, or replace batteries for the laser rangefinder, handheld weather station, stopwatch, and GPS unit.
4. Upload background images, layers, and waypoints associated with bird grids to the GPS unit.
5. Print and organize data sheets.
6. Set appropriate declination on the compasses.

SOP B Field Sampling

The method is adapted from the Bird Conservancy of the Rockies 2015 field protocol for spatially balanced sampling of landbird populations (Hanni et al. 2011). The bird point count datasheet is provided separately (RD[04]), but a key to the datasheet can be found in Appendix A.1

1. Record the **date**, **site ID**, **start cloud cover**, and **start relative humidity** on the Bird point count datasheet (RD[04]).
 - Date (YYYY-MM-DD) and site ID (XXXX) should be filled out on every datasheet.
 - Start and ending cloud cover (%) and relative humidity (%) need to be completed only once per site ID per date.
 - Cloud cover is estimated visually, while relative humidity should be measured with handheld weather station (if appropriate equipment is available). These data are collected for every sampling point (i.e., plot) at single point array sites.
2. Upon reaching each point, wait 2 minutes to allow the local birds to become accustomed to your presence (the ‘settling in period’). While waiting, fill in the required metadata (i.e., **plot ID** (XXX), **point ID** (X), **start-time** (XX:XX), **habitat code**, **temperature** (degrees Celsius), and average **wind speed** (average kilometers per hour over 20 seconds) on the Bird point count datasheet (RD[04]). (Also record relative humidity and cloud cover on the single-point array datasheets.) These metadata are filled out once for each point at all sites.
 - DO NOT begin counting until the 2 minutes have passed.
 - DO identify and note the locations of any birds flushed from around the point upon approach. If during the six minute survey you detect a bird that was flushed from the survey point upon your arrival, record the bird’s original distance from the survey point. The bird is assumed to have remained at the original location were it not for the disturbance created by the observer.
3. Set the timer for the point count duration (6 minutes) with a chime and/or vibration to indicate the passing of each minute within the counting period. Begin the count-down and begin recording the birds you see and/or hear onto the Bird point count datasheet (RD[04]).
4. For each independently detected bird record the following information:
 - The **minute** (1-6) of the point count during which the observation was made.
 - The **species**, using the appropriate 4-letter code (**taxonID**; Pyle and DeSante 2012).
 - The horizontal **distance** to the bird measured with the rangefinder (meters). This method uses distance-sampling techniques and analyses; bird data recorded without associated distances **cannot** be used in the analysis.
 - Distance to birds is recorded radially in 2-dimensions from the observer; only the horizontal distance is recorded. That is, a bird 10 meters up in a tree directly overhead is recorded as zero meters from the observer.



- If you cannot get a direct line of sight to a bird, estimate the distance the bird is from a visible point and use the rangefinder to measure to that point. Then add or subtract the estimated distance between that point and the bird to obtain the best possible distance estimate. **Estimate the distance from the visible point to the bird BEFORE using the rangefinder, because the bird might move and it's easy to lose track of where you thought the bird was.** Distance-sampling assumes that you measure all distances accurately, so be sure to use your rangefinders as much as possible.
- Always measure distances to where you first detected the bird, not to where you first identified it.
- For birds that are vocalizing but not seen, try to determine their locations relative to a landmark, such as a tree or shrub, then measure the distance to that landmark. If you are unable to pinpoint its location, then estimate the distance to the nearest meter. **Do not round distances to 5 or 10 m intervals**, as this causes heaping at specific values and complicates data analysis.



- **How** the bird was detected:
 - V=visual, C=calling, S=singing, D=drumming, F=Flyover, or O=other aural (e.g., wing beats).
 - Singing is defined as a relatively structured and lengthy vocalization by any bird species known to be for mate attraction or territorial defense. All other vocalizations are recorded as calling.
 - Flyovers are instances of a bird flying over the count area in such a way that the bird does not appear to regularly use the count area for foraging, perching, nesting, etc. Species that are known to forage on the wing, such as raptors, swallows, and swifts, should not be assumed to be flyovers. Assessment of the behavior of a bird is key to determining whether it should be considered a flyover (passing through) or using the area.
 - Enter the code for how you **first** detected each individual.
 - Add an 'S' to the above method, if the detected bird is heard singing at any time after the initial detection.
 - Remember that how you *detect* a bird can be different from how you *identify* it.
- If you were able to **visually** identify the individual at any time during the survey:
 - Enter a checkmark in the **Visual** column. Check this box even if you recorded "V" for the detection type. This column is meant to further assure crew leaders and data end users of proper identification. You may also check this box if you visually identify the individual before or after the point count.



- **Note:** If a bird was detected visually but you were never able to positively identify the individual by sight (i.e. identification was by singing), then do NOT check the visual checkbox.
- The **sex** of the bird, if an adult bird:
 - Record the sex of the bird (F = Female; M = Male) if you visually observe a sexually dimorphic species and can identify the sex of the individual.
 - If you are unable to visually observe the bird, or if the bird is of a species that does not exhibit sexual dimorphism, record the sex as “U” for unknown.
 - Change the “U” to “M” or “F” if you later identify the same individual as male or female.
 - Do **not** assume that all singing birds are males. Females of many bird species sing at least occasionally, and female singing behavior of many species is poorly understood.
- If the bird is visually identified as a **juvenile**:
 - Record all data about the bird as normal.
 - Additionally, record “J” in the ‘Sex’ column.
 - **Note:** Even though the surveys we conduct are for breeding birds and juveniles do not fall into this category, recording birds as juveniles provides proof of breeding behavior for this location.
- The **cluster size** and **cluster ID code** (if applicable) for **all birds** observed. The cluster size for independent (non-clustered) birds will always be 1. Clusters are non-independent detections of either flocks or paired birds – i.e., birds of the same species observed together (foraging, flying, perching, or otherwise obviously interacting with each other).
 - More than one bird observed together should be considered a cluster, if they are:
 - The same species
 - Detected during the same minute interval during a point count
 - Within 20m of one another
 - **Note:** Two males of the same species singing do NOT constitute a cluster, even if within 20m of each other.





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- See Box 2 for more information on clusters.

Box 2. How to record clusters

Flocks: When two or more individuals of the same species are obviously in a flock and cannot be readily sexed (e.g. Cliff Swallow or Pine Siskin), record the distance to the center of the flock and record the number of individuals in the “Cluster Size” column of your data form. Do not enter a Cluster Code. When you can determine sex, enter the number of males on one line, and the number of females on the next line, with the appropriate number of each sex in the corresponding “Cluster Size” boxes. Then enter the same letter on both lines for the “Cluster Code” (a, b, c, etc.). The Cluster Code is used to link clusters that take up multiple lines on the data sheet.

Pairs: Often you may hear a bird singing or calling, look up, and see that it is a male bird with a female perched or foraging nearby. Or you may see one individual moving about, raise your binoculars to identify it, and observe that there are two individuals of the same species but opposite sex in that location. In these cases, enter the male and female on separate lines of your data form, with the appropriate codes for “HOW” detected. In the first scenario, the male “HOW” = S(inging) and the female “HOW” = V(usual). In the second scenario, “HOW” = V(usual) for both the male and female. In both cases enter the same letter for the “Cluster Code” of each member of the pair.

5. **Record the passing of each minute** in the appropriate column of the datasheet (RD[04]). If no new birds are observed during a given minute, record ‘NOBI’ (no birds) in the taxonID column.
6. Before moving to the next sample point, **review the datasheet** to ensure that all required data have been recorded.
7. If, **after the count period has ended**, you observe an uncommon or rare species that has not yet been recorded during this year’s surveys at the NEON site, record the species on the datasheet, entering ‘88’ as the count minute associated with the last pointID surveyed.
8. **Skip a line** on the datasheet between sampling points within a grid.
9. **Avoid trampling other NEON Plots when navigating among points.** Route planning is the best method to avoid trampling other NEON plots.
 - a. Kmz and shapefile downloads of active NEON TOS plot locations are available on Neonscience.org on the [spatial data & maps page](#), in the Quick Downloads section using the “Terrestrial Observation System Sampling Locations” tile. Use these maps beforehand to plan your route and add them to your GPS receiver or phone to navigate in the field. These maps include Bird Grids, Distributed Tick Plots, Distributed Mammal Grids, Distributed Mosquito Points, and Distributed Base Plots. Of these, prioritize avoidance of Distributed Base Plots if possible, particularly the inner 20 x 20m. This is where vegetation sampling occurs, and thus trampling may be especially impactful. Tick Plots should also be avoided, in case NEON tick sampling happens concurrently with bird



sampling. Always look out for plot markers and flagging in the field and avoid these areas as you navigate to bird sampling locations.

- b. Single point array sampling locations are at the southwest corner of a 40m by 40m Distributed Base Plot. **Avoid walking through the plot to reach the bird sampling point.** Prioritize approaching from the southwest when possible, and attempt to walk around the perimeter of the plot when approaching from other directions.



B.1 Tips and Tricks (from Hanni et al. 2011)

The following are a few **general guidelines** for collecting high-quality data:

- Focus primarily on birds that are close to the observation point. Missing distant birds has only a small effect on density estimates, but missing birds that are close by has a much larger effect on density estimates.
- Look and listen in all directions – **including UP.**
 - Note that distance to birds is recorded radially in 2-dimensions from the observer. That is, a bird 10 meters up in a tree directly overhead is recorded as zero meters from the observer.
- Do not move from the observation point. That said, it is acceptable to take a step or two away from the point to identify a bird spotted from the point, but **ALWAYS** return ASAP to the point to continue observations.
- Mentally track birds that may move around you during a point so as not to double count them during a 6-min count.
- During the point count, prioritize data collection in the following order:
 - Close birds
 - New birds
 - In open habitats, scan 360 degrees during the 2nd half of the count if there is time, concentrating on the 50-100m distance.
 - Use the rangefinder to improve distance estimates when there are not new birds.
- Record the same bird at multiple points if the bird is not moving in response to your presence. For example, if you see a Western Meadowlark on a power line and that same Western Meadowlark is visible from the next two points, you would record it on all three point counts. Additionally, if you see a Red-tailed Hawk soaring above and you still see the hawk soaring from another point, you would record it on both points.
 - However, if you survey three points along a fence and as you move between points a Loggerhead Shrike keeps moving away from you and re-perching on the fence, you should record that bird on the first point only.
- Do NOT chase birds before or during the count. After the observation period has elapsed, you may chase down a bird to identify it if you couldn't identify it from the point.
- Turn phone notifications off. Point counts require your full attention for all 6 minutes.



There are **several potential issues** that can lead to problems in the data:

- Window species – these are species that you see or listen through because they are common. For example, Mourning Dove is a common window species. This can result in the observer failing to count individuals of these species. The goal is to get an accurate count of all species, so be aware of this issue and strive to count all individuals seen and heard. Look and listen everywhere – Look up regularly, and do not wear hats that obscure hearing (including wide-brimmed hats that deflect sound), or sunglasses that obscure vision.
- Stand at observation points – do not sit or kneel. Altering your position will affect your ability to consistently and repeatably see and hear birds.
- No “phishing” – do not make noises that can attract birds to you and alter the density estimation.
- Airplanes and other external noises – If audibility of birds is reduced by mechanical noise, then interrupt the count and resume when the noise abates. The total time spent counting should still equal 6 minutes.
- Identify birds to the lowest taxonomic rank you confidently can – If the species is unknown, identify to genus, family, or other group, as appropriate. Consult the master list of taxonomic names and codes for the available entries (provided separately).

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SOP C Post-Field Sampling Tasks

C.1 Equipment Maintenance: Cleaning and Storage

Evaluate equipment after each sampling event (see Appendix B.1 for checklist):

1. Clean and check binoculars to make sure they are in good working condition.
2. Check and charge or replace batteries for the laser rangefinder, handheld weather station, stopwatch, and GPS unit.
3. Check that the appropriate declination is set on the compasses.

In addition, review completed datasheets as soon as possible after completing surveys each morning to check for missing weather data, incorrect bird codes, etc. It is much easier to find and correct these errors when survey details are still fresh.

C.2 Criteria for Permanent Reallocation of Sampling Within a Site

Breeding landbird sampling occurs on the schedule described above at up to 135 points per site. Ideally, sampling will occur at these sampling locations for the duration of the site’s affiliation with the NEON project. However, circumstances may arise requiring that sampling within a site be shifted from one location to another. In general, sampling is compromised when sampling at a location becomes so limited that data quality is significantly reduced. If sampling at a given plot becomes compromised, the issue should be communicated to NEON Science.

There are two main pathways by which sampling can be compromised. Sampling locations can become inappropriately suited to answer meaningful biological questions (e.g., a terrestrial sampling plot becomes permanently flooded or a stream moves after a flood and the location is no longer within the stream channel). Alternatively, sampling locations may be located in areas that are logistically impossible to sample on a schedule that that is biologically meaningful.

For bird sampling, a given plot must be able to be sampled for at least 50% of the sampling events planned for the site over a two-year period. For plots comprised of 9-point grids, at least six points must be sampled to constitute a sampled plot. Plots that cannot be sampled on this schedule should be considered compromised.



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SOP D Data Entry and Verification

D.1 Data Transcription

The importance of thorough, accurate data transcription cannot be overstated; the value of the efforts in the field is only manifested once the data are properly entered for delivery to NEON’s end users.

1. Transcribe information from each datasheet into the provided data entry application. This should be done at the end of the sampling day, if possible. Data should be transcribed no more than 14 days after collection.
 - Include notes on all deviations from procedures. Indicate what was done and why.
 - Please keep transcribed remarks brief (<255 characters) and professional and avoid sensitive information, including protected species or personal information, as remarks will be published as entered.
2. Scan and then file a hard copy of each datasheet. Datasheets should be scanned and sent to the Bird Contractor contact within 14 days after collection. Upon completion of the sampling season, mail the hardcopies of the datasheets to NEON Science.

D.2 Quality Checking Data

After all the data from one sampling period have been entered, personnel shall quality check all of the data in each worksheet by comparing it to the original paper datasheet.

1. Check the records against the original paper datasheet.
 - a. It is recommended (not required) that checks be done by two people, one reading the values on the original paper sheet out loud, while the other checks those against the electronically entered values.
2. Keep a record in the **remarks** column of all errors as you find and fix them.

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APPENDIX A QUICK REFERENCES

A.1 Datasheet Field Definitions

Data Field	Description/What to Enter
date	Date that sampling was conducted (YYYY-MM-DD)
siteID	Site identifier (4-character site code – see Appendix D)
recordedBy	Full name of personnel conducting the point count(s) (First name Last name)
Visit (1 or 2)	<i>Single point array datasheet only</i> - whether sampling was conducted during the first or second scheduled visit to the site
cloudsStart	Estimate of % cloud cover, at the start of the sampling day
cloudsEnd	Estimate of % cloud cover, at the end of the sampling day
rhStart	Relative humidity (%), as measured by handheld weather station (if available), at the start of the sampling day
rhEnd	Relative humidity (%) at the end of the sampling day
plotID	Plot identifier (XXX)
pointID	Relative coordinate of the point within the given plotID (1-9). For small, point-based sites, the pointID will always be “21”.
habitatCode	The dominant habitat surrounding the point within a 50-m radius; see codes and descriptions below. If ‘XX’ is entered to indicate a habitat type not listed, please describe the habitat in the remarks.
startTime	24-hr format (hhmm; e.g., 0812 or 1432)
temperature	The air temperature measured at beginning of each point count with a handheld weather station, in degrees Celsius
wind	The average wind speed measured at beginning of each point count with a handheld weather station, in kilometers per hour
minute	The minute of sampling within the 6-minute point count sampling period (1-6 or 88 for new species observed outside of the count period or area). There should be a record for each count minute; record ‘NOBI’ (no birds) in the taxonID column if no new birds are observed during any given minute.
taxonID	Unique 4 character species code, following AOU conventions
radial distance	Radial distance between the observer and the bird(s), in meters
how	How the bird(s) is (are) first detected by the observer
visual	Whether the bird(s) was (were) visually identified before, during, or after the point count (checkbox)
sex	M = Male; F = Female; U = Unknown; J = Juvenile (if readily apparent)
clusterSize	Clusters consist of either flocks or paired birds of the same species observed together; the size of the cluster is simply the count of individuals.
clusterCode	Clusters consist of either flocks or paired birds of the same species observed together; alphabetic codes (A:Z) are used to link clusters that span multiple records.
Points not sampled & why	Document any points that cannot be sampled in a sampling bout and is not likely to be rescheduled; free-form, with recommended reason codes described in protocol
remarks	Observer notes; free-form – be brief and avoid sensitive information, including protected species or personal information



A.2 Sampling Overview

1. Navigate to bird point count location while avoiding other NEON plots.
2. Wait for 2 minutes to begin bird observations (settling in period).
 - a. Record point metadata (start time, plot ID, point ID, habitat code, temperature, average wind speed).
 - i. First point of the day (and for all single-point array sites): record site metadata (date, site ID, start cloud cover, start relative humidity).
3. Begin 6-minute point count, recording minute, species, distance, and detection method for every bird observed.
 - a. Record sex, visual identification, juvenile, and cluster information if available.
4. Record NOBI for minutes where no birds are observed.
5. Review datasheet for completeness and accuracy.
 - a. Attempt to identify unknown birds that were observed during the point count.
6. Navigate to next point count location, again avoiding other NEON plots.
7. Last point of the day: record end cloud cover and end relative humidity.

A.3 Differences between NEON Bird Sampling and Integrated Monitoring for Bird Conservation Regions (IMBCR) Sampling

- Size of grids: NEON Bird Grids consist of 9 points (3x3) in a 0.56km² grid instead of 16 points (4X4) in a 1-km² IMBCR sampling grid.
- Point and PlotID Labels: For point-based NEON sites, the pointID is always “21” and the plotID is “SITE_000”. For point-based IMBCR surveys, the pointID is always “1” and the plotID is the transect name.
- Completion timing of surveys within a grid: All points on a NEON grid should be surveyed if it is safe to do so, but they do not need to be surveyed on the same day. For example, if it starts to rain or becomes too windy to survey, the remainder of the points in the grid can be surveyed on another day up to 14 days later, but preferably within 7 days. In contrast, one IMBCR grid should be completed within one morning.
- Primary habitat classifications: For NEON surveys, there are 12 habitat codes to choose from to describe the habitat within a 50-m radius of a point (see section below) including “XX” for habitat types not covered. For IMBCR surveys, there are 34 habitat codes to choose from including “XX”. The most common discrepancies on NEON datasheets are: Sage Shrubland instead of Shrubland, Mixed Conifer instead of Evergreen Forest, and Alpine Tundra instead of Shrubland or Tundra (new this year). During data entry, you will see a long list of habitat codes to choose from because the data entry application was designed for IMBCR and other

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programs that use additional codes. Be sure to select one of the 12 2-letter habitat codes listed below in Appendix A.4.

- **Habitat Data:** For NEON surveys, observers only need to record the 2-letter primary habitat classification. They do not collect any of the other habitat data that observers collect for IMBCR surveys, such as overstory cover by species, ground cover, etc.
- **Weather data:** Observers for NEON surveys use hand-held weather devices to collect additional weather data compared to observers for IMBCR surveys. Percent cloud cover is the only variable measured the same (visually) for both protocols at the start and end of the morning survey period. NEON observers must use their hand-held weather device to also record relative percent humidity at the start and end of each survey period (including at every point at single-point array sites), and temperature and wind speed at the start of each survey. IMBCR observers estimate the temperature and wind speed at the start and end of each survey period, along with percent cloud cover.

A.4 Habitat Codes and Descriptions

From Bird Conservancy of the Rockies:

Agricultural/Rural (AR): “Vegetation has been planted by humans for food production or ornamental purposes in sparsely developed areas. Examples include a farmed field with wheat, corn, millet, etc., a fallow field, a rural home site with planted non-native species, or a park planted with non-native species. Please make note of crop spp., if fallow, etc.”

Riparian (RI): “Stands or strips of trees or shrubs near a permanent or seasonal water source. Typical tree and shrub species include cottonwood, box elder, maple, aspen, alder, and willows. Riparian areas are typically discrete habitats, often surrounded by coniferous forest, grassland, shrubland or sagebrush habitat. If riparian habitat is present within the 50m radius, this should be the primary habitat type.”

Other (XX): Use if primary habitat type is not included in the list. Be sure to provide additional details in the remarks field.

From National Land Cover Database (NLCD) classifications

(<https://www.mrlc.gov/data/legends/national-land-cover-database-class-legend-and-description>; accessed 7 February 2024):

Barren (BA): “Areas characterized by bare rock, gravel, sand, silt, clay, or other earthen material, with little or no "green" vegetation present regardless of its inherent ability to support life. Vegetation, if present, is more widely spaced and scrubby than that in the "green" vegetated categories; lichen cover may be extensive.” Includes Barren Land (Rock/Sand/Clay) – “Barren areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Generally, vegetation accounts for less than 15% of total cover.”

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Developed (DE): Areas characterized by a high percentage (30 percent or greater) of constructed materials (e.g., asphalt, concrete, buildings, etc).

Deciduous Forest (DF): A subtype of NLCD Forested Upland – “Areas characterized by tree cover (natural or semi-natural woody vegetation, generally greater than 6 meters tall); tree canopy accounts for 10-100 percent of the cover.” Equivalent to NLCD Deciduous Forest – “Areas dominated by trees where 75 percent or more of the tree species shed foliage simultaneously in response to seasonal change.”

Evergreen Forest (EF): A subtype of NLCD Forested Upland – “Areas characterized by tree cover (natural or semi-natural woody vegetation, generally greater than 6 meters tall); tree canopy accounts for 10-100 percent of the cover.” Equivalent to NLCD Evergreen Forest – “Areas dominated by trees where 75 percent or more of the tree species` maintain their leaves all year. Canopy is never without green foliage.”

Mixed Forest (MX): A subtype of NLCD Forested Upland – “Areas characterized by tree cover (natural or semi-natural woody vegetation, generally greater than 6 meters tall); tree canopy accounts for 10-100 percent of the cover.” – “Areas dominated by trees where neither deciduous nor evergreen species represent more than 75 percent of the cover present.”

Grassland (GR): Equivalent to NLCD Grassland/Herbaceous – “areas dominated by graminoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.

Shrubland (SH): Equivalent to NLCD Shrubland – “Areas dominated by shrubs; shrub canopy accounts for 25-100 percent of the cover. Shrub cover is generally greater than 25 percent when tree cover is less than 25 percent. Shrub cover may be less than 25 percent in cases when the cover of other life forms (e.g. herbaceous or tree) is less than 25 percent and shrubs cover exceeds the cover of the other life forms.” and Shrub/Scrub – “Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions.”

Tundra (TU): Equivalent to Alaska only NLCD classes – Sedge/Herbaceous – “Alaska only areas dominated by sedges and forbs, generally greater than 80% of total vegetation;” Lichens – “Alaska only areas dominated by fruticose or foliose lichens generally greater than 80% of total vegetation;” Moss – “Alaska only areas dominated by mosses, generally greater than 80% of total vegetation;” and Dwarf Scrub – “Alaska only areas dominated by shrubs less than 20 centimeters tall with shrub canopy typically greater than 20% of total vegetation.”

Wetland (WE): Equivalent to NLCD Emergent Herbaceous Wetlands – “Areas where perennial herbaceous vegetation accounts for 75-100 percent of the cover and the soil or substrate is periodically saturated with or covered with water.” Also should be used for areas that were previously wetland and include standing dead wetland vegetation.

APPENDIX B REMINDERS

B.1 Required Task Checklist Before and After Conducting Bird Surveys

Complete this checklist before and after EACH field sampling event.

Binoculars cleaned and checked to make sure they are in good working condition

Batteries for the laser rangefinder checked and charged if necessary

Batteries for the GPS unit checked and charged if necessary

Appropriate declination is set on the compasses

Print datasheets for next sampling event

Double-check completed datasheets to ensure thoroughness

File completed datasheets in designated safe place for subsequent scanning and data entry

B.2 Equipment for Conducting Bird Surveys

Complete this checklist for each team member prior to EACH field sampling event.

Item Description	Crew #1	Crew #2	Crew #3	Crew #4
10 × 40 binoculars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GPS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laser rangefinder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sibley Field Guide to Birds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Datasheets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Declination adjustable compass w/ mirror sight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Countdown timer w/ chime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Master list of 4-letter species codes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kestrel (temp & wind measurements)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX C ESTIMATED DATES FOR ONSET AND CESSATION OF SAMPLING

The dates in the table below are expert estimates of the optimal time to survey breeding landbirds at each site, as informed by the first years of sampling and the many years of experience of the expert sources.

Table 4. Optimal breeding landbird sampling windows by NEON site.

Source	Domain	SiteID	Quantity	Unit	Optimal Survey Dates
Mass Audubon	D01	BART	9	grid	9 June - 30 June
Mass Audubon	D01	HARV	10	grid	1 June - 21 June
Smithsonian Institution	D02	BLAN	11	point	15 May - 15 June
Smithsonian Institution	D02	SCBI	21	point	15 May - 15 June
Smithsonian Institution	D02	SERC	24	point	15 May - 15 June
Chris Eberly	D03	DSNY	10	grid	1 May - 22 May
Rich Fischer	D03	JERC	9	grid	18 May - 7 June
Rich Fischer	D03	OSBS	10	grid	1 May - 22 May
Ivelisse Rodriguez-Colon	D04	GUAN	9	grid	15 May - 4 June
Ivelisse Rodriguez-Colon	D04	LAJA	16	point	1 May - 22 May
University of Wisconsin - Stevens Point	D05	STEI	10	grid	24 May - 13 June
University of Wisconsin - Stevens Point	D05	TREE	17	point	24 May - 13 June
University of Wisconsin - Stevens Point	D05	UNDE	10	grid	9 June - 30 June
Bill DeMott	D06	KONA	15	point	20 May - 10 June
Bill DeMott	D06	KONZ	10	grid	20 May - 10 June
Bill DeMott	D06	UKFS	5	grid	20 May - 10 June
Lizzie and John Diener	D07	GRSM	10	grid	21 May - 15 June
Conservation Management Institute at Virginia Tech	D07	MLBS	8	grid	25 May - 15 June
Lizzie and John Diener	D07	ORNL	10	grid	21 May - 15 June
Lizzie and John Diener	D08	DELA	14	point	15 May - 7 June
Lizzie and John Diener	D08	LENO	23	point	15 May - 7 June
Lizzie and John Diener	D08	TALL	10	grid	15 May - 7 June
Matt Smith	D09	DCFS	20	point	24 June - 15 July
Matt Smith	D09	NOGP	20	point	24 June - 15 July
Matt Smith	D09	WOOD	9	grid	24 June - 15 July
Matthew McLaren	D10	CPER	10	grid	17 May - 6 June
Matthew McLaren	D10	RMNP	10	grid	14 June - 4 July
Matthew McLaren	D10	STER	9	point	17 May - 6 June
Bill DeMott	D11	CLBJ	9	grid	5 May - 25 May

Source	Domain	SiteID	Quantity	Unit	Optimal Survey Dates
Bill DeMott	D11	OAES	7	grid	5 May - 25 May
Alex van Boer	D12	YELL	10	grid	15 June - 5 July
Nick Van Lanen	D13	MOAB	9	grid	15 May - 5 June
Matthew McLaren	D13	NIWO	6	grid	1 July - 20 July
Charles Britt	D14	JORN	10	grid	28 April - 19 May
Dylan Radin	D14	SRER	10	grid	15 April - 7 May
Nick Van Lanen	D15	ONAQ	6	grid	20 May - 10 June
Greg Levandoski	D16	ABBY	20	point	22 May - 12 June
Greg Levandoski	D16	WREF	10	grid	28 May - 19 June
Point Blue	D17	SJER	8	grid	7 April - 21 April
Point Blue	D17	SOAP	15	point	14 May - 28 May
Point Blue	D17	TEAK	10	grid	7 June - 28 June
Greg Levandoski	D18	BARR	7	grid	15 June - 7 July
Greg Levandoski	D18	TOOL	20	point	1 June - 21 June
Rich Fischer	D19	BONA	10	grid	7 June - 28 June
Chris Eberly	D19	DEJU	10	grid	1 June - 22 June
Rich Fischer	D19	HEAL	9	grid	1 June - 22 June
Hawaii Natural Area Reserve System	D20	PUUM	15	point	1 April - 30 April

APPENDIX D SITE-SPECIFIC INFORMATION

The tables below provide a general guide based on available data of the bird species and associated relative abundances that have been observed at NEON sites. These are meant to help guide training and testing of observers.

D.1 D01 – HARV – Harvard Forest & Quabbin Watershed NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Ovenbird	<i>Seiurus aurocapilla</i>	15.96%	2015	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	11.27%	2015	2022
Veery	<i>Catharus fuscescens</i>	6.89%	2015	2022
Black-and-white Warbler	<i>Mniotilta varia</i>	4.18%	2015	2022
Pine Warbler	<i>Setophaga pinus</i>	3.89%	2015	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	3.72%	2015	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	3.68%	2015	2022
American Redstart	<i>Setophaga ruticilla</i>	3.33%	2015	2022
Black-throated Green Warbler	<i>Setophaga virens</i>	3.23%	2015	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	3.23%	2015	2022
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	3.19%	2015	2022
Scarlet Tanager	<i>Piranga olivacea</i>	2.82%	2015	2022
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	2.25%	2015	2022
Black-capped Chickadee	<i>Poecile atricapillus</i>	2.16%	2015	2022
Chipping Sparrow	<i>Spizella passerina</i>	1.96%	2015	2022
Blue Jay	<i>Cyanocitta cristata</i>	1.91%	2015	2022
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	1.49%	2015	2022
Blackburnian Warbler	<i>Setophaga fusca</i>	1.39%	2015	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	1.34%	2015	2022
Mourning Dove	<i>Zenaida macroura</i>	1.08%	2015	2022
Hermit Thrush	<i>Catharus guttatus</i>	1.04%	2015	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	1.02%	2015	2021
Tufted Titmouse	<i>Baeolophus bicolor</i>	0.88%	2015	2022
Least Flycatcher	<i>Empidonax minimus</i>	0.87%	2015	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	0.85%	2015	2022
American Robin	<i>Turdus migratorius</i>	0.84%	2015	2022
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	0.81%	2015	2022
Wood Thrush	<i>Hylocichla mustelina</i>	0.81%	2015	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.63%	2015	2022

commonName	scientificName	meanRA	minYear	maxYear
Gray Catbird	<i>Dumetella carolinensis</i>	0.61%	2015	2022
Brown Creeper	<i>Certhia americana</i>	0.60%	2015	2022
Red-breasted Nuthatch	<i>Sitta canadensis</i>	0.60%	2015	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.55%	2015	2021
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.47%	2015	2021
Yellow Warbler	<i>Setophaga petechia</i>	0.47%	2015	2022
Blue-headed Vireo	<i>Vireo solitarius</i>	0.44%	2015	2022
Unknown Loon	<i>Gavia sp.</i>	0.42%	2015	2022
Baltimore Oriole	<i>Icterus galbula</i>	0.41%	2015	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	0.41%	2015	2022
American Goldfinch	<i>Spinus tristis</i>	0.38%	2016	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	0.37%	2015	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.34%	2015	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.34%	2015	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.34%	2015	2022
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.34%	2015	2022
American Crow	<i>Corvus brachyrhynchos</i>	0.31%	2015	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.28%	2015	2022
Song Sparrow	<i>Melospiza melodia</i>	0.25%	2015	2022
Tree Swallow	<i>Tachycineta bicolor</i>	0.25%	2015	2022
Winter Wren	<i>Troglodytes hiemalis</i>	0.23%	2015	2022
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	0.22%	2015	2021
Canada Warbler	<i>Cardellina canadensis</i>	0.22%	2015	2022
Ruffed Grouse	<i>Bonasa umbellus</i>	0.21%	2015	2022
Magnolia Warbler	<i>Setophaga magnolia</i>	0.17%	2015	2022
Common Grackle	<i>Quiscalus quiscula</i>	0.16%	2015	2022
Common Raven	<i>Corvus corax</i>	0.14%	2015	2022
Eastern Phoebe	<i>Sayornis phoebe</i>	0.14%	2016	2022
Broad-winged Hawk	<i>Buteo platypterus</i>	0.13%	2015	2022
Canada Goose	<i>Branta canadensis</i>	0.13%	2016	2022
Yellow-rumped Warbler	<i>Setophaga coronata</i>	0.13%	2015	2021
Northern Flicker	<i>Colaptes auratus</i>	0.10%	2015	2022
Barred Owl	<i>Strix varia</i>	0.09%	2015	2022
Golden-crowned Kinglet	<i>Regulus satrapa</i>	0.09%	2018	2020
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	0.08%	2015	2022
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.08%	2016	2021
Northern Cardinal	<i>Cardinalis cardinalis</i>	0.07%	2015	2022
Swamp Sparrow	<i>Melospiza georgiana</i>	0.07%	2018	2022
Worm-eating Warbler	<i>Helmitheros vermivorum</i>	0.07%	2019	2021
Northern Waterthrush	<i>Parkesia noveboracensis</i>	0.06%	2015	2022

commonName	scientificName	meanRA	minYear	maxYear
Prairie Warbler	<i>Setophaga discolor</i>	0.06%	2015	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.06%	2016	2022
American Black Duck	<i>Anas rubripes</i>	0.05%	2021	2021
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.05%	2017	2022
Blackpoll Warbler	<i>Setophaga striata</i>	0.03%	2017	2021
Great Blue Heron	<i>Ardea herodias</i>	0.03%	2018	2020
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.03%	2015	2022
Wilson's Warbler	<i>Cardellina pusilla</i>	0.03%	2019	2020
Wood Duck	<i>Aix sponsa</i>	0.03%	2015	2022
Alder Flycatcher	<i>Empidonax alnorum</i>	0.02%	2015	2022
Cackling Goose	<i>Branta hutchinsii</i>	0.02%	2015	2019
Common Merganser	<i>Mergus merganser</i>	0.02%	2021	2021
Cooper's Hawk	<i>Accipiter cooperii</i>	0.02%	2015	2021
Eastern Bluebird	<i>Sialia sialis</i>	0.02%	2017	2021
Purple Finch	<i>Haemorhous purpureus</i>	0.02%	2016	2020
Unknown Finch	<i>Fringillidae sp.</i>	0.02%	2020	2020
Warbling Vireo	<i>Vireo gilvus</i>	0.02%	2017	2022
American Woodcock	<i>Scolopax minor</i>	0.01%	2022	2022
Bachman's Sparrow	<i>Peucaea aestivalis</i>	0.01%	2017	2017
Blue-winged Warbler	<i>Vermivora cyanoptera</i>	0.01%	2015	2015
Chimney Swift	<i>Chaetura pelagica</i>	0.01%	2021	2021
Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	0.01%	2022	2022
Fish Crow	<i>Corvus ossifragus</i>	0.01%	2016	2016
Great Horned Owl	<i>Bubo virginianus</i>	0.01%	2019	2019
Green Heron	<i>Butorides virescens</i>	0.01%	2021	2021
Northern Mockingbird	<i>Mimus polyglottos</i>	0.01%	2017	2017
Northern Parula	<i>Setophaga americana</i>	0.01%	2020	2020
Red Crossbill	<i>Loxia curvirostra</i>	0.01%	2015	2015
Turkey Vulture	<i>Cathartes aura</i>	0.01%	2021	2021
Unknown Corvid	<i>Corvidae sp.</i>	0.01%	2021	2021
Unknown Nuthatch	<i>Sitta sp.</i>	0.01%	2019	2019
Willow Flycatcher	<i>Empidonax traillii</i>	0.01%	2016	2016

D.2 D01 – BART – Barlett Experimental Forest NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Red-eyed Vireo	<i>Vireo olivaceus</i>	16.81%	2015	2022

commonName	scientificName	meanRA	minYear	maxYear
Ovenbird	<i>Seiurus aurocapilla</i>	15.16%	2015	2022
Black-throated Green Warbler	<i>Setophaga virens</i>	11.35%	2015	2022
Blackburnian Warbler	<i>Setophaga fusca</i>	6.60%	2015	2022
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	5.61%	2015	2022
Hermit Thrush	<i>Catharus guttatus</i>	4.27%	2015	2022
Black-capped Chickadee	<i>Poecile atricapillus</i>	3.94%	2015	2022
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	3.61%	2015	2022
Blue-headed Vireo	<i>Vireo solitarius</i>	3.17%	2015	2022
Winter Wren	<i>Troglodytes hiemalis</i>	2.99%	2015	2022
Blue Jay	<i>Cyanocitta cristata</i>	2.38%	2015	2022
Swainson's Thrush	<i>Catharus ustulatus</i>	2.31%	2015	2022
Scarlet Tanager	<i>Piranga olivacea</i>	1.69%	2015	2022
American Redstart	<i>Setophaga ruticilla</i>	1.61%	2015	2021
Red-breasted Nuthatch	<i>Sitta canadensis</i>	1.56%	2015	2022
Black-and-white Warbler	<i>Mniotilta varia</i>	1.43%	2015	2022
Veery	<i>Catharus fuscescens</i>	1.23%	2015	2022
Golden-crowned Kinglet	<i>Regulus satrapa</i>	1.06%	2015	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	1.01%	2015	2022
Yellow-rumped Warbler	<i>Setophaga coronata</i>	0.90%	2015	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.88%	2015	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	0.88%	2015	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.86%	2016	2022
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	0.84%	2015	2022
Brown Creeper	<i>Certhia americana</i>	0.79%	2015	2022
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	0.46%	2015	2022
Magnolia Warbler	<i>Setophaga magnolia</i>	0.37%	2015	2022
Broad-winged Hawk	<i>Buteo platypterus</i>	0.31%	2015	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.31%	2017	2022
Red Crossbill	<i>Loxia curvirostra</i>	0.29%	2020	2020
Common Raven	<i>Corvus corax</i>	0.24%	2016	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.22%	2015	2021
Wood Thrush	<i>Hylocichla mustelina</i>	0.15%	2015	2021
American Crow	<i>Corvus brachyrhynchos</i>	0.13%	2018	2021
Mourning Dove	<i>Zenaida macroura</i>	0.13%	2017	2022
Barred Owl	<i>Strix varia</i>	0.11%	2018	2021
Dark-eyed Junco	<i>Junco hyemalis</i>	0.11%	2021	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	0.11%	2015	2017
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.11%	2016	2021
American Robin	<i>Turdus migratorius</i>	0.09%	2018	2020
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	0.09%	2021	2022

commonName	scientificName	meanRA	minYear	maxYear
Blackpoll Warbler	<i>Setophaga striata</i>	0.09%	2021	2021
Least Flycatcher	<i>Empidonax minimus</i>	0.09%	2015	2021
Northern Flicker	<i>Colaptes auratus</i>	0.09%	2016	2021
Northern Parula	<i>Setophaga americana</i>	0.09%	2016	2022
Pine Warbler	<i>Setophaga pinus</i>	0.09%	2015	2022
Purple Finch	<i>Haemorhous purpureus</i>	0.09%	2020	2022
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.09%	2016	2021
Common Yellowthroat	<i>Geothlypis trichas</i>	0.07%	2015	2019
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	0.07%	2017	2020
American Goshawk	<i>Accipiter gentilis</i>	0.07%	2020	2020
Tufted Titmouse	<i>Baeolophus bicolor</i>	0.07%	2015	2016
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.07%	2015	2017
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.04%	2021	2021
Canada Warbler	<i>Cardellina canadensis</i>	0.04%	2015	2015
Chipping Sparrow	<i>Spizella passerina</i>	0.04%	2017	2017
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	0.04%	2019	2022
Wilson's Warbler	<i>Cardellina pusilla</i>	0.04%	2019	2020
American Goldfinch	<i>Spinus tristis</i>	0.02%	2021	2021
Black-throated Wren	<i>Pheugopedius atrogularis</i>	0.02%	2019	2019
Cerulean Warbler	<i>Setophaga cerulea</i>	0.02%	2016	2016
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	0.02%	2016	2016
House Wren	<i>Troglodytes aedon</i>	0.02%	2015	2015
Mangrove Cuckoo	<i>Coccyzus minor</i>	0.02%	2015	2015
Ruby-crowned Kinglet	<i>Regulus calendula</i>	0.02%	2017	2017
Ruffed Grouse	<i>Bonasa umbellus</i>	0.02%	2018	2018
Varied Bunting	<i>Passerina versicolor</i>	0.02%	2016	2016
White-naped Swift	<i>Streptoprocne semicollaris</i>	0.02%	2018	2018
Wild Turkey	<i>Meleagris gallopavo</i>	0.02%	2021	2021
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	0.02%	2021	2021
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.02%	2020	2020

D.3 D02 – SCBI – Smithsonian Conservation Biology Institute NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Wood Thrush	<i>Hylocichla mustelina</i>	6.47%	2015	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	6.21%	2015	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	5.53%	2015	2022

commonName	scientificName	meanRA	minYear	maxYear
Carolina Wren	<i>Thryothorus ludovicianus</i>	5.43%	2015	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	5.33%	2015	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	5.18%	2015	2022
Indigo Bunting	<i>Passerina cyanea</i>	4.15%	2015	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	4.15%	2015	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	3.67%	2015	2022
Scarlet Tanager	<i>Piranga olivacea</i>	3.32%	2015	2022
Acadian Flycatcher	<i>Empidonax virescens</i>	3.17%	2015	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	2.64%	2015	2022
American Crow	<i>Corvus brachyrhynchos</i>	2.54%	2015	2022
Blue Jay	<i>Cyanocitta cristata</i>	1.96%	2015	2022
Purple Martin	<i>Progne subis</i>	1.89%	2015	2022
Field Sparrow	<i>Spizella pusilla</i>	1.86%	2015	2022
American Goldfinch	<i>Spinus tristis</i>	1.76%	2015	2022
American Redstart	<i>Setophaga ruticilla</i>	1.64%	2016	2022
Yellow-breasted Chat	<i>Icteria virens</i>	1.61%	2015	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	1.51%	2015	2022
Hooded Warbler	<i>Setophaga citrina</i>	1.46%	2015	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	1.46%	2015	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	1.41%	2015	2022
Ovenbird	<i>Seiurus aurocapilla</i>	1.38%	2016	2022
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	1.11%	2015	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	1.08%	2015	2022
American Robin	<i>Turdus migratorius</i>	0.98%	2015	2022
Barn Swallow	<i>Hirundo rustica</i>	0.93%	2015	2019
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.88%	2016	2019
Worm-eating Warbler	<i>Helmitheros vermivorum</i>	0.88%	2016	2022
Mourning Dove	<i>Zenaida macroura</i>	0.86%	2015	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.83%	2015	2021
Carolina Chickadee	<i>Poecile carolinensis</i>	0.81%	2015	2022
Eastern Bluebird	<i>Sialia sialis</i>	0.78%	2016	2022
Kentucky Warbler	<i>Geothlypis formosa</i>	0.78%	2016	2022
Tree Swallow	<i>Tachycineta bicolor</i>	0.78%	2015	2021
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.78%	2015	2022
Orchard Oriole	<i>Icterus spurius</i>	0.70%	2016	2022
Common Raven	<i>Corvus corax</i>	0.68%	2015	2022
Cerulean Warbler	<i>Setophaga cerulea</i>	0.65%	2016	2022
Prairie Warbler	<i>Setophaga discolor</i>	0.65%	2015	2020
Northern Flicker	<i>Colaptes auratus</i>	0.60%	2015	2022
White-eyed Vireo	<i>Vireo griseus</i>	0.58%	2015	2022

commonName	scientificName	meanRA	minYear	maxYear
Common Grackle	<i>Quiscalus quiscula</i>	0.55%	2016	2020
Song Sparrow	<i>Melospiza melodia</i>	0.50%	2015	2020
Wild Turkey	<i>Meleagris gallopavo</i>	0.43%	2016	2021
Baltimore Oriole	<i>Icterus galbula</i>	0.40%	2015	2020
European Starling	<i>Sturnus vulgaris</i>	0.40%	2016	2019
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.40%	2016	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.38%	2015	2021
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.35%	2015	2019
Brown Thrasher	<i>Toxostoma rufum</i>	0.33%	2015	2021
Turkey Vulture	<i>Cathartes aura</i>	0.33%	2015	2021
Chipping Sparrow	<i>Spizella passerina</i>	0.28%	2015	2020
House Wren	<i>Troglodytes aedon</i>	0.28%	2016	2019
Chimney Swift	<i>Chaetura pelagica</i>	0.25%	2016	2019
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.25%	2017	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.23%	2017	2019
Canada Goose	<i>Branta canadensis</i>	0.15%	2017	2020
Eastern Phoebe	<i>Sayornis phoebe</i>	0.15%	2016	2022
Gray Catbird	<i>Dumetella carolinensis</i>	0.15%	2016	2020
House Finch	<i>Haemorhous mexicanus</i>	0.15%	2016	2022
Louisiana Waterthrush	<i>Parkesia motacilla</i>	0.15%	2017	2022
Northern Parula	<i>Setophaga americana</i>	0.15%	2015	2021
Blackpoll Warbler	<i>Setophaga striata</i>	0.13%	2017	2018
Eastern Meadowlark	<i>Sturnella magna</i>	0.10%	2019	2019
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	0.08%	2017	2018
American Kestrel	<i>Falco sparverius</i>	0.05%	2019	2019
American Woodcock	<i>Scolopax minor</i>	0.05%	2019	2019
Barred Owl	<i>Strix varia</i>	0.05%	2019	2019
Black-and-white Warbler	<i>Mniotilta varia</i>	0.05%	2019	2020
Great Blue Heron	<i>Ardea herodias</i>	0.05%	2020	2020
House Sparrow	<i>Passer domesticus</i>	0.05%	2016	2017
Northern Mockingbird	<i>Mimus polyglottos</i>	0.05%	2019	2022
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.05%	2016	2019
Swainson's Thrush	<i>Catharus ustulatus</i>	0.05%	2017	2020
Warbling Vireo	<i>Vireo gilvus</i>	0.05%	2016	2017
Black Vulture	<i>Coragyps atratus</i>	0.03%	2020	2020
Blue-headed Vireo	<i>Vireo solitarius</i>	0.03%	2018	2018
Brown Creeper	<i>Certhia americana</i>	0.03%	2017	2017
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.03%	2016	2016
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.03%	2018	2018
Ruffed Grouse	<i>Bonasa umbellus</i>	0.03%	2020	2020

commonName	scientificName	meanRA	minYear	maxYear
Willow Flycatcher	<i>Empidonax traillii</i>	0.03%	2017	2017
Yellow Warbler	<i>Setophaga petechia</i>	0.03%	2021	2021
Yellow-rumped Warbler	<i>Setophaga coronata</i>	0.03%	2017	2017

D.4 D02 – SERC – Smithsonian Environmental Research Center NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Northern Cardinal	<i>Cardinalis cardinalis</i>	7.62%	2017	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	7.51%	2017	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	5.77%	2017	2022
Acadian Flycatcher	<i>Empidonax vireescens</i>	5.56%	2017	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	5.38%	2017	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	5.01%	2017	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	4.98%	2017	2022
Ovenbird	<i>Seiurus aurocapilla</i>	4.66%	2017	2022
Wood Thrush	<i>Hylocichla mustelina</i>	4.26%	2017	2022
Canada Goose	<i>Branta canadensis</i>	3.27%	2017	2022
Scarlet Tanager	<i>Piranga olivacea</i>	3.13%	2017	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	3.01%	2017	2022
American Crow	<i>Corvus brachyrhynchos</i>	2.50%	2017	2022
Blue Jay	<i>Cyanocitta cristata</i>	2.36%	2017	2022
Indigo Bunting	<i>Passerina cyanea</i>	2.18%	2017	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	1.88%	2017	2022
Northern Parula	<i>Setophaga americana</i>	1.67%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	1.62%	2017	2022
Downy Woodpecker	<i>Picoides pubescens</i>	1.41%	2017	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	1.41%	2017	2022
Hooded Warbler	<i>Setophaga citrina</i>	1.41%	2017	2022
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	1.39%	2017	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	1.34%	2017	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	1.25%	2017	2022
Carolina Chickadee	<i>Poecile carolinensis</i>	1.18%	2017	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	1.14%	2017	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	1.09%	2017	2022
American Goldfinch	<i>Spinus tristis</i>	1.04%	2017	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.97%	2017	2020
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.83%	2017	2020

commonName	scientificName	meanRA	minYear	maxYear
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.83%	2017	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.74%	2017	2022
American Redstart	<i>Setophaga ruticilla</i>	0.63%	2017	2020
Louisiana Waterthrush	<i>Parkesia motacilla</i>	0.58%	2017	2022
Northern Flicker	<i>Colaptes auratus</i>	0.58%	2017	2021
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.49%	2017	2022
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	0.44%	2017	2021
Kentucky Warbler	<i>Geothlypis formosa</i>	0.44%	2017	2022
Summer Tanager	<i>Piranga rubra</i>	0.44%	2017	2019
Great Blue Heron	<i>Ardea herodias</i>	0.39%	2017	2022
Osprey	<i>Pandion haliaetus</i>	0.39%	2017	2021
Blue-winged Warbler	<i>Vermivora cyanoptera</i>	0.35%	2017	2020
White-eyed Vireo	<i>Vireo griseus</i>	0.35%	2017	2022
Blue Grosbeak	<i>Passerina caerulea</i>	0.30%	2017	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.30%	2017	2021
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.30%	2017	2019
Eastern Bluebird	<i>Sialia sialis</i>	0.28%	2017	2022
Worm-eating Warbler	<i>Helminthos vermivorum</i>	0.28%	2017	2019
American Robin	<i>Turdus migratorius</i>	0.25%	2017	2021
Bald Eagle	<i>Haliaeetus leucocephalus</i>	0.25%	2018	2020
Hairy Woodpecker	<i>Picoides villosus</i>	0.25%	2017	2022
Orchard Oriole	<i>Icterus spurius</i>	0.25%	2017	2022
Barn Swallow	<i>Hirundo rustica</i>	0.23%	2017	2019
Gray Catbird	<i>Dumetella carolinensis</i>	0.23%	2017	2021
Northern Mockingbird	<i>Mimus polyglottos</i>	0.23%	2017	2022
Turkey Vulture	<i>Cathartes aura</i>	0.23%	2017	2020
Yellow-breasted Chat	<i>Icteria virens</i>	0.23%	2017	2022
Blackpoll Warbler	<i>Setophaga striata</i>	0.19%	2017	2019
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.19%	2021	2021
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.19%	2017	2021
Swainson's Thrush	<i>Catharus ustulatus</i>	0.19%	2017	2020
Black-and-white Warbler	<i>Mniotilta varia</i>	0.16%	2018	2019
Fish Crow	<i>Corvus ossifragus</i>	0.16%	2018	2022
Veery	<i>Catharus fuscescens</i>	0.16%	2017	2019
Yellow-throated Warbler	<i>Setophaga dominica</i>	0.16%	2017	2022
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.09%	2018	2018
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	0.09%	2017	2021
Northern Waterthrush	<i>Parkesia noveboracensis</i>	0.09%	2018	2019
Chimney Swift	<i>Chaetura pelagica</i>	0.07%	2019	2020
Laughing Gull	<i>Leucophaeus atricilla</i>	0.07%	2019	2019

commonName	scientificName	meanRA	minYear	maxYear
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.07%	2018	2018
Wood Duck	<i>Aix sponsa</i>	0.07%	2017	2019
American Kestrel	<i>Falco sparverius</i>	0.05%	2017	2017
Black Vulture	<i>Coragyps atratus</i>	0.05%	2019	2019
Brown Thrasher	<i>Toxostoma rufum</i>	0.05%	2017	2018
Common Grackle	<i>Quiscalus quiscula</i>	0.05%	2017	2020
Pine Warbler	<i>Setophaga pinus</i>	0.05%	2019	2019
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.05%	2017	2019
Solitary Sandpiper	<i>Tringa solitaria</i>	0.05%	2019	2019
Song Sparrow	<i>Melospiza melodia</i>	0.05%	2020	2020
Tree Swallow	<i>Tachycineta bicolor</i>	0.05%	2017	2017
Alder Flycatcher	<i>Empidonax alnorum</i>	0.02%	2018	2018
American Black Duck	<i>Anas rubripes</i>	0.02%	2020	2020
Barred Owl	<i>Strix varia</i>	0.02%	2018	2018
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	0.02%	2019	2019
Black-throated Green Warbler	<i>Setophaga virens</i>	0.02%	2019	2019
Cassin's Sparrow	<i>Peucaea cassinii</i>	0.02%	2019	2019
Eastern Meadowlark	<i>Sturnella magna</i>	0.02%	2019	2019
Eastern Phoebe	<i>Sayornis phoebe</i>	0.02%	2019	2019
European Starling	<i>Sturnus vulgaris</i>	0.02%	2018	2018
Gray-cheeked Thrush	<i>Catharus minimus</i>	0.02%	2018	2018
House Finch	<i>Haemorhous mexicanus</i>	0.02%	2021	2021
House Wren	<i>Troglodytes aedon</i>	0.02%	2021	2021
Mallard	<i>Anas platyrhynchos</i>	0.02%	2020	2020
Purple Martin	<i>Progne subis</i>	0.02%	2018	2018
Spotted Sandpiper	<i>Actitis macularius</i>	0.02%	2019	2019

D.5 D02 – BLAN – Blandy Experimental Farm NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Tufted Titmouse	<i>Baeolophus bicolor</i>	6.45%	2017	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	5.88%	2017	2022
Indigo Bunting	<i>Passerina cyanea</i>	5.82%	2017	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	5.37%	2017	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	4.79%	2017	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	4.57%	2017	2022
Field Sparrow	<i>Spizella pusilla</i>	4.28%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	4.11%	2017	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	4.05%	2017	2022
American Goldfinch	<i>Spinus tristis</i>	3.54%	2017	2022
Warbling Vireo	<i>Vireo gilvus</i>	3.25%	2017	2022
Acadian Flycatcher	<i>Empidonax virescens</i>	3.03%	2017	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	2.85%	2017	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	2.63%	2017	2022
American Crow	<i>Corvus brachyrhynchos</i>	2.51%	2017	2022
Blue-gray Gnatcatcher	<i>Poliptila caerulea</i>	2.17%	2017	2020
Cedar Waxwing	<i>Bombycilla cedrorum</i>	2.17%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	2.17%	2017	2022
Eastern Bluebird	<i>Sialia sialis</i>	1.94%	2017	2022
Orchard Oriole	<i>Icterus spurius</i>	1.83%	2017	2022
Wood Thrush	<i>Hylocichla mustelina</i>	1.71%	2017	2022
Chipping Sparrow	<i>Spizella passerina</i>	1.66%	2017	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	1.48%	2017	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	1.48%	2017	2022
Scarlet Tanager	<i>Piranga olivacea</i>	1.37%	2017	2022
Blue Jay	<i>Cyanocitta cristata</i>	1.26%	2018	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	1.26%	2017	2022
Downy Woodpecker	<i>Picoides pubescens</i>	1.20%	2017	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	1.20%	2017	2022
Baltimore Oriole	<i>Icterus galbula</i>	1.03%	2017	2022
American Redstart	<i>Setophaga ruticilla</i>	0.97%	2017	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.97%	2017	2022
Carolina Chickadee	<i>Poecile carolinensis</i>	0.91%	2017	2022
Great Blue Heron	<i>Ardea herodias</i>	0.74%	2017	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	0.57%	2017	2021
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.57%	2018	2021
Northern Parula	<i>Setophaga americana</i>	0.51%	2017	2021
Common Grackle	<i>Quiscalus quiscula</i>	0.46%	2018	2022
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.46%	2017	2022
Eastern Meadowlark	<i>Sturnella magna</i>	0.40%	2017	2022
Cerulean Warbler	<i>Setophaga cerulea</i>	0.34%	2018	2019
Common Raven	<i>Corvus corax</i>	0.34%	2019	2022
European Starling	<i>Sturnus vulgaris</i>	0.34%	2022	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.34%	2019	2022
Northern Flicker	<i>Colaptes auratus</i>	0.29%	2019	2021
Prothonotary Warbler	<i>Protonotaria citrea</i>	0.29%	2018	2021
Song Sparrow	<i>Melospiza melodia</i>	0.29%	2017	2021

commonName	scientificName	meanRA	minYear	maxYear
American Robin	<i>Turdus migratorius</i>	0.23%	2017	2020
Chimney Swift	<i>Chaetura pelagica</i>	0.23%	2018	2019
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.23%	2019	2022
Tree Swallow	<i>Tachycineta bicolor</i>	0.23%	2017	2020
Turkey Vulture	<i>Cathartes aura</i>	0.23%	2017	2020
Blue Grosbeak	<i>Passerina caerulea</i>	0.17%	2021	2021
Hairy Woodpecker	<i>Picoides villosus</i>	0.17%	2017	2020
House Finch	<i>Haemorhous mexicanus</i>	0.17%	2018	2018
House Wren	<i>Troglodytes aedon</i>	0.17%	2017	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.17%	2018	2021
Yellow-breasted Chat	<i>Icteria virens</i>	0.17%	2018	2019
Bald Eagle	<i>Haliaeetus leucocephalus</i>	0.11%	2019	2019
Barred Owl	<i>Strix varia</i>	0.11%	2018	2022
Blackpoll Warbler	<i>Setophaga striata</i>	0.11%	2017	2019
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	0.11%	2018	2018
Louisiana Waterthrush	<i>Parkesia motacilla</i>	0.11%	2019	2020
Prairie Warbler	<i>Setophaga discolor</i>	0.11%	2017	2019
Purple Martin	<i>Progne subis</i>	0.11%	2017	2018
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.11%	2018	2018
Barn Swallow	<i>Hirundo rustica</i>	0.06%	2017	2017
Black Vulture	<i>Coragyps atratus</i>	0.06%	2017	2017
Brown Thrasher	<i>Toxostoma rufum</i>	0.06%	2020	2020
Cooper's Hawk	<i>Accipiter cooperii</i>	0.06%	2019	2019
Eastern Phoebe	<i>Sayornis phoebe</i>	0.06%	2020	2020
Fish Crow	<i>Corvus ossifragus</i>	0.06%	2021	2021
Gray Catbird	<i>Dumetella carolinensis</i>	0.06%	2021	2021
Gray Flycatcher	<i>Empidonax wrightii</i>	0.06%	2020	2020
Hooded Warbler	<i>Setophaga citrina</i>	0.06%	2019	2019
Northern Mockingbird	<i>Mimus polyglottos</i>	0.06%	2017	2017
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.06%	2021	2021
Ovenbird	<i>Seiurus aurocapilla</i>	0.06%	2017	2017
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.06%	2018	2018
Summer Tanager	<i>Piranga rubra</i>	0.06%	2021	2021
Swainson's Thrush	<i>Catharus ustulatus</i>	0.06%	2021	2021
White-eyed Vireo	<i>Vireo griseus</i>	0.06%	2018	2018

D.6 D03 – OSBS – Ordway-Swisher Biological Station NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Tufted Titmouse	<i>Baeolophus bicolor</i>	14.81%	2016	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	8.92%	2016	2022
Mourning Dove	<i>Zenaida macroura</i>	7.85%	2016	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	7.38%	2016	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	6.21%	2016	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	5.11%	2016	2022
Blue Jay	<i>Cyanocitta cristata</i>	4.29%	2016	2022
Pine Warbler	<i>Setophaga pinus</i>	3.94%	2016	2022
White-eyed Vireo	<i>Vireo griseus</i>	3.94%	2016	2022
Yellow-throated Vireo	<i>Vireo flavifrons</i>	3.09%	2016	2022
American Crow	<i>Corvus brachyrhynchos</i>	3.03%	2016	2022
Summer Tanager	<i>Piranga rubra</i>	2.78%	2016	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	2.69%	2016	2022
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	1.87%	2016	2022
Bachman's Sparrow	<i>Peucaea aestivalis</i>	1.84%	2016	2022
Common Nighthawk	<i>Chordeiles minor</i>	1.84%	2016	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	1.45%	2016	2022
Northern Parula	<i>Setophaga americana</i>	1.31%	2016	2022
Red-shouldered Hawk	<i>Buteo lineatus</i>	1.16%	2016	2022
Downy Woodpecker	<i>Picoides pubescens</i>	1.14%	2016	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	1.00%	2016	2022
Northern Bobwhite	<i>Colinus virginianus</i>	0.96%	2016	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.87%	2016	2022
Brown Thrasher	<i>Toxostoma rufum</i>	0.85%	2016	2022
Eastern Bluebird	<i>Sialia sialis</i>	0.76%	2016	2022
Wood Duck	<i>Aix sponsa</i>	0.75%	2017	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.65%	2016	2022
White Ibis	<i>Eudocimus albus</i>	0.65%	2016	2022
Anhinga	<i>Anhinga anhinga</i>	0.56%	2016	2022
Great Egret	<i>Ardea alba</i>	0.55%	2016	2022
Common Grackle	<i>Quiscalus quiscula</i>	0.53%	2017	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	0.51%	2016	2022
Black-bellied Whistling-Duck	<i>Dendrocygna autumnalis</i>	0.49%	2017	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.49%	2016	2022
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	0.44%	2016	2022
Barred Owl	<i>Strix varia</i>	0.42%	2016	2022
Chuck-will's-widow	<i>Antrostomus carolinensis</i>	0.40%	2016	2022
Carolina Chickadee	<i>Poecile carolinensis</i>	0.35%	2017	2022
Turkey Vulture	<i>Cathartes aura</i>	0.33%	2016	2022
Common Gallinule	<i>Gallinula galeata</i>	0.29%	2016	2017

commonName	scientificName	meanRA	minYear	maxYear
Little Blue Heron	<i>Egretta caerulea</i>	0.27%	2016	2021
Snowy Egret	<i>Egretta thula</i>	0.27%	2016	2017
Common Yellowthroat	<i>Geothlypis trichas</i>	0.25%	2016	2022
Sandhill Crane	<i>Grus canadensis</i>	0.24%	2016	2020
Great Blue Heron	<i>Ardea herodias</i>	0.20%	2016	2021
Swallow-tailed Kite	<i>Elanoides forficatus</i>	0.20%	2017	2022
Boat-tailed Grackle	<i>Quiscalus major</i>	0.16%	2016	2017
Brown-headed Nuthatch	<i>Sitta pusilla</i>	0.16%	2016	2021
Cattle Egret	<i>Bubulcus ibis</i>	0.13%	2017	2020
Blue Grosbeak	<i>Passerina caerulea</i>	0.11%	2016	2016
Mottled Duck	<i>Anas fulvigula</i>	0.11%	2016	2019
American Kestrel	<i>Falco sparverius</i>	0.07%	2020	2020
Brown-headed Cowbird	<i>Molothrus ater</i>	0.07%	2016	2021
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	0.07%	2020	2020
Northern Flicker	<i>Colaptes auratus</i>	0.07%	2016	2022
American Redstart	<i>Setophaga ruticilla</i>	0.05%	2021	2022
Bald Eagle	<i>Haliaeetus leucocephalus</i>	0.05%	2017	2019
Black Vulture	<i>Coragyps atratus</i>	0.05%	2017	2022
Common Ground-Dove	<i>Columbina passerina</i>	0.05%	2020	2021
Hairy Woodpecker	<i>Picoides villosus</i>	0.05%	2018	2021
Tricolored Heron	<i>Egretta tricolor</i>	0.05%	2016	2022
Acadian Flycatcher	<i>Empidonax virescens</i>	0.04%	2016	2016
Green Heron	<i>Butorides virescens</i>	0.04%	2016	2016
Purple Martin	<i>Progne subis</i>	0.04%	2022	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.04%	2016	2022
American Coot	<i>Fulica americana</i>	0.02%	2019	2019
Antillean Crested Hummingbird	<i>Orthorhyncus cristatus</i>	0.02%	2018	2018
Canada Goose	<i>Branta canadensis</i>	0.02%	2017	2017
Chimney Swift	<i>Chaetura pelagica</i>	0.02%	2016	2016
Eastern Screech-Owl	<i>Megascops asio</i>	0.02%	2022	2022
Fish Crow	<i>Corvus ossifragus</i>	0.02%	2020	2020
Glossy Ibis	<i>Plegadis falcinellus</i>	0.02%	2017	2017
Killdeer	<i>Charadrius vociferus</i>	0.02%	2017	2017
Marsh Wren	<i>Cistothorus palustris</i>	0.02%	2016	2016
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.02%	2020	2020
Solitary Sandpiper	<i>Tringa solitaria</i>	0.02%	2022	2022
White-winged Dove	<i>Zenaida asiatica</i>	0.02%	2016	2016
Yellow-breasted Chat	<i>Icteria virens</i>	0.02%	2016	2016
Yellow-throated Warbler	<i>Setophaga dominica</i>	0.02%	2021	2021

D.7 D03 – DSNY – Disney Wilderness Preserve NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	13.41%	2015	2022
Mourning Dove	<i>Zenaida macroura</i>	7.64%	2015	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	6.55%	2015	2022
Eastern Meadowlark	<i>Sturnella magna</i>	6.54%	2015	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	5.95%	2015	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	5.31%	2015	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	4.96%	2015	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	4.75%	2015	2022
Bachman's Sparrow	<i>Peucaea aestivalis</i>	4.62%	2015	2022
Northern Bobwhite	<i>Colinus virginianus</i>	3.89%	2015	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	3.59%	2015	2022
American Crow	<i>Corvus brachyrhynchos</i>	3.01%	2015	2022
White-eyed Vireo	<i>Vireo griseus</i>	2.95%	2015	2022
Eastern Bluebird	<i>Sialia sialis</i>	2.73%	2015	2022
Common Ground-Dove	<i>Columbina passerina</i>	2.04%	2015	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	1.99%	2015	2022
Common Nighthawk	<i>Chordeiles minor</i>	1.72%	2015	2022
Pine Warbler	<i>Setophaga pinus</i>	1.69%	2015	2022
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	1.45%	2015	2022
Red-shouldered Hawk	<i>Buteo lineatus</i>	1.34%	2015	2022
Common Grackle	<i>Quiscalus quiscula</i>	1.10%	2015	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.96%	2015	2022
Brown-headed Nuthatch	<i>Sitta pusilla</i>	0.92%	2015	2022
Sandhill Crane	<i>Grus canadensis</i>	0.81%	2015	2022
Chuck-will's-widow	<i>Antrostomus carolinensis</i>	0.64%	2015	2022
Turkey Vulture	<i>Cathartes aura</i>	0.64%	2015	2022
Blue Jay	<i>Cyanocitta cristata</i>	0.53%	2015	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.49%	2015	2022
Purple Martin	<i>Progne subis</i>	0.43%	2016	2021
Cattle Egret	<i>Bubulcus ibis</i>	0.40%	2015	2019
Bald Eagle	<i>Haliaeetus leucocephalus</i>	0.38%	2017	2022
Barred Owl	<i>Strix varia</i>	0.33%	2015	2022
Great Egret	<i>Ardea alba</i>	0.29%	2015	2022
Loggerhead Shrike	<i>Lanius ludovicianus</i>	0.29%	2015	2022
Summer Tanager	<i>Piranga rubra</i>	0.29%	2016	2022

commonName	scientificName	meanRA	minYear	maxYear
Yellow-throated Warbler	<i>Setophaga dominica</i>	0.29%	2017	2022
Black-bellied Whistling-Duck	<i>Dendrocygna autumnalis</i>	0.26%	2015	2017
Brown Thrasher	<i>Toxostoma rufum</i>	0.26%	2015	2022
Fish Crow	<i>Corvus ossifragus</i>	0.26%	2015	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.26%	2015	2022
Black Vulture	<i>Coragyps atratus</i>	0.24%	2016	2019
Northern Parula	<i>Setophaga americana</i>	0.24%	2016	2022
Unknown Corvid	<i>Corvidae sp.</i>	0.24%	2015	2021
Wood Duck	<i>Aix sponsa</i>	0.24%	2018	2021
Northern Flicker	<i>Colaptes auratus</i>	0.21%	2015	2022
White Ibis	<i>Eudocimus albus</i>	0.21%	2015	2019
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	0.18%	2015	2022
Osprey	<i>Pandion haliaetus</i>	0.18%	2015	2022
Snowy Egret	<i>Egretta thula</i>	0.16%	2017	2017
Killdeer	<i>Charadrius vociferus</i>	0.14%	2015	2019
Downy Woodpecker	<i>Picoides pubescens</i>	0.13%	2016	2019
Swallow-tailed Kite	<i>Elanoides forficatus</i>	0.13%	2015	2018
Mottled Duck	<i>Anas fulvigula</i>	0.11%	2016	2019
Great Blue Heron	<i>Ardea herodias</i>	0.10%	2015	2019
Red-eyed Vireo	<i>Vireo olivaceus</i>	0.08%	2017	2022
Little Blue Heron	<i>Egretta caerulea</i>	0.06%	2015	2016
Great Horned Owl	<i>Bubo virginianus</i>	0.05%	2018	2019
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.05%	2015	2015
Tricolored Heron	<i>Egretta tricolor</i>	0.05%	2016	2019
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.05%	2017	2019
American Redstart	<i>Setophaga ruticilla</i>	0.03%	2021	2021
Anhinga	<i>Anhinga anhinga</i>	0.03%	2021	2021
Boat-tailed Grackle	<i>Quiscalus major</i>	0.03%	2015	2015
Carolina Chickadee	<i>Poecile carolinensis</i>	0.03%	2021	2021
Common Gallinule	<i>Gallinula galeata</i>	0.03%	2016	2016
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.03%	2016	2017
American Kestrel	<i>Falco sparverius</i>	0.02%	2017	2017
Bobolink	<i>Dolichonyx oryzivorus</i>	0.02%	2017	2017
Brown-headed Cowbird	<i>Molothrus ater</i>	0.02%	2017	2017
Cooper's Hawk	<i>Accipiter cooperii</i>	0.02%	2021	2021
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	0.02%	2018	2018
Gray Catbird	<i>Dumetella carolinensis</i>	0.02%	2021	2021
Hairy Woodpecker	<i>Picoides villosus</i>	0.02%	2021	2021
House Sparrow	<i>Passer domesticus</i>	0.02%	2018	2018
Indigo Bunting	<i>Passerina cyanea</i>	0.02%	2016	2016

commonName	scientificName	meanRA	minYear	maxYear
Northern Harrier	<i>Circus cyaneus</i>	0.02%	2022	2022
Prothonotary Warbler	<i>Protonotaria citrea</i>	0.02%	2016	2016
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.02%	2019	2019
Roseate Spoonbill	<i>Platalea ajaja</i>	0.02%	2015	2015

D.8 D03 – JERC – The Jones Center At Ichauway NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Northern Cardinal	<i>Cardinalis cardinalis</i>	9.91%	2016	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	8.43%	2016	2022
Mourning Dove	<i>Zenaida macroura</i>	7.72%	2016	2022
Northern Bobwhite	<i>Colinus virginianus</i>	7.04%	2016	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	6.80%	2016	2022
Blue Jay	<i>Cyanocitta cristata</i>	4.39%	2016	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	4.35%	2016	2022
Bachman's Sparrow	<i>Peucaea aestivalis</i>	3.99%	2016	2022
Field Sparrow	<i>Spizella pusilla</i>	3.63%	2016	2022
Indigo Bunting	<i>Passerina cyanea</i>	3.46%	2016	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	3.46%	2016	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	2.75%	2016	2022
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	2.66%	2016	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	2.36%	2016	2022
Northern Parula	<i>Setophaga americana</i>	2.32%	2016	2022
White-eyed Vireo	<i>Vireo griseus</i>	2.24%	2016	2022
Pine Warbler	<i>Setophaga pinus</i>	2.19%	2016	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	1.99%	2016	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	1.75%	2016	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	1.60%	2016	2022
Summer Tanager	<i>Piranga rubra</i>	1.11%	2016	2022
American Crow	<i>Corvus brachyrhynchos</i>	1.01%	2016	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	1.01%	2016	2022
Yellow-breasted Chat	<i>Icteria virens</i>	0.99%	2016	2022
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	0.93%	2016	2022
Common Ground-Dove	<i>Columbina passerina</i>	0.93%	2016	2022
Blue Grosbeak	<i>Passerina caerulea</i>	0.92%	2016	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.83%	2016	2022

commonName	scientificName	meanRA	minYear	maxYear
Brown-headed Nuthatch	<i>Sitta pusilla</i>	0.80%	2016	2022
Carolina Chickadee	<i>Poecile carolinensis</i>	0.79%	2016	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.76%	2016	2022
Gray Catbird	<i>Dumetella carolinensis</i>	0.65%	2016	2022
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.63%	2016	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	0.57%	2016	2022
Eastern Bluebird	<i>Sialia sialis</i>	0.55%	2016	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.29%	2017	2022
White Ibis	<i>Eudocimus albus</i>	0.27%	2019	2021
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.24%	2016	2021
Brown Thrasher	<i>Toxostoma rufum</i>	0.21%	2018	2021
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.20%	2016	2022
Turkey Vulture	<i>Cathartes aura</i>	0.20%	2016	2022
Black-bellied Whistling-Duck	<i>Dendrocygna autumnalis</i>	0.19%	2021	2022
Acadian Flycatcher	<i>Empidonax virescens</i>	0.17%	2016	2022
Common Nighthawk	<i>Chordeiles minor</i>	0.13%	2016	2021
House Finch	<i>Haemorhous mexicanus</i>	0.12%	2017	2022
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.12%	2016	2022
Loggerhead Shrike	<i>Lanius ludovicianus</i>	0.11%	2017	2022
Purple Martin	<i>Progne subis</i>	0.11%	2019	2022
Cooper's Hawk	<i>Accipiter cooperii</i>	0.09%	2017	2022
Northern Flicker	<i>Colaptes auratus</i>	0.09%	2018	2022
Orchard Oriole	<i>Icterus spurius</i>	0.09%	2016	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	0.09%	2018	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.07%	2018	2022
American Goldfinch	<i>Spinus tristis</i>	0.05%	2016	2022
Fish Crow	<i>Corvus ossifragus</i>	0.05%	2019	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.05%	2018	2022
Barn Swallow	<i>Hirundo rustica</i>	0.04%	2017	2022
Chimney Swift	<i>Chaetura pelagica</i>	0.04%	2016	2019
Common Grackle	<i>Quiscalus quiscula</i>	0.04%	2016	2020
Great Horned Owl	<i>Bubo virginianus</i>	0.04%	2016	2021
Barred Owl	<i>Strix varia</i>	0.03%	2020	2021
Black Vulture	<i>Coragyps atratus</i>	0.03%	2020	2022
Broad-winged Hawk	<i>Buteo platypterus</i>	0.03%	2018	2022
Cattle Egret	<i>Bubulcus ibis</i>	0.03%	2021	2021
Great Blue Heron	<i>Ardea herodias</i>	0.03%	2018	2018
Hairy Woodpecker	<i>Picoides villosus</i>	0.03%	2017	2018
Prairie Warbler	<i>Setophaga discolor</i>	0.03%	2016	2016
Warbling Vireo	<i>Vireo gilvus</i>	0.03%	2017	2018

commonName	scientificName	meanRA	minYear	maxYear
Wood Duck	<i>Aix sponsa</i>	0.03%	2021	2021
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.01%	2021	2021
Cackling Goose	<i>Branta hutchinsii</i>	0.01%	2022	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.01%	2022	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.01%	2016	2016
Eastern Screech-Owl	<i>Megascops asio</i>	0.01%	2022	2022
European Starling	<i>Sturnus vulgaris</i>	0.01%	2020	2020
Great Egret	<i>Ardea alba</i>	0.01%	2021	2021
Green Heron	<i>Butorides virescens</i>	0.01%	2019	2019
Groove-billed Ani	<i>Crotophaga sulcirostris</i>	0.01%	2016	2016
Hooded Warbler	<i>Setophaga citrina</i>	0.01%	2017	2017
Louisiana Waterthrush	<i>Parkesia motacilla</i>	0.01%	2020	2020
Wood Thrush	<i>Hylocichla mustelina</i>	0.01%	2019	2019

D.9 D04 – GUAN – Guanica Forest NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Adelaide's Warbler	<i>Setophaga adelaidae</i>	18.75%	2015	2022
Puerto Rican Bullfinch	<i>Loxigilla portoricensis</i>	9.06%	2015	2022
Bananaquit	<i>Coereba flaveola</i>	9.00%	2015	2022
White-winged Dove	<i>Zenaida asiatica</i>	8.20%	2015	2022
Puerto Rican Tody	<i>Todus mexicanus</i>	5.77%	2015	2022
Caribbean Elaenia	<i>Elaenia martinica</i>	5.51%	2015	2022
Puerto Rican Woodpecker	<i>Melanerpes portoricensis</i>	5.07%	2015	2022
Pearly-eyed Thrasher	<i>Margarops fuscatus</i>	5.01%	2015	2022
Venezuelan Troupial	<i>Icterus icterus</i>	4.77%	2015	2022
Puerto Rican Flycatcher	<i>Myiarchus antillarum</i>	4.34%	2015	2022
Zenaida Dove	<i>Zenaida aurita</i>	3.71%	2015	2022
Mangrove Cuckoo	<i>Coccyzus minor</i>	3.13%	2015	2022
Puerto Rican Lizard-Cuckoo	<i>Coccyzus vieilloti</i>	2.66%	2015	2022
Common Ground-Dove	<i>Columbina passerina</i>	2.18%	2015	2022
Turkey Vulture	<i>Cathartes aura</i>	1.42%	2015	2022
Mourning Dove	<i>Zenaida macroura</i>	1.05%	2015	2022
Cave Swallow	<i>Petrochelidon fulva</i>	1.00%	2015	2022
Black-whiskered Vireo	<i>Vireo altiloquus</i>	0.93%	2015	2022
Antillean Mango	<i>Anthracothorax dominicus</i>	0.91%	2015	2022
Gray Kingbird	<i>Tyrannus dominicensis</i>	0.79%	2015	2022

commonName	scientificName	meanRA	minYear	maxYear
Puerto Rican Nightjar	<i>Antrostomus noctitherus</i>	0.73%	2015	2022
Antillean Euphonia	<i>Euphonia musica</i>	0.64%	2015	2022
Black-faced Grassquit	<i>Tiaris bicolor</i>	0.64%	2015	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	0.44%	2015	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.43%	2015	2022
Lesser Antillean Pewee	<i>Contopus latirostris</i>	0.39%	2017	2022
Puerto Rican Emerald	<i>Chlorostilbon maugaeus</i>	0.38%	2015	2022
Red-legged Thrush	<i>Turdus plumbeus</i>	0.31%	2015	2022
Puerto Rican Screech-Owl	<i>Megascops nudipes</i>	0.29%	2015	2022
Scaly-naped Pigeon	<i>Patagioenas squamosa</i>	0.28%	2015	2022
Key West Quail-Dove	<i>Geotrygon chrysia</i>	0.26%	2015	2022
Puerto Rican Vireo	<i>Vireo latimeri</i>	0.25%	2015	2022
Smooth-billed Ani	<i>Crotophaga ani</i>	0.23%	2015	2021
Brown Pelican	<i>Pelecanus occidentalis</i>	0.11%	2017	2022
Ruddy Quail-Dove	<i>Geotrygon montana</i>	0.11%	2015	2022
Yellow-faced Grassquit	<i>Tiaris olivaceus</i>	0.10%	2015	2022
Antillean Nighthawk	<i>Chordeiles gundlachii</i>	0.10%	2015	2019
Sandwich Tern	<i>Thalasseus sandvicensis</i>	0.09%	2015	2022
Black-necked Stilt	<i>Himantopus mexicanus</i>	0.07%	2019	2019
Magnificent Frigatebird	<i>Fregata magnificens</i>	0.07%	2015	2022
Bronze Mannikin	<i>Spermestes cucullata</i>	0.07%	2015	2017
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.07%	2015	2022
American Black Duck	<i>Anas rubripes</i>	0.06%	2015	2021
American Kestrel	<i>Falco sparverius</i>	0.05%	2017	2022
Caribbean Martin	<i>Progne dominicensis</i>	0.05%	2015	2020
Royal Tern	<i>Thalasseus maximus</i>	0.04%	2017	2020
Shiny Cowbird	<i>Molothrus bonariensis</i>	0.04%	2015	2021
Loggerhead Kingbird	<i>Tyrannus caudifasciatus</i>	0.04%	2015	2022
White-tailed Tropicbird	<i>Phaethon lepturus</i>	0.04%	2019	2020
Green Mango	<i>Anthracothorax viridis</i>	0.03%	2015	2015
African Collared-Dove	<i>Streptopelia roseogrisea</i>	0.02%	2019	2019
Black Oystercatcher	<i>Haematopus bachmani</i>	0.02%	2021	2021
American Redstart	<i>Setophaga ruticilla</i>	0.01%	2018	2018
Common Goldeneye	<i>Bucephala clangula</i>	0.01%	2018	2019
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	0.01%	2021	2022
Greater Antillean Grackle	<i>Quiscalus niger</i>	0.01%	2019	2019
Killdeer	<i>Charadrius vociferus</i>	0.01%	2015	2018
Laughing Gull	<i>Leucophaeus atricilla</i>	0.01%	2021	2022
Oak Titmouse	<i>Baeolophus inornatus</i>	0.01%	2017	2021
Puerto Rican Oriole	<i>Icterus portoricensis</i>	0.01%	2015	2021

commonName	scientificName	meanRA	minYear	maxYear
Puerto Rican Spindalis	<i>Spindalis portoricensis</i>	0.01%	2015	2015
Red Junglefowl	<i>Gallus gallus</i>	0.01%	2019	2019
Abert's Towhee	<i>Melospiza aberti</i>	0.01%	2021	2021
American White Pelican	<i>Pelecanus erythrorhynchos</i>	0.01%	2015	2015
Bachman's Sparrow	<i>Peucaea aestivalis</i>	0.01%	2015	2015
Common Gallinule	<i>Gallinula galeata</i>	0.01%	2015	2015
Green-throated Carib	<i>Eulampis holosericeus</i>	0.01%	2021	2021
Indigo Bunting	<i>Passerina cyanea</i>	0.01%	2019	2019
Merlin	<i>Falco columbarius</i>	0.01%	2015	2015
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	0.01%	2020	2020
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.01%	2017	2017
Prairie Warbler	<i>Setophaga discolor</i>	0.01%	2019	2019
Wood Duck	<i>Aix sponsa</i>	0.01%	2021	2021
Yellow Warbler	<i>Setophaga petechia</i>	0.01%	2015	2015

D.10 D04 – LAJA – Lajas Experimental Station NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
White-winged Dove	<i>Zenaida asiatica</i>	15.09%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	11.12%	2017	2022
Cattle Egret	<i>Bubulcus ibis</i>	8.82%	2017	2022
Gray Kingbird	<i>Tyrannus dominicensis</i>	6.38%	2017	2022
Northern Red Bishop	<i>Euplectes franciscanus</i>	6.03%	2017	2022
Turkey Vulture	<i>Cathartes aura</i>	4.59%	2017	2022
Greater Antillean Grackle	<i>Quiscalus niger</i>	3.72%	2017	2022
Smooth-billed Ani	<i>Crotophaga ani</i>	3.40%	2017	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	3.26%	2017	2022
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	3.18%	2017	2022
Zenaida Dove	<i>Zenaida aurita</i>	3.16%	2017	2022
Yellow-faced Grassquit	<i>Tiaris olivaceus</i>	2.96%	2017	2022
Black-faced Grassquit	<i>Tiaris bicolor</i>	2.34%	2017	2022
House Sparrow	<i>Passer domesticus</i>	2.12%	2017	2022
Bronze Mannikin	<i>Spermestes cucullata</i>	1.98%	2017	2022
White-winged Parakeet	<i>Brotogeris versicolurus</i>	1.75%	2017	2022
Glossy Ibis	<i>Plegadis falcinellus</i>	1.74%	2017	2022
Venezuelan Troupial	<i>Icterus icterus</i>	1.48%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Bananaquit	<i>Coereba flaveola</i>	1.45%	2017	2022
Orange-cheeked Waxbill	<i>Estrilda melpoda</i>	1.43%	2017	2022
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	1.17%	2017	2022
Monk Parakeet	<i>Myiopsitta monachus</i>	1.07%	2017	2022
Common Ground-Dove	<i>Columbina passerina</i>	1.04%	2017	2022
Puerto Rican Woodpecker	<i>Melanerpes portoricensis</i>	1.04%	2017	2022
Killdeer	<i>Charadrius vociferus</i>	0.92%	2017	2022
Red Junglefowl	<i>Gallus gallus</i>	0.84%	2018	2022
Pin-tailed Whydah	<i>Vidua macroura</i>	0.66%	2017	2022
Black-whiskered Vireo	<i>Vireo altiloquus</i>	0.64%	2017	2022
Helmeted Guineafowl	<i>Numida meleagris</i>	0.45%	2021	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.44%	2017	2022
Ruddy Quail-Dove	<i>Geotrygon montana</i>	0.40%	2019	2019
African Collared-Dove	<i>Streptopelia roseogrisea</i>	0.39%	2018	2022
Black-necked Stilt	<i>Himantopus mexicanus</i>	0.38%	2017	2022
Pearly-eyed Thrasher	<i>Margarops fuscatus</i>	0.38%	2017	2022
Shiny Cowbird	<i>Molothrus bonariensis</i>	0.38%	2017	2020
Puerto Rican Flycatcher	<i>Myiarchus antillarum</i>	0.36%	2017	2022
Great Egret	<i>Ardea alba</i>	0.33%	2017	2022
White-crowned Pigeon	<i>Patagioenas leucocephala</i>	0.33%	2017	2022
American Black Duck	<i>Anas rubripes</i>	0.28%	2019	2021
Snowy Egret	<i>Egretta thula</i>	0.28%	2019	2022
Adelaide's Warbler	<i>Setophaga adelaidae</i>	0.25%	2017	2021
Mangrove Cuckoo	<i>Coccyzus minor</i>	0.18%	2017	2021
Antillean Mango	<i>Anthracothorax dominicus</i>	0.16%	2017	2022
Cave Swallow	<i>Petrochelidon fulva</i>	0.16%	2017	2022
Rock Pigeon	<i>Columba livia</i>	0.14%	2017	2021
Scaly-naped Pigeon	<i>Patagioenas squamosa</i>	0.14%	2018	2020
Whimbrel	<i>Numenius phaeopus</i>	0.14%	2019	2019
Common Gallinule	<i>Gallinula galeata</i>	0.13%	2017	2022
Caribbean Martin	<i>Progne dominicensis</i>	0.11%	2017	2022
American Kestrel	<i>Falco sparverius</i>	0.09%	2017	2021
Loggerhead Kingbird	<i>Tyrannus caudifasciatus</i>	0.09%	2017	2021
Puerto Rican Oriole	<i>Icterus portoricensis</i>	0.09%	2017	2022
Indian Peafowl	<i>Pavo cristatus</i>	0.08%	2021	2022
Little Blue Heron	<i>Egretta caerulea</i>	0.08%	2017	2020
Caribbean Coot	<i>Fulica caribaea</i>	0.04%	2018	2018
Caribbean Elaenia	<i>Elaenia martinica</i>	0.04%	2017	2019
Green Heron	<i>Butorides virescens</i>	0.04%	2017	2021
Magnificent Frigatebird	<i>Fregata magnificens</i>	0.04%	2021	2021

commonName	scientificName	meanRA	minYear	maxYear
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.04%	2017	2022
Black-winged Stilt	<i>Himantopus himantopus</i>	0.03%	2017	2017
Least Grebe	<i>Tachybaptus dominicus</i>	0.03%	2017	2017
Masked Duck	<i>Nomonyx dominicus</i>	0.03%	2017	2017
Puerto Rican Bullfinch	<i>Loxigilla portoricensis</i>	0.03%	2021	2022
American Coot	<i>Fulica americana</i>	0.01%	2017	2017
Antillean Nighthawk	<i>Chordeiles gundlachii</i>	0.01%	2017	2017
Blue Grosbeak	<i>Passerina caerulea</i>	0.01%	2021	2021
Cinnamon Hummingbird	<i>Amazilia rutila</i>	0.01%	2019	2019
Grayish Saltator	<i>Saltator coerulescens</i>	0.01%	2022	2022
Osprey	<i>Pandion haliaetus</i>	0.01%	2019	2019
Purple Martin	<i>Progne subis</i>	0.01%	2017	2017
Red-legged Thrush	<i>Turdus plumbeus</i>	0.01%	2021	2021
Short-eared Owl	<i>Asio flammeus</i>	0.01%	2018	2018
Wandering Tattler	<i>Tringa incana</i>	0.01%	2017	2017
Wilson's Snipe	<i>Gallinago delicata</i>	0.01%	2018	2018

D.11 D05 – UNDE – University of Notre Dame Environmental Research Center NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Ovenbird	<i>Seiurus aurocapilla</i>	12.57%	2016	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	9.91%	2016	2022
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	6.60%	2016	2022
White-throated Sparrow	<i>Zonotrichia albicollis</i>	5.54%	2016	2022
Black-throated Green Warbler	<i>Setophaga virens</i>	4.83%	2016	2022
Blue Jay	<i>Cyanocitta cristata</i>	4.71%	2016	2022
Black-capped Chickadee	<i>Poecile atricapillus</i>	2.71%	2016	2022
Veery	<i>Catharus fuscescens</i>	2.49%	2016	2022
Northern Parula	<i>Setophaga americana</i>	2.31%	2016	2022
Black-and-white Warbler	<i>Mniotilta varia</i>	2.22%	2016	2022
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	2.11%	2017	2022
Winter Wren	<i>Troglodytes hiemalis</i>	2.04%	2016	2022
Hermit Thrush	<i>Catharus guttatus</i>	1.96%	2016	2022
Least Flycatcher	<i>Empidonax minimus</i>	1.91%	2016	2022
American Robin	<i>Turdus migratorius</i>	1.88%	2016	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	1.53%	2016	2022
Red-breasted Nuthatch	<i>Sitta canadensis</i>	1.53%	2016	2022

commonName	scientificName	meanRA	minYear	maxYear
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	1.53%	2016	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	1.40%	2016	2022
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	1.37%	2016	2022
Northern Flicker	<i>Colaptes auratus</i>	1.29%	2016	2022
Swamp Sparrow	<i>Melospiza georgiana</i>	1.28%	2017	2022
Alder Flycatcher	<i>Empidonax alnorum</i>	1.21%	2016	2022
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	1.08%	2016	2022
Golden-crowned Kinglet	<i>Regulus satrapa</i>	1.02%	2016	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	0.86%	2016	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.86%	2016	2022
Brown Creeper	<i>Certhia americana</i>	0.83%	2017	2022
Mourning Warbler	<i>Geothlypis philadelphia</i>	0.83%	2016	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.78%	2016	2022
Common Loon	<i>Gavia immer</i>	0.73%	2017	2021
Canada Goose	<i>Branta canadensis</i>	0.69%	2019	2022
Song Sparrow	<i>Melospiza melodia</i>	0.62%	2017	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.54%	2016	2022
American Crow	<i>Corvus brachyrhynchos</i>	0.51%	2016	2022
Magnolia Warbler	<i>Setophaga magnolia</i>	0.49%	2017	2022
Sedge Wren	<i>Cistothorus platensis</i>	0.49%	2019	2021
Wood Thrush	<i>Hylocichla mustelina</i>	0.49%	2016	2022
Blackburnian Warbler	<i>Setophaga fusca</i>	0.46%	2017	2022
Common Raven	<i>Corvus corax</i>	0.45%	2017	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.45%	2017	2022
Blue-headed Vireo	<i>Vireo solitarius</i>	0.43%	2016	2022
Ruffed Grouse	<i>Bonasa umbellus</i>	0.43%	2016	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.43%	2016	2022
Common Grackle	<i>Quiscalus quiscula</i>	0.38%	2017	2021
American Redstart	<i>Setophaga ruticilla</i>	0.35%	2017	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.33%	2017	2022
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	0.30%	2019	2022
Canada Warbler	<i>Cardellina canadensis</i>	0.27%	2017	2022
Pine Warbler	<i>Setophaga pinus</i>	0.27%	2016	2022
Ruby-crowned Kinglet	<i>Regulus calendula</i>	0.27%	2016	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.24%	2017	2020
Northern Cardinal	<i>Cardinalis cardinalis</i>	0.24%	2016	2021
Gray Catbird	<i>Dumetella carolinensis</i>	0.22%	2017	2020
Yellow-rumped Warbler	<i>Setophaga coronata</i>	0.22%	2017	2022
American Goldfinch	<i>Spinus tristis</i>	0.21%	2016	2022
Broad-winged Hawk	<i>Buteo platypterus</i>	0.21%	2016	2022

commonName	scientificName	meanRA	minYear	maxYear
Dark-eyed Junco	<i>Junco hyemalis</i>	0.21%	2016	2020
Purple Finch	<i>Haemorhous purpureus</i>	0.19%	2019	2022
Scarlet Tanager	<i>Piranga olivacea</i>	0.16%	2017	2021
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.14%	2016	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	0.14%	2016	2021
Tennessee Warbler	<i>Oreothlypis peregrina</i>	0.14%	2019	2021
Blue-winged Warbler	<i>Vermivora cyanoptera</i>	0.13%	2017	2022
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.13%	2019	2022
Bay-breasted Warbler	<i>Setophaga castanea</i>	0.11%	2019	2021
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	0.11%	2018	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	0.11%	2019	2021
Tundra Swan	<i>Cygnus columbianus</i>	0.11%	2020	2020
Cape May Warbler	<i>Setophaga tigrina</i>	0.10%	2017	2022
Indigo Bunting	<i>Passerina cyanea</i>	0.10%	2017	2021
Canada Jay	<i>Perisoreus canadensis</i>	0.08%	2016	2019
Cerulean Warbler	<i>Setophaga cerulea</i>	0.08%	2016	2021
Chimney Swift	<i>Chaetura pelagica</i>	0.08%	2019	2022
Sandhill Crane	<i>Grus canadensis</i>	0.08%	2018	2020
Willow Flycatcher	<i>Empidonax traillii</i>	0.08%	2017	2019
Bald Eagle	<i>Haliaeetus leucocephalus</i>	0.06%	2017	2021
Kentucky Warbler	<i>Geothlypis formosa</i>	0.06%	2017	2021
Trumpeter Swan	<i>Cygnus buccinator</i>	0.06%	2019	2019
Baltimore Oriole	<i>Icterus galbula</i>	0.05%	2019	2021
Connecticut Warbler	<i>Oporornis agilis</i>	0.05%	2019	2020
Eastern Phoebe	<i>Sayornis phoebe</i>	0.05%	2016	2018
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	0.05%	2017	2017
Worm-eating Warbler	<i>Helmitheros vermivorum</i>	0.05%	2016	2017
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.05%	2020	2021
Cooper's Hawk	<i>Accipiter cooperii</i>	0.03%	2018	2018
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.03%	2019	2019
Sora	<i>Porzana carolina</i>	0.03%	2019	2021
Warbling Vireo	<i>Vireo gilvus</i>	0.03%	2016	2019
Wood Duck	<i>Aix sponsa</i>	0.03%	2017	2020
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.03%	2019	2021
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	0.03%	2019	2020
American Woodcock	<i>Scolopax minor</i>	0.02%	2017	2017
Barred Owl	<i>Strix varia</i>	0.02%	2022	2022
Blackpoll Warbler	<i>Setophaga striata</i>	0.02%	2021	2021
Common Merganser	<i>Mergus merganser</i>	0.02%	2017	2017
Eastern Bluebird	<i>Sialia sialis</i>	0.02%	2020	2020

commonName	scientificName	meanRA	minYear	maxYear
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.02%	2022	2022
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	0.02%	2017	2017
Northern Mockingbird	<i>Mimus polyglottos</i>	0.02%	2020	2020
Northern Waterthrush	<i>Parkesia noveboracensis</i>	0.02%	2022	2022
Oak Titmouse	<i>Baeolophus inornatus</i>	0.02%	2018	2018
Osprey	<i>Pandion haliaetus</i>	0.02%	2019	2019
Palm Warbler	<i>Setophaga palmarum</i>	0.02%	2021	2021
Philadelphia Vireo	<i>Vireo philadelphicus</i>	0.02%	2022	2022
Pine Siskin	<i>Spinus pinus</i>	0.02%	2019	2019
Red Crossbill	<i>Loxia curvirostra</i>	0.02%	2022	2022
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.02%	2021	2021
Tree Swallow	<i>Tachycineta bicolor</i>	0.02%	2017	2017
Yellow-throated Warbler	<i>Setophaga dominica</i>	0.02%	2021	2021

D.12 D05 – STEI – Steigerwaldt-Chequamegon NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Ovenbird	<i>Seiurus aurocapilla</i>	21.72%	2016	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	13.70%	2016	2022
Black-throated Green Warbler	<i>Setophaga virens</i>	5.73%	2016	2022
Least Flycatcher	<i>Empidonax minimus</i>	5.59%	2016	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	3.96%	2016	2022
Blue Jay	<i>Cyanocitta cristata</i>	3.20%	2016	2022
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	3.07%	2016	2022
Hermit Thrush	<i>Catharus guttatus</i>	2.86%	2016	2022
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	2.71%	2016	2022
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	1.90%	2016	2022
American Robin	<i>Turdus migratorius</i>	1.85%	2016	2022
Veery	<i>Catharus fuscescens</i>	1.85%	2016	2022
Wood Thrush	<i>Hylocichla mustelina</i>	1.61%	2016	2022
Ruffed Grouse	<i>Bonasa umbellus</i>	1.55%	2016	2022
Black-capped Chickadee	<i>Poecile atricapillus</i>	1.33%	2016	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	1.33%	2016	2022
Black-and-white Warbler	<i>Mniotilta varia</i>	1.23%	2016	2022
White-throated Sparrow	<i>Zonotrichia albicollis</i>	1.09%	2016	2022
Alder Flycatcher	<i>Empidonax alnorum</i>	0.93%	2016	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.93%	2016	2020

commonName	scientificName	meanRA	minYear	maxYear
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.90%	2016	2022
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	0.85%	2016	2022
Mourning Warbler	<i>Geothlypis philadelphia</i>	0.78%	2016	2022
Scarlet Tanager	<i>Piranga olivacea</i>	0.78%	2016	2022
Red-breasted Nuthatch	<i>Sitta canadensis</i>	0.71%	2016	2022
Common Raven	<i>Corvus corax</i>	0.70%	2016	2022
Golden-crowned Kinglet	<i>Regulus satrapa</i>	0.65%	2016	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.59%	2016	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.57%	2016	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.55%	2016	2021
Northern Flicker	<i>Colaptes auratus</i>	0.54%	2016	2021
Brown Creeper	<i>Certhia americana</i>	0.52%	2016	2022
Blue-headed Vireo	<i>Vireo solitarius</i>	0.49%	2016	2021
American Crow	<i>Corvus brachyrhynchos</i>	0.46%	2016	2022
Canada Goose	<i>Branta canadensis</i>	0.44%	2016	2022
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	0.44%	2016	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.44%	2016	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.43%	2016	2022
Common Grackle	<i>Quiscalus quiscula</i>	0.38%	2017	2022
American Redstart	<i>Setophaga ruticilla</i>	0.35%	2016	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	0.35%	2016	2022
Broad-winged Hawk	<i>Buteo platypterus</i>	0.33%	2016	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	0.33%	2016	2021
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	0.32%	2016	2022
Indigo Bunting	<i>Passerina cyanea</i>	0.30%	2016	2022
Song Sparrow	<i>Melospiza melodia</i>	0.28%	2016	2022
Blackburnian Warbler	<i>Setophaga fusca</i>	0.25%	2017	2022
Sandhill Crane	<i>Grus canadensis</i>	0.25%	2016	2022
American Goldfinch	<i>Spinus tristis</i>	0.24%	2016	2022
Dark-eyed Junco	<i>Junco hyemalis</i>	0.24%	2016	2022
Eastern Phoebe	<i>Sayornis phoebe</i>	0.24%	2016	2017
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.22%	2016	2022
Winter Wren	<i>Troglodytes hiemalis</i>	0.22%	2016	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	0.19%	2016	2021
Sedge Wren	<i>Cistothorus platensis</i>	0.19%	2017	2021
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	0.17%	2020	2021
Gray Catbird	<i>Dumetella carolinensis</i>	0.17%	2016	2020
Magnolia Warbler	<i>Setophaga magnolia</i>	0.17%	2016	2021
Pine Warbler	<i>Setophaga pinus</i>	0.16%	2017	2020
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	0.13%	2016	2022

commonName	scientificName	meanRA	minYear	maxYear
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.13%	2017	2022
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.13%	2019	2022
Tennessee Warbler	<i>Oreothlypis peregrina</i>	0.11%	2019	2019
Yellow-rumped Warbler	<i>Setophaga coronata</i>	0.11%	2017	2022
Canada Warbler	<i>Cardellina canadensis</i>	0.09%	2019	2022
Swamp Sparrow	<i>Melospiza georgiana</i>	0.09%	2022	2022
Willow Flycatcher	<i>Empidonax traillii</i>	0.08%	2016	2020
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	0.08%	2022	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	0.06%	2018	2019
Barred Owl	<i>Strix varia</i>	0.05%	2017	2019
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.05%	2017	2019
Clay-colored Sparrow	<i>Spizella pallida</i>	0.05%	2017	2017
Northern Parula	<i>Setophaga americana</i>	0.05%	2017	2020
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.05%	2019	2019
Ruby-crowned Kinglet	<i>Regulus calendula</i>	0.05%	2016	2021
Swainson's Thrush	<i>Catharus ustulatus</i>	0.05%	2019	2019
Warbling Vireo	<i>Vireo gilvus</i>	0.05%	2018	2021
Brown Thrasher	<i>Toxostoma rufum</i>	0.03%	2016	2020
Mourning Dove	<i>Zenaida macroura</i>	0.03%	2018	2020
Purple Finch	<i>Haemorhous purpureus</i>	0.03%	2019	2022
Tree Swallow	<i>Tachycineta bicolor</i>	0.03%	2016	2016
American Woodcock	<i>Scolopax minor</i>	0.02%	2020	2020
Blackpoll Warbler	<i>Setophaga striata</i>	0.02%	2019	2019
Blue-winged Warbler	<i>Vermivora cyanoptera</i>	0.02%	2022	2022
Cerulean Warbler	<i>Setophaga cerulea</i>	0.02%	2021	2021
Chimney Swift	<i>Chaetura pelagica</i>	0.02%	2021	2021
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.02%	2016	2016
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	0.02%	2016	2016
Great Blue Heron	<i>Ardea herodias</i>	0.02%	2017	2017
Kentucky Warbler	<i>Geothlypis formosa</i>	0.02%	2018	2018
Tufted Titmouse	<i>Baeolophus bicolor</i>	0.02%	2020	2020
Tundra Swan	<i>Cygnus columbianus</i>	0.02%	2021	2021
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.02%	2020	2020
Yellow-throated Warbler	<i>Setophaga dominica</i>	0.02%	2021	2021

D.13 D05 – TREE – Treehaven NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Ovenbird	<i>Seiurus aurocapilla</i>	12.73%	2016	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	9.35%	2016	2022
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	8.32%	2016	2022
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	7.28%	2016	2022
White-throated Sparrow	<i>Zonotrichia albicollis</i>	5.17%	2016	2022
Black-capped Chickadee	<i>Poecile atricapillus</i>	4.22%	2016	2022
Blue Jay	<i>Cyanocitta cristata</i>	4.02%	2016	2022
Red-breasted Nuthatch	<i>Sitta canadensis</i>	3.70%	2016	2022
Hermit Thrush	<i>Catharus guttatus</i>	3.02%	2016	2022
American Crow	<i>Corvus brachyrhynchos</i>	2.87%	2016	2022
Black-throated Green Warbler	<i>Setophaga virens</i>	2.87%	2016	2022
Indigo Bunting	<i>Passerina cyanea</i>	2.87%	2016	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	2.43%	2016	2022
Mourning Warbler	<i>Geothlypis philadelphia</i>	1.99%	2016	2022
Chipping Sparrow	<i>Spizella passerina</i>	1.83%	2016	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	1.83%	2016	2022
Black-and-white Warbler	<i>Mniotilta varia</i>	1.79%	2016	2022
Golden-crowned Kinglet	<i>Regulus satrapa</i>	1.43%	2016	2022
Winter Wren	<i>Troglodytes hiemalis</i>	1.39%	2016	2022
Sandhill Crane	<i>Grus canadensis</i>	1.27%	2016	2022
Least Flycatcher	<i>Empidonax minimus</i>	1.11%	2016	2022
Pine Warbler	<i>Setophaga pinus</i>	0.99%	2016	2022
Common Raven	<i>Corvus corax</i>	0.88%	2017	2022
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	0.84%	2016	2022
American Goldfinch	<i>Spinus tristis</i>	0.72%	2016	2022
Veery	<i>Catharus fuscescens</i>	0.72%	2016	2022
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	0.68%	2017	2022
American Robin	<i>Turdus migratorius</i>	0.64%	2016	2022
Northern Flicker	<i>Colaptes auratus</i>	0.64%	2016	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.56%	2016	2022
Northern Parula	<i>Setophaga americana</i>	0.52%	2016	2022
Scarlet Tanager	<i>Piranga olivacea</i>	0.52%	2016	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.48%	2016	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	0.44%	2016	2022
Alder Flycatcher	<i>Empidonax alnorum</i>	0.40%	2018	2022
Dark-eyed Junco	<i>Junco hyemalis</i>	0.40%	2016	2022
Gray Catbird	<i>Dumetella carolinensis</i>	0.40%	2016	2021
Mourning Dove	<i>Zenaida macroura</i>	0.40%	2016	2022
American Redstart	<i>Setophaga ruticilla</i>	0.36%	2016	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	0.36%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Hairy Woodpecker	<i>Picoides villosus</i>	0.36%	2017	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.32%	2017	2022
Blue-headed Vireo	<i>Vireo solitarius</i>	0.28%	2016	2019
Brown Creeper	<i>Certhia americana</i>	0.28%	2020	2022
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.28%	2019	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	0.24%	2017	2021
Broad-winged Hawk	<i>Buteo platypterus</i>	0.20%	2017	2021
Song Sparrow	<i>Melospiza melodia</i>	0.20%	2017	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.20%	2016	2021
Wood Thrush	<i>Hylocichla mustelina</i>	0.20%	2016	2021
Blackburnian Warbler	<i>Setophaga fusca</i>	0.16%	2017	2021
Downy Woodpecker	<i>Picoides pubescens</i>	0.16%	2016	2020
Magnolia Warbler	<i>Setophaga magnolia</i>	0.16%	2021	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.16%	2019	2020
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	0.16%	2018	2019
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.16%	2018	2022
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	0.12%	2018	2022
Chimney Swift	<i>Chaetura pelagica</i>	0.12%	2018	2018
Ruffed Grouse	<i>Bonasa umbellus</i>	0.12%	2017	2020
Canada Warbler	<i>Cardellina canadensis</i>	0.08%	2019	2019
Cape May Warbler	<i>Setophaga tigrina</i>	0.08%	2022	2022
Common Loon	<i>Gavia immer</i>	0.08%	2022	2022
Red Crossbill	<i>Loxia curvirostra</i>	0.08%	2018	2018
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	0.08%	2017	2017
Sedge Wren	<i>Cistothorus platensis</i>	0.08%	2019	2019
American Woodcock	<i>Scolopax minor</i>	0.04%	2021	2021
Baltimore Oriole	<i>Icterus galbula</i>	0.04%	2022	2022
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	0.04%	2021	2021
Brown Thrasher	<i>Toxostoma rufum</i>	0.04%	2017	2017
Canada Goose	<i>Branta canadensis</i>	0.04%	2020	2020
Cerulean Warbler	<i>Setophaga cerulea</i>	0.04%	2020	2020
Eastern Phoebe	<i>Sayornis phoebe</i>	0.04%	2020	2020
Northern Harrier	<i>Circus cyaneus</i>	0.04%	2021	2021
Osprey	<i>Pandion haliaetus</i>	0.04%	2016	2016
Palm Warbler	<i>Setophaga palmarum</i>	0.04%	2020	2020
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	0.04%	2018	2018
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.04%	2017	2017
Swamp Sparrow	<i>Melospiza georgiana</i>	0.04%	2022	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.04%	2016	2016

D.14 D06 – KONZ – Konza Prairie Biological Station NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Dickcissel	<i>Spiza americana</i>	22.38%	2017	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	11.10%	2017	2022
Eastern Meadowlark	<i>Sturnella magna</i>	10.01%	2017	2022
Northern Bobwhite	<i>Colinus virginianus</i>	5.31%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	3.77%	2017	2022
Field Sparrow	<i>Spizella pusilla</i>	3.45%	2017	2022
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	3.20%	2017	2022
Bell's Vireo	<i>Vireo bellii</i>	2.68%	2017	2022
Upland Sandpiper	<i>Bartramia longicauda</i>	2.68%	2017	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	2.46%	2017	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	2.25%	2017	2022
American Crow	<i>Corvus brachyrhynchos</i>	2.21%	2017	2022
Brown Thrasher	<i>Toxostoma rufum</i>	2.05%	2017	2022
Indigo Bunting	<i>Passerina cyanea</i>	1.74%	2017	2022
American Goldfinch	<i>Spinus tristis</i>	1.53%	2017	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	1.20%	2017	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	1.18%	2017	2022
Blue Grosbeak	<i>Passerina caerulea</i>	0.98%	2017	2022
Lark Sparrow	<i>Chondestes grammacus</i>	0.95%	2017	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	0.86%	2017	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	0.85%	2017	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	0.84%	2017	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	0.79%	2017	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	0.77%	2017	2022
Common Nighthawk	<i>Chordeiles minor</i>	0.71%	2017	2022
Black-capped Chickadee	<i>Poecile atricapillus</i>	0.67%	2017	2022
Eastern Bluebird	<i>Sialia sialis</i>	0.67%	2017	2022
Blue Jay	<i>Cyanocitta cristata</i>	0.64%	2017	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	0.64%	2017	2022
Summer Tanager	<i>Piranga rubra</i>	0.61%	2017	2022
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	0.59%	2017	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.59%	2017	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.57%	2017	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.57%	2017	2022
Orchard Oriole	<i>Icterus spurius</i>	0.55%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Turkey Vulture	<i>Cathartes aura</i>	0.55%	2017	2022
Barn Swallow	<i>Hirundo rustica</i>	0.51%	2017	2022
Gray Catbird	<i>Dumetella carolinensis</i>	0.48%	2017	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	0.46%	2017	2022
Baltimore Oriole	<i>Icterus galbula</i>	0.44%	2017	2022
Canada Goose	<i>Branta canadensis</i>	0.44%	2017	2022
Henslow's Sparrow	<i>Ammodramus henslowii</i>	0.44%	2017	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.26%	2017	2022
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0.25%	2017	2022
American Robin	<i>Turdus migratorius</i>	0.19%	2017	2022
Yellow-breasted Chat	<i>Icteria virens</i>	0.18%	2018	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.17%	2017	2022
Greater Prairie-Chicken	<i>Tympanuchus cupido</i>	0.17%	2017	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.16%	2017	2022
Kentucky Warbler	<i>Geothlypis formosa</i>	0.15%	2017	2022
House Wren	<i>Troglodytes aedon</i>	0.12%	2017	2022
Sedge Wren	<i>Cistothorus platensis</i>	0.12%	2020	2020
Least Flycatcher	<i>Empidonax minimus</i>	0.10%	2020	2022
Unknown Meadowlark	<i>Sturnella sp.</i>	0.10%	2017	2019
Western Meadowlark	<i>Sturnella neglecta</i>	0.10%	2018	2021
Northern Flicker	<i>Colaptes auratus</i>	0.10%	2017	2022
Horned Lark	<i>Eremophila alpestris</i>	0.09%	2017	2020
Killdeer	<i>Charadrius vociferus</i>	0.09%	2017	2022
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.08%	2018	2022
Bewick's Wren	<i>Thryomanes bewickii</i>	0.07%	2017	2022
Northern Parula	<i>Setophaga americana</i>	0.07%	2017	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.06%	2018	2022
Eastern Phoebe	<i>Sayornis phoebe</i>	0.06%	2018	2022
Louisiana Waterthrush	<i>Parkesia motacilla</i>	0.06%	2017	2022
Scissor-tailed Flycatcher	<i>Tyrannus forficatus</i>	0.06%	2018	2022
Black-and-white Warbler	<i>Mniotilta varia</i>	0.05%	2017	2022
European Starling	<i>Sturnus vulgaris</i>	0.05%	2017	2018
Great Blue Heron	<i>Ardea herodias</i>	0.05%	2017	2018
Hairy Woodpecker	<i>Picoides villosus</i>	0.05%	2017	2022
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.05%	2018	2020
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.05%	2017	2022
Bobolink	<i>Dolichonyx oryzivorus</i>	0.04%	2020	2022
Common Grackle	<i>Quiscalus quiscula</i>	0.03%	2018	2022
Fish Crow	<i>Corvus ossifragus</i>	0.03%	2018	2021
Unknown Corvid	<i>Corvidae sp.</i>	0.03%	2018	2018

commonName	scientificName	meanRA	minYear	maxYear
Western Kingbird	<i>Tyrannus verticalis</i>	0.03%	2018	2020
American Redstart	<i>Setophaga ruticilla</i>	0.03%	2020	2022
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	0.03%	2019	2021
House Finch	<i>Haemorhous mexicanus</i>	0.03%	2017	2021
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.03%	2017	2022
Swainson's Thrush	<i>Catharus ustulatus</i>	0.03%	2020	2020
Tennessee Warbler	<i>Oreothlypis peregrina</i>	0.03%	2020	2020
Alder Flycatcher	<i>Empidonax alnorum</i>	0.02%	2018	2018
Barred Owl	<i>Strix varia</i>	0.02%	2018	2022
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	0.02%	2020	2020
Chimney Swift	<i>Chaetura pelagica</i>	0.02%	2018	2022
Cooper's Hawk	<i>Accipiter cooperii</i>	0.02%	2017	2017
Northern Mockingbird	<i>Mimus polyglottos</i>	0.02%	2020	2022
Orange-crowned Warbler	<i>Oreothlypis celata</i>	0.02%	2020	2020
Purple Martin	<i>Progne subis</i>	0.02%	2022	2022
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	0.02%	2020	2022
Scarlet Tanager	<i>Piranga olivacea</i>	0.02%	2019	2020
Swainson's Hawk	<i>Buteo swainsoni</i>	0.02%	2021	2022
Warbling Vireo	<i>Vireo gilvus</i>	0.02%	2020	2020
American Bittern	<i>Botaurus lentiginosus</i>	0.01%	2020	2020
Clay-colored Sparrow	<i>Spizella pallida</i>	0.01%	2020	2020
Eastern Screech-Owl	<i>Megascops asio</i>	0.01%	2020	2020
Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	0.01%	2019	2019
Great Horned Owl	<i>Bubo virginianus</i>	0.01%	2019	2019
Green Heron	<i>Butorides virescens</i>	0.01%	2022	2022
Harris's Sparrow	<i>Zonotrichia querula</i>	0.01%	2020	2020
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	0.01%	2020	2020
Nelson's Sparrow	<i>Ammodramus nelsoni</i>	0.01%	2020	2020
Northern Harrier	<i>Circus cyaneus</i>	0.01%	2018	2018
Savannah Sparrow	<i>Passerculus sandwichensis</i>	0.01%	2022	2022
Song Sparrow	<i>Melospiza melodia</i>	0.01%	2018	2018
Unknown Dove	<i>Columbidae sp.</i>	0.01%	2021	2021
Willow Flycatcher	<i>Empidonax traillii</i>	0.01%	2022	2022
Wilson's Warbler	<i>Cardellina pusilla</i>	0.01%	2020	2020
Wood Duck	<i>Aix sponsa</i>	0.01%	2017	2017
Yellow-rumped Warbler	<i>Setophaga coronata</i>	0.01%	2020	2020
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.01%	2020	2020

D.15 D06 – UKFS – KU Field Station NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Northern Cardinal	<i>Cardinalis cardinalis</i>	9.95%	2017	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	8.42%	2017	2022
Indigo Bunting	<i>Passerina cyanea</i>	8.13%	2017	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	6.51%	2017	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	4.90%	2017	2022
American Crow	<i>Corvus brachyrhynchos</i>	4.26%	2017	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	3.49%	2017	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	3.35%	2017	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	3.35%	2017	2022
Dickcissel	<i>Spiza americana</i>	3.31%	2017	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	3.14%	2017	2022
Eastern Meadowlark	<i>Sturnella magna</i>	3.06%	2017	2022
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	2.94%	2017	2022
Black-capped Chickadee	<i>Poecile atricapillus</i>	2.75%	2017	2022
American Goldfinch	<i>Spinus tristis</i>	2.36%	2017	2022
Blue Jay	<i>Cyanocitta cristata</i>	2.34%	2017	2022
Summer Tanager	<i>Piranga rubra</i>	2.13%	2017	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	1.82%	2017	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	1.76%	2017	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	1.65%	2017	2022
Kentucky Warbler	<i>Geothlypis formosa</i>	1.57%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	1.55%	2017	2022
Northern Parula	<i>Setophaga americana</i>	1.39%	2017	2022
Field Sparrow	<i>Spizella pusilla</i>	1.32%	2017	2022
Downy Woodpecker	<i>Picoides pubescens</i>	1.03%	2017	2022
Acadian Flycatcher	<i>Empidonax virescens</i>	0.97%	2017	2022
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.77%	2017	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.74%	2017	2022
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	0.64%	2017	2022
Eastern Bluebird	<i>Sialia sialis</i>	0.60%	2017	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.52%	2017	2022
Turkey Vulture	<i>Cathartes aura</i>	0.52%	2017	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.48%	2017	2022
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.43%	2017	2022
Scarlet Tanager	<i>Piranga olivacea</i>	0.39%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Louisiana Waterthrush	<i>Parkesia motacilla</i>	0.37%	2017	2022
Bell's Vireo	<i>Vireo bellii</i>	0.35%	2018	2022
Blue Grosbeak	<i>Passerina caerulea</i>	0.33%	2017	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.33%	2017	2022
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.29%	2017	2022
Brown Thrasher	<i>Toxostoma rufum</i>	0.27%	2017	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	0.25%	2017	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.23%	2017	2022
Purple Martin	<i>Progne subis</i>	0.23%	2017	2022
Yellow-breasted Chat	<i>Icteria virens</i>	0.23%	2017	2022
Barred Owl	<i>Strix varia</i>	0.21%	2018	2022
Common Grackle	<i>Quiscalus quiscula</i>	0.19%	2017	2022
Killdeer	<i>Charadrius vociferus</i>	0.19%	2017	2022
Northern Bobwhite	<i>Colinus virginianus</i>	0.19%	2017	2022
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.19%	2017	2022
Canada Goose	<i>Branta canadensis</i>	0.17%	2017	2021
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.17%	2017	2022
European Starling	<i>Sturnus vulgaris</i>	0.14%	2017	2019
Henslow's Sparrow	<i>Ammodramus henslowii</i>	0.14%	2018	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.14%	2019	2022
Prothonotary Warbler	<i>Protonotaria citrea</i>	0.12%	2021	2022
American Robin	<i>Turdus migratorius</i>	0.10%	2017	2022
Barn Swallow	<i>Hirundo rustica</i>	0.10%	2018	2020
Lark Sparrow	<i>Chondestes grammacus</i>	0.10%	2018	2022
Northern Flicker	<i>Colaptes auratus</i>	0.10%	2018	2019
American Redstart	<i>Setophaga ruticilla</i>	0.06%	2020	2022
Baltimore Oriole	<i>Icterus galbula</i>	0.06%	2017	2022
Eastern Phoebe	<i>Sayornis phoebe</i>	0.06%	2022	2022
Loggerhead Shrike	<i>Lanius ludovicianus</i>	0.06%	2020	2022
Wood Thrush	<i>Hylocichla mustelina</i>	0.06%	2018	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.06%	2019	2022
Black-and-white Warbler	<i>Mniotilta varia</i>	0.04%	2017	2020
Great Blue Heron	<i>Ardea herodias</i>	0.04%	2017	2022
Orchard Oriole	<i>Icterus spurius</i>	0.04%	2019	2022
Ovenbird	<i>Seiurus aurocapilla</i>	0.04%	2017	2022
Warbling Vireo	<i>Vireo gilvus</i>	0.04%	2019	2022
White-eyed Vireo	<i>Vireo griseus</i>	0.04%	2019	2021
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	0.02%	2022	2022
Brown Creeper	<i>Certhia americana</i>	0.02%	2020	2020
Chipping Sparrow	<i>Spizella passerina</i>	0.02%	2019	2019

commonName	scientificName	meanRA	minYear	maxYear
Chuck-will's-widow	<i>Antrastomus carolinensis</i>	0.02%	2019	2019
Eastern Whip-poor-will	<i>Antrastomus vociferus</i>	0.02%	2019	2019
Fish Crow	<i>Corvus ossifragus</i>	0.02%	2022	2022
Gray Catbird	<i>Dumetella carolinensis</i>	0.02%	2017	2017
Great Horned Owl	<i>Bubo virginianus</i>	0.02%	2020	2020
Horned Lark	<i>Eremophila alpestris</i>	0.02%	2022	2022
House Finch	<i>Haemorhous mexicanus</i>	0.02%	2017	2017
House Wren	<i>Troglodytes aedon</i>	0.02%	2022	2022
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.02%	2022	2022
Painted Bunting	<i>Passerina ciris</i>	0.02%	2022	2022
Pine Siskin	<i>Spinus pinus</i>	0.02%	2021	2021
Tree Swallow	<i>Tachycineta bicolor</i>	0.02%	2019	2019
Unknown Buteo	<i>Buteo sp.</i>	0.02%	2020	2020
Wood Duck	<i>Aix sponsa</i>	0.02%	2017	2017
Yellow-throated Warbler	<i>Setophaga dominica</i>	0.02%	2022	2022

D.16 D06 – KONA – Konza Prairie Agroecosystem NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Dickcissel	<i>Spiza americana</i>	13.12%	2018	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	11.27%	2018	2022
European Starling	<i>Sturnus vulgaris</i>	7.27%	2018	2022
Horned Lark	<i>Eremophila alpestris</i>	7.10%	2018	2022
Eastern Meadowlark	<i>Sturnella magna</i>	5.47%	2018	2022
Mourning Dove	<i>Zenaida macroura</i>	3.86%	2018	2022
American Crow	<i>Corvus brachyrhynchos</i>	3.55%	2018	2022
American Robin	<i>Turdus migratorius</i>	3.47%	2018	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	3.44%	2018	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	3.44%	2018	2022
Common Grackle	<i>Quiscalus quiscula</i>	2.80%	2018	2022
Rock Pigeon	<i>Columba livia</i>	2.75%	2018	2022
Northern Bobwhite	<i>Colinus virginianus</i>	2.72%	2018	2022
Barn Swallow	<i>Hirundo rustica</i>	2.11%	2018	2022
Indigo Bunting	<i>Passerina cyanea</i>	1.42%	2018	2022
Brown Thrasher	<i>Toxostoma rufum</i>	1.39%	2018	2022
Killdeer	<i>Charadrius vociferus</i>	1.33%	2018	2022
Turkey Vulture	<i>Cathartes aura</i>	1.25%	2018	2022

commonName	scientificName	meanRA	minYear	maxYear
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	1.19%	2018	2022
Blue Jay	<i>Cyanocitta cristata</i>	1.05%	2018	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	1.05%	2018	2022
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	1.03%	2018	2022
Fish Crow	<i>Corvus ossifragus</i>	1.03%	2018	2022
Blue Grosbeak	<i>Passerina caerulea</i>	0.86%	2018	2022
Canada Goose	<i>Branta canadensis</i>	0.80%	2018	2022
Lark Sparrow	<i>Chondestes grammacus</i>	0.80%	2018	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	0.67%	2019	2022
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	0.61%	2018	2022
Baltimore Oriole	<i>Icterus galbula</i>	0.58%	2018	2022
Unknown Corvid	<i>Corvidae sp.</i>	0.53%	2018	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.50%	2018	2022
Eastern Bluebird	<i>Sialia sialis</i>	0.42%	2019	2022
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	0.42%	2018	2022
House Sparrow	<i>Passer domesticus</i>	0.42%	2018	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	0.42%	2018	2022
Western Kingbird	<i>Tyrannus verticalis</i>	0.42%	2018	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.39%	2018	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	0.39%	2018	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	0.39%	2018	2022
American Goldfinch	<i>Spinus tristis</i>	0.36%	2018	2022
Great Blue Heron	<i>Ardea herodias</i>	0.31%	2018	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	0.28%	2018	2022
Northern Flicker	<i>Colaptes auratus</i>	0.25%	2018	2022
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.25%	2019	2022
Summer Tanager	<i>Piranga rubra</i>	0.25%	2019	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.22%	2020	2022
Eastern Phoebe	<i>Sayornis phoebe</i>	0.19%	2019	2021
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.19%	2018	2022
Upland Sandpiper	<i>Bartramia longicauda</i>	0.19%	2018	2021
Western Meadowlark	<i>Sturnella neglecta</i>	0.19%	2018	2022
Black-capped Chickadee	<i>Poecile atricapillus</i>	0.17%	2019	2022
Orchard Oriole	<i>Icterus spurius</i>	0.17%	2018	2022
Unknown Meadowlark	<i>Sturnella sp.</i>	0.17%	2018	2019
Warbling Vireo	<i>Vireo gilvus</i>	0.17%	2018	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.17%	2020	2022
Bell's Vireo	<i>Vireo bellii</i>	0.14%	2018	2022
Common Nighthawk	<i>Chordeiles minor</i>	0.14%	2019	2019
House Wren	<i>Troglodytes aedon</i>	0.14%	2018	2022

commonName	scientificName	meanRA	minYear	maxYear
Wild Turkey	<i>Meleagris gallopavo</i>	0.14%	2018	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.11%	2018	2020
Common Yellowthroat	<i>Geothlypis trichas</i>	0.11%	2018	2022
Field Sparrow	<i>Spizella pusilla</i>	0.11%	2018	2022
Willow Flycatcher	<i>Empidonax traillii</i>	0.11%	2022	2022
American Kestrel	<i>Falco sparverius</i>	0.08%	2018	2022
Bank Swallow	<i>Riparia riparia</i>	0.08%	2021	2022
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	0.08%	2020	2020
Downy Woodpecker	<i>Picoides pubescens</i>	0.08%	2019	2020
House Finch	<i>Haemorhous mexicanus</i>	0.08%	2018	2022
Least Flycatcher	<i>Empidonax minimus</i>	0.08%	2022	2022
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.08%	2018	2022
Swainson's Hawk	<i>Buteo swainsoni</i>	0.08%	2021	2021
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	0.06%	2021	2022
Franklin's Gull	<i>Leucophaeus pipixcan</i>	0.06%	2020	2020
Ring-necked Pheasant	<i>Phasianus colchicus</i>	0.06%	2019	2019
Unknown Dove	<i>Columbidae sp.</i>	0.06%	2018	2021
Wood Duck	<i>Aix sponsa</i>	0.06%	2019	2022
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	0.03%	2019	2019
Blue-headed Vireo	<i>Vireo solitarius</i>	0.03%	2022	2022
Chimney Swift	<i>Chaetura pelagica</i>	0.03%	2022	2022
Cooper's Hawk	<i>Accipiter cooperii</i>	0.03%	2021	2021
Greater Roadrunner	<i>Geococcyx californianus</i>	0.03%	2021	2021
Great-tailed Grackle	<i>Quiscalus mexicanus</i>	0.03%	2018	2018
Green Heron	<i>Butorides virescens</i>	0.03%	2022	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.03%	2020	2020
Loggerhead Shrike	<i>Lanius ludovicianus</i>	0.03%	2020	2020
Purple Martin	<i>Progne subis</i>	0.03%	2022	2022
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.03%	2022	2022

D.17 D07 – ORNL – Oak Ridge NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Red-eyed Vireo	<i>Vireo olivaceus</i>	11.31%	2016	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	6.82%	2016	2022
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	5.41%	2016	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	5.35%	2016	2020

commonName	scientificName	meanRA	minYear	maxYear
Northern Cardinal	<i>Cardinalis cardinalis</i>	4.49%	2016	2022
Carolina Chickadee	<i>Poecile carolinensis</i>	3.89%	2016	2016
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	3.36%	2016	2020
Scarlet Tanager	<i>Piranga olivacea</i>	3.19%	2016	2022
Acadian Flycatcher	<i>Empidonax virescens</i>	3.12%	2016	2022
Northern Parula	<i>Setophaga americana</i>	3.08%	2016	2020
American Crow	<i>Corvus brachyrhynchos</i>	2.70%	2016	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	2.68%	2016	2019
Brown-headed Cowbird	<i>Molothrus ater</i>	2.52%	2016	2021
Blue Jay	<i>Cyanocitta cristata</i>	2.44%	2016	2020
Hooded Warbler	<i>Setophaga citrina</i>	2.44%	2016	2021
Indigo Bunting	<i>Passerina cyanea</i>	2.18%	2016	2020
Wood Thrush	<i>Hylocichla mustelina</i>	2.13%	2016	2020
American Goldfinch	<i>Spinus tristis</i>	1.79%	2016	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	1.74%	2016	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	1.60%	2016	2022
Pine Warbler	<i>Setophaga pinus</i>	1.51%	2016	2022
Yellow-breasted Chat	<i>Icteria virens</i>	1.47%	2016	2022
Downy Woodpecker	<i>Picoides pubescens</i>	1.34%	2016	2022
Field Sparrow	<i>Spizella pusilla</i>	1.24%	2016	2022
Ovenbird	<i>Seiurus aurocapilla</i>	1.15%	2016	2021
Pileated Woodpecker	<i>Dryocopus pileatus</i>	1.15%	2016	2022
Yellow-throated Warbler	<i>Setophaga dominica</i>	1.08%	2016	2022
Summer Tanager	<i>Piranga rubra</i>	1.03%	2016	2022
Mourning Dove	<i>Zenaida macroura</i>	1.00%	2016	2022
Swainson's Thrush	<i>Catharus ustulatus</i>	0.93%	2016	2020
Eastern Wood-Pewee	<i>Contopus virens</i>	0.92%	2016	2022
White-eyed Vireo	<i>Vireo griseus</i>	0.90%	2016	2022
Prairie Warbler	<i>Setophaga discolor</i>	0.88%	2016	2021
Common Yellowthroat	<i>Geothlypis trichas</i>	0.83%	2016	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.73%	2016	2022
Canada Goose	<i>Branta canadensis</i>	0.64%	2016	2022
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.55%	2016	2022
Blue-headed Vireo	<i>Vireo solitarius</i>	0.46%	2016	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.42%	2016	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.40%	2016	2022
Kentucky Warbler	<i>Geothlypis formosa</i>	0.37%	2016	2022
Eastern Bluebird	<i>Sialia sialis</i>	0.37%	2016	2021
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	0.33%	2016	2022
Worm-eating Warbler	<i>Helmitheros vermivorum</i>	0.29%	2016	2022
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.27%	2016	2022
Barn Swallow	<i>Hirundo rustica</i>	0.25%	2016	2021
Brown Thrasher	<i>Toxostoma rufum</i>	0.25%	2016	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.24%	2016	2022
Blue Grosbeak	<i>Passerina caerulea</i>	0.24%	2016	2017

commonName	scientificName	meanRA	minYear	maxYear
Louisiana Waterthrush	<i>Parkesia motacilla</i>	0.21%	2016	2020
European Starling	<i>Sturnus vulgaris</i>	0.20%	2019	2022
Chimney Swift	<i>Chaetura pelagica</i>	0.18%	2016	2022
Osprey	<i>Pandion haliaetus</i>	0.17%	2016	2016
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.17%	2016	2022
Eastern Phoebe	<i>Sayornis phoebe</i>	0.16%	2016	2021
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.16%	2016	2022
Tree Swallow	<i>Tachycineta bicolor</i>	0.16%	2016	2022
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.15%	2016	2022
Broad-winged Hawk	<i>Buteo platypterus</i>	0.13%	2016	2022
Tennessee Warbler	<i>Oreothlypis peregrina</i>	0.13%	2020	2020
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	0.12%	2016	2022
Barred Owl	<i>Strix varia</i>	0.11%	2019	2020
Blackpoll Warbler	<i>Setophaga striata</i>	0.11%	2017	2020
Northern Mockingbird	<i>Mimus polyglottos</i>	0.11%	2016	2022
Great Blue Heron	<i>Ardea herodias</i>	0.11%	2016	2022
House Finch	<i>Haemorhous mexicanus</i>	0.10%	2017	2020
American Robin	<i>Turdus migratorius</i>	0.09%	2016	2022
Orchard Oriole	<i>Icterus spurius</i>	0.09%	2017	2022
Common Grackle	<i>Quiscalus quiscula</i>	0.08%	2019	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.08%	2017	2022
Northern Flicker	<i>Colaptes auratus</i>	0.08%	2017	2022
Song Sparrow	<i>Melospiza melodia</i>	0.08%	2016	2022
Bay-breasted Warbler	<i>Setophaga castanea</i>	0.07%	2016	2022
Brown-headed Nuthatch	<i>Sitta pusilla</i>	0.06%	2016	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.05%	2017	2022
American Redstart	<i>Setophaga ruticilla</i>	0.04%	2016	2022
Magnolia Warbler	<i>Setophaga magnolia</i>	0.04%	2016	2022
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.03%	2018	2022
Black-and-white Warbler	<i>Mniotilta varia</i>	0.03%	2018	2019
Gray Catbird	<i>Dumetella carolinensis</i>	0.03%	2016	2022
Unknown Tanager	<i>Cardinalidae/Thraupidae sp.</i>	0.03%	2017	2022
Blackburnian Warbler	<i>Setophaga fusca</i>	0.02%	2017	2022
Black-throated Green Warbler	<i>Setophaga virens</i>	0.02%	2017	2020
Chuck-will's-widow	<i>Antrostomus carolinensis</i>	0.02%	2020	2021
Killdeer	<i>Charadrius vociferus</i>	0.02%	2017	2022
Purple Martin	<i>Progne subis</i>	0.02%	2020	2022
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.02%	2019	2022
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	0.02%	2020	2020
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0.02%	2021	2020
Gray-cheeked Thrush	<i>Catharus minimus</i>	0.02%	2017	2022
Mallard	<i>Anas platyrhynchos</i>	0.02%	2020	2022
Veery	<i>Catharus fuscescens</i>	0.02%	2016	2021
Willow Flycatcher	<i>Empidonax traillii</i>	0.02%	2018	2019
Wood Duck	<i>Aix sponsa</i>	0.02%	2021	2020

commonName	scientificName	meanRA	minYear	maxYear
American Woodcock	<i>Scolopax minor</i>	0.01%	2016	2019
Bald Eagle	<i>Haliaeetus leucocephalus</i>	0.01%	2020	2018
Black Vulture	<i>Coragyps atratus</i>	0.01%	2019	2022
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	0.01%	2020	2022
Cooper's Hawk	<i>Accipiter cooperii</i>	0.01%	2022	2022
Eastern Meadowlark	<i>Sturnella magna</i>	0.01%	2021	2018
Fish Crow	<i>Corvus ossifragus</i>	0.01%	2022	2021
Great Horned Owl	<i>Bubo virginianus</i>	0.01%	2016	2022
Hooded Merganser	<i>Lophodytes cucullatus</i>	0.01%	2021	2022
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	0.01%	2020	2022
Turkey Vulture	<i>Cathartes aura</i>	0.01%	2021	2022
Western Bluebird	<i>Sialia mexicana</i>	0.01%	2019	2016
Whip-poor-will	<i>Antrastomus sp.</i>	0.01%	2018	2022
Yellow-crowned Night-Heron	<i>Nyctanassa violacea</i>	0.01%	2016	2022

D.18 D07 – GRSM – Great Smoky Mountains National Park NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Red-eyed Vireo	<i>Vireo olivaceus</i>	11.03%	2016	2022
Black-throated Green Warbler	<i>Setophaga virens</i>	8.36%	2016	2022
Hooded Warbler	<i>Setophaga citrina</i>	7.42%	2016	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	4.95%	2016	2019
Ovenbird	<i>Seiurus aurocapilla</i>	4.59%	2016	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	4.10%	2016	2017
Scarlet Tanager	<i>Piranga olivacea</i>	3.98%	2016	2021
Blue-headed Vireo	<i>Vireo solitarius</i>	3.35%	2016	2016
Carolina Chickadee	<i>Poecile carolinensis</i>	3.31%	2016	2022
Northern Parula	<i>Setophaga americana</i>	2.94%	2016	2019
American Crow	<i>Corvus brachyrhynchos</i>	2.75%	2016	2019
Black-and-white Warbler	<i>Mniotilta varia</i>	2.67%	2016	2020
Acadian Flycatcher	<i>Empidonax virescens</i>	2.53%	2016	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	2.10%	2016	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	2.07%	2016	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	2.03%	2016	2022
Worm-eating Warbler	<i>Helmitheros vermivorum</i>	2.02%	2016	2022
Yellow-throated Warbler	<i>Setophaga dominica</i>	2.02%	2016	2019
Louisiana Waterthrush	<i>Parkesia motacilla</i>	1.87%	2016	2022
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	1.80%	2016	2022

commonName	scientificName	meanRA	minYear	maxYear
White-breasted Nuthatch	<i>Sitta carolinensis</i>	1.73%	2016	2022
American Goldfinch	<i>Spinus tristis</i>	1.69%	2016	2022
Indigo Bunting	<i>Passerina cyanea</i>	1.69%	2016	2020
Blue Jay	<i>Cyanocitta cristata</i>	1.39%	2016	2022
Wood Thrush	<i>Hylocichla mustelina</i>	1.24%	2016	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	1.10%	2016	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.86%	2016	2022
American Robin	<i>Turdus migratorius</i>	0.85%	2016	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.76%	2016	2019
Eastern Phoebe	<i>Sayornis phoebe</i>	0.72%	2016	2018
Eastern Wood-Pewee	<i>Contopus virens</i>	0.69%	2016	2022
Pine Warbler	<i>Setophaga pinus</i>	0.60%	2016	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.55%	2016	2022
Chimney Swift	<i>Chaetura pelagica</i>	0.55%	2016	2016
Brown-headed Cowbird	<i>Molothrus ater</i>	0.46%	2016	2022
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.40%	2016	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.35%	2016	2022
Eastern Bluebird	<i>Sialia sialis</i>	0.32%	2017	2018
Northern Flicker	<i>Colaptes auratus</i>	0.32%	2017	2018
Yellow-breasted Chat	<i>Icteria virens</i>	0.29%	2019	2020
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.23%	2017	2022
Broad-winged Hawk	<i>Buteo platypterus</i>	0.21%	2016	2022
Prairie Warbler	<i>Setophaga discolor</i>	0.21%	2019	2022
Mourning Dove	<i>Zenaida macroura</i>	0.19%	2018	2021
Common Grackle	<i>Quiscalus quiscula</i>	0.18%	2016	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.16%	2016	2020
Red-breasted Nuthatch	<i>Sitta canadensis</i>	0.15%	2016	2022
Barred Owl	<i>Strix varia</i>	0.14%	2016	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.14%	2017	2022
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	0.11%	2016	2022
Dark-eyed Junco	<i>Junco hyemalis</i>	0.09%	2018	2022
Summer Tanager	<i>Piranga rubra</i>	0.08%	2016	2022
Brown Creeper	<i>Certhia americana</i>	0.06%	2017	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	0.06%	2017	2022
Swainson's Thrush	<i>Catharus ustulatus</i>	0.06%	2018	2022
Brown Thrasher	<i>Toxostoma rufum</i>	0.05%	2016	2022
House Wren	<i>Troglodytes aedon</i>	0.05%	2017	2022
Red Crossbill	<i>Loxia curvirostra</i>	0.05%	2017	2021
Song Sparrow	<i>Melospiza melodia</i>	0.05%	2017	2022
Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	0.04%	2020	2022

commonName	scientificName	meanRA	minYear	maxYear
Great Blue Heron	<i>Ardea herodias</i>	0.04%	2016	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.04%	2016	2019
Ruffed Grouse	<i>Bonasa umbellus</i>	0.04%	2016	2022
White-eyed Vireo	<i>Vireo griseus</i>	0.04%	2017	2022
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.02%	2016	2019
Canada Goose	<i>Branta canadensis</i>	0.02%	2019	2022
Kentucky Warbler	<i>Geothlypis formosa</i>	0.02%	2016	2020
American Redstart	<i>Setophaga ruticilla</i>	0.01%	2019	2017
American Woodcock	<i>Scolopax minor</i>	0.01%	2017	2022
Blackburnian Warbler	<i>Setophaga fusca</i>	0.01%	2019	2022
Blackpoll Warbler	<i>Setophaga striata</i>	0.01%	2019	2022
Blue-winged Warbler	<i>Vermivora cyanoptera</i>	0.01%	2019	2022
Eastern Screech-Owl	<i>Megascops asio</i>	0.01%	2016	2020
Field Sparrow	<i>Spizella pusilla</i>	0.01%	2018	2022
Golden-crowned Kinglet	<i>Regulus satrapa</i>	0.01%	2018	2022

D.19 D07 – MLBS – Mountain Lake Biological Station NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Ovenbird	<i>Seiurus aurocapilla</i>	12.20%	2018	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	7.69%	2018	2022
American Redstart	<i>Setophaga ruticilla</i>	5.96%	2018	2022
Blackburnian Warbler	<i>Setophaga fusca</i>	4.85%	2018	2022
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	4.57%	2018	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	4.23%	2018	2022
Blue-headed Vireo	<i>Vireo solitarius</i>	4.04%	2018	2022
Black-and-white Warbler	<i>Mniotilta varia</i>	3.72%	2018	2022
Scarlet Tanager	<i>Piranga olivacea</i>	3.65%	2018	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	3.55%	2018	2022
Veery	<i>Catharus fuscescens</i>	3.31%	2018	2022
Acadian Flycatcher	<i>Empidonax virescens</i>	3.21%	2018	2022
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	2.93%	2018	2022
Wood Thrush	<i>Hylocichla mustelina</i>	2.78%	2018	2022
Indigo Bunting	<i>Passerina cyanea</i>	2.52%	2018	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	2.24%	2018	2022
Hooded Warbler	<i>Setophaga citrina</i>	2.01%	2018	2022
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	1.88%	2018	2022

commonName	scientificName	meanRA	minYear	maxYear
American Crow	<i>Corvus brachyrhynchos</i>	1.84%	2018	2022
Dark-eyed Junco	<i>Junco hyemalis</i>	1.75%	2018	2022
American Robin	<i>Turdus migratorius</i>	1.71%	2018	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	1.24%	2018	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	1.22%	2019	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	1.18%	2018	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	1.13%	2018	2022
Least Flycatcher	<i>Empidonax minimus</i>	1.07%	2018	2022
Blue Jay	<i>Cyanocitta cristata</i>	1.03%	2018	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.90%	2018	2022
Black-throated Green Warbler	<i>Setophaga virens</i>	0.85%	2018	2022
Brown Creeper	<i>Certhia americana</i>	0.79%	2019	2022
Black-capped Chickadee	<i>Poecile atricapillus</i>	0.79%	2018	2022
Gray Catbird	<i>Dumetella carolinensis</i>	0.77%	2018	2022
American Goldfinch	<i>Spinus tristis</i>	0.75%	2018	2022
Common Grackle	<i>Quiscalus quiscula</i>	0.64%	2018	2018
Louisiana Waterthrush	<i>Parkesia motacilla</i>	0.53%	2018	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	0.51%	2018	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.49%	2018	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	0.49%	2019	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.38%	2018	2022
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.38%	2018	2022
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	0.28%	2018	2022
Mourning Dove	<i>Zenaida macroura</i>	0.26%	2018	2022
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.26%	2018	2022
Common Raven	<i>Corvus corax</i>	0.26%	2018	2022
Chimney Swift	<i>Chaetura pelagica</i>	0.24%	2019	2022
Hermit Thrush	<i>Catharus guttatus</i>	0.24%	2018	2022
Northern Parula	<i>Setophaga americana</i>	0.21%	2018	2022
Red-breasted Nuthatch	<i>Sitta canadensis</i>	0.21%	2020	2022
Worm-eating Warbler	<i>Helmitheros vermivorum</i>	0.21%	2019	2022
Canada Warbler	<i>Cardellina canadensis</i>	0.19%	2018	2022
Pine Warbler	<i>Setophaga pinus</i>	0.15%	2018	2022
Barred Owl	<i>Strix varia</i>	0.13%	2018	2022
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	0.13%	2019	2021
Brown-headed Cowbird	<i>Molothrus ater</i>	0.13%	2018	2020
Eastern Bluebird	<i>Sialia sialis</i>	0.13%	2018	2021
Common Yellowthroat	<i>Geothlypis trichas</i>	0.11%	2018	2022
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.11%	2018	2022
Carolina Chickadee	<i>Poecile carolinensis</i>	0.09%	2018	2022

commonName	scientificName	meanRA	minYear	maxYear
Eastern Phoebe	<i>Sayornis phoebe</i>	0.09%	2020	2021
Northern Flicker	<i>Colaptes auratus</i>	0.09%	2018	2021
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.09%	2019	2021
Field Sparrow	<i>Spizella pusilla</i>	0.06%	2020	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	0.06%	2019	2021
Song Sparrow	<i>Melospiza melodia</i>	0.06%	2020	2021
Broad-winged Hawk	<i>Buteo platypterus</i>	0.04%	2020	2020
Cerulean Warbler	<i>Setophaga cerulea</i>	0.04%	2018	2019
Golden-crowned Kinglet	<i>Regulus satrapa</i>	0.04%	2018	2019
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	0.04%	2021	2022
Baltimore Oriole	<i>Icterus galbula</i>	0.02%	2018	2018
Carolina Wren	<i>Thryothorus ludovicianus</i>	0.02%	2020	2020
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	0.02%	2019	2019
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.02%	2020	2020
Kentucky Warbler	<i>Geothlypis formosa</i>	0.02%	2020	2020
Orchard Oriole	<i>Icterus spurius</i>	0.02%	2019	2019
Ruffed Grouse	<i>Bonasa umbellus</i>	0.02%	2020	2020
Swainson's Thrush	<i>Catharus ustulatus</i>	0.02%	2022	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.02%	2021	2021
Winter Wren	<i>Troglodytes hiemalis</i>	0.02%	2021	2021
Yellow-breasted Chat	<i>Icteria virens</i>	0.02%	2022	2022
Yellow-throated Warbler	<i>Setophaga dominica</i>	0.02%	2020	2020

D.20 D08 – TALL – Talladega National Forest NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Red-eyed Vireo	<i>Vireo olivaceus</i>	10.29%	2015	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	6.05%	2015	2022
Hooded Warbler	<i>Setophaga citrina</i>	5.40%	2015	2022
Pine Warbler	<i>Setophaga pinus</i>	5.00%	2015	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	4.73%	2015	2022
Indigo Bunting	<i>Passerina cyanea</i>	4.62%	2015	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	4.46%	2015	2022
Prairie Warbler	<i>Setophaga discolor</i>	4.12%	2015	2022
Summer Tanager	<i>Piranga rubra</i>	3.69%	2015	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	3.08%	2015	2022
Yellow-throated Warbler	<i>Setophaga dominica</i>	2.59%	2015	2022

commonName	scientificName	meanRA	minYear	maxYear
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	2.56%	2015	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	2.47%	2015	2022
Blue Jay	<i>Cyanocitta cristata</i>	2.22%	2015	2022
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	2.07%	2015	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	2.01%	2015	2022
American Crow	<i>Corvus brachyrhynchos</i>	2.00%	2015	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	1.83%	2015	2022
Yellow-breasted Chat	<i>Icteria virens</i>	1.73%	2015	2022
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	1.70%	2015	2022
White-eyed Vireo	<i>Vireo griseus</i>	1.67%	2015	2022
Carolina Chickadee	<i>Poecile carolinensis</i>	1.63%	2015	2022
Acadian Flycatcher	<i>Empidonax vireescens</i>	1.60%	2015	2022
Mourning Dove	<i>Zenaida macroura</i>	1.42%	2015	2022
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	1.26%	2015	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	1.24%	2015	2022
Northern Parula	<i>Setophaga americana</i>	1.18%	2015	2022
Wood Thrush	<i>Hylocichla mustelina</i>	1.18%	2015	2022
Downy Woodpecker	<i>Picoides pubescens</i>	1.04%	2015	2022
Yellow-throated Vireo	<i>Vireo flavifrons</i>	1.02%	2015	2022
Brown-headed Nuthatch	<i>Sitta pusilla</i>	0.89%	2015	2022
Eastern Bluebird	<i>Sialia sialis</i>	0.71%	2015	2022
Kentucky Warbler	<i>Geothlypis formosa</i>	0.70%	2015	2022
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.50%	2015	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	0.48%	2015	2022
Louisiana Waterthrush	<i>Parkesia motacilla</i>	0.46%	2015	2022
Blue Grosbeak	<i>Passerina caerulea</i>	0.43%	2015	2022
Chimney Swift	<i>Chaetura pelagica</i>	0.38%	2015	2022
Purple Martin	<i>Progne subis</i>	0.34%	2015	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.27%	2015	2022
Scarlet Tanager	<i>Piranga olivacea</i>	0.27%	2016	2022
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.25%	2015	2022
Black-and-white Warbler	<i>Mniotilta varia</i>	0.20%	2019	2022
Field Sparrow	<i>Spizella pusilla</i>	0.20%	2015	2022
Worm-eating Warbler	<i>Helmitheros vermivorum</i>	0.18%	2015	2022
Fish Crow	<i>Corvus ossifragus</i>	0.18%	2015	2022
Northern Bobwhite	<i>Colinus virginianus</i>	0.17%	2015	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	0.16%	2015	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.14%	2015	2022
Northern Flicker	<i>Colaptes auratus</i>	0.14%	2015	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.12%	2015	2022

commonName	scientificName	meanRA	minYear	maxYear
Brown Thrasher	<i>Toxostoma rufum</i>	0.11%	2016	2020
Broad-winged Hawk	<i>Buteo platypterus</i>	0.11%	2015	2022
Orchard Oriole	<i>Icterus spurius</i>	0.10%	2015	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.10%	2016	2019
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.10%	2015	2021
Chuck-will's-widow	<i>Antrostomus carolinensis</i>	0.10%	2015	2021
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.10%	2019	2021
Common Grackle	<i>Quiscalus quiscula</i>	0.09%	2015	2021
American Goldfinch	<i>Spinus tristis</i>	0.08%	2016	2022
American Kestrel	<i>Falco sparverius</i>	0.08%	2016	2022
Swainson's Warbler	<i>Limnothlypis swainsonii</i>	0.08%	2019	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.07%	2015	2021
Canada Goose	<i>Branta canadensis</i>	0.07%	2016	2021
Canada Warbler	<i>Cardellina canadensis</i>	0.05%	2015	2015
Barred Owl	<i>Strix varia</i>	0.05%	2019	2021
Wood Duck	<i>Aix sponsa</i>	0.04%	2016	2021
Unknown Corvid	<i>Corvidae sp.</i>	0.03%	2017	2017
Eastern Phoebe	<i>Sayornis phoebe</i>	0.02%	2018	2021
Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	0.02%	2015	2018
Turkey Vulture	<i>Cathartes aura</i>	0.02%	2016	2022
Unknown Tanager	<i>Cardinalidae/Thraupidae sp.</i>	0.02%	2018	2022
Blue-headed Vireo	<i>Vireo solitarius</i>	0.02%	2017	2017
Great Blue Heron	<i>Ardea herodias</i>	0.02%	2018	2021
Sharp-shinned Hawk	<i>Accipiter striatus</i>	0.02%	2018	2022
Bald Eagle	<i>Haliaeetus leucocephalus</i>	0.02%	2017	2017
Black-capped Gnatcatcher	<i>Poliophtila nigriceps</i>	0.02%	2015	2015
Cooper's Hawk	<i>Accipiter cooperii</i>	0.02%	2021	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	0.02%	2017	2018
Prothonotary Warbler	<i>Protonotaria citrea</i>	0.02%	2015	2020
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	0.02%	2019	2019
American Redstart	<i>Setophaga ruticilla</i>	0.01%	2015	2015
American Robin	<i>Turdus migratorius</i>	0.01%	2015	2015
Bay-breasted Warbler	<i>Setophaga castanea</i>	0.01%	2019	2019
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.01%	2019	2019
Black-throated Green Warbler	<i>Setophaga virens</i>	0.01%	2019	2019
Blue-winged Warbler	<i>Vermivora cyanoptera</i>	0.01%	2015	2015
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0.01%	2017	2017
Eastern Screech-Owl	<i>Megascops asio</i>	0.01%	2016	2016
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.01%	2017	2017
Northern Waterthrush	<i>Parkesia noveboracensis</i>	0.01%	2015	2015

commonName	scientificName	meanRA	minYear	maxYear
Pine Siskin	<i>Spinus pinus</i>	0.01%	2015	2015
Swainson's Thrush	<i>Catharus ustulatus</i>	0.01%	2019	2019

D.21 D08 – LENO – Lenoir Landing NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Red-eyed Vireo	<i>Vireo olivaceus</i>	13.66%	2017	2022
Northern Parula	<i>Setophaga americana</i>	11.31%	2017	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	6.61%	2017	2022
Prothonotary Warbler	<i>Protonotaria citrea</i>	5.89%	2017	2022
White-eyed Vireo	<i>Vireo griseus</i>	5.53%	2017	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	5.46%	2017	2022
Acadian Flycatcher	<i>Empidonax virescens</i>	5.36%	2017	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	4.94%	2017	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	4.62%	2017	2022
American Redstart	<i>Setophaga ruticilla</i>	3.52%	2017	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	3.37%	2017	2022
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	2.80%	2017	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	2.54%	2017	2022
Blue Jay	<i>Cyanocitta cristata</i>	2.37%	2017	2022
Hooded Warbler	<i>Setophaga citrina</i>	1.95%	2017	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	1.80%	2017	2022
Summer Tanager	<i>Piranga rubra</i>	1.69%	2017	2022
Carolina Chickadee	<i>Poecile carolinensis</i>	1.55%	2017	2022
Red-shouldered Hawk	<i>Buteo lineatus</i>	1.19%	2017	2022
Yellow-throated Vireo	<i>Vireo flavifrons</i>	1.02%	2017	2022
Fish Crow	<i>Corvus ossifragus</i>	0.78%	2017	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.61%	2017	2022
American Crow	<i>Corvus brachyrhynchos</i>	0.61%	2017	2022
Barred Owl	<i>Strix varia</i>	0.53%	2017	2022
Chimney Swift	<i>Chaetura pelagica</i>	0.49%	2019	2022
Black-bellied Whistling-Duck	<i>Dendrocygna autumnalis</i>	0.49%	2017	2022
Great Egret	<i>Ardea alba</i>	0.49%	2017	2022
Yellow-throated Warbler	<i>Setophaga dominica</i>	0.42%	2017	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	0.34%	2017	2022
White Ibis	<i>Eudocimus albus</i>	0.34%	2017	2020
Brown-headed Cowbird	<i>Molothrus ater</i>	0.30%	2019	2022

commonName	scientificName	meanRA	minYear	maxYear
Indigo Bunting	<i>Passerina cyanea</i>	0.30%	2017	2022
Yellow-breasted Chat	<i>Icteria virens</i>	0.30%	2017	2022
Mallard	<i>Anas platyrhynchos</i>	0.25%	2018	2018
Little Blue Heron	<i>Egretta caerulea</i>	0.23%	2017	2022
Kentucky Warbler	<i>Geothlypis formosa</i>	0.21%	2017	2022
Yellow-crowned Night-Heron	<i>Nyctanassa violacea</i>	0.21%	2017	2022
Wood Thrush	<i>Hylocichla mustelina</i>	0.19%	2017	2022
Pine Warbler	<i>Setophaga pinus</i>	0.17%	2019	2022
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.17%	2020	2022
Wood Duck	<i>Aix sponsa</i>	0.17%	2017	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.15%	2018	2022
Common Grackle	<i>Quiscalus quiscula</i>	0.13%	2019	2022
Common Gallinule	<i>Gallinula galeata</i>	0.11%	2017	2021
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.11%	2019	2022
Blue Grosbeak	<i>Passerina caerulea</i>	0.08%	2019	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.08%	2017	2022
Green Heron	<i>Butorides virescens</i>	0.08%	2017	2022
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.06%	2019	2022
Mourning Dove	<i>Zenaida macroura</i>	0.06%	2017	2022
Northern Bobwhite	<i>Colinus virginianus</i>	0.06%	2019	2019
Eastern Wood-Pewee	<i>Contopus virens</i>	0.04%	2022	2022
Great Blue Heron	<i>Ardea herodias</i>	0.04%	2021	2022
Mississippi Kite	<i>Ictinia mississippiensis</i>	0.04%	2017	2017
Orchard Oriole	<i>Icterus spurius</i>	0.04%	2017	2020
Purple Gallinule	<i>Porphyrio martinicus</i>	0.04%	2017	2020
Snowy Egret	<i>Egretta thula</i>	0.04%	2020	2021
Purple Martin	<i>Progne subis</i>	0.04%	2017	2017
American Goldfinch	<i>Spinus tristis</i>	0.02%	2022	2022
American Robin	<i>Turdus migratorius</i>	0.02%	2017	2017
Cattle Egret	<i>Bubulcus ibis</i>	0.02%	2017	2017
Eastern Bluebird	<i>Sialia sialis</i>	0.02%	2019	2019
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	0.02%	2019	2019
Osprey	<i>Pandion haliaetus</i>	0.02%	2022	2022
Pied-billed Grebe	<i>Podilymbus podiceps</i>	0.02%	2019	2019
Swainson's Warbler	<i>Limnothlypis swainsonii</i>	0.02%	2017	2017
Swallow-tailed Kite	<i>Elanoides forficatus</i>	0.02%	2017	2017
Tufted Flycatcher	<i>Mitrephanes phaeocercus</i>	0.02%	2021	2021
Turkey Vulture	<i>Cathartes aura</i>	0.02%	2022	2022

D.22 D08 – DELA – Dead Lake NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Northern Cardinal	<i>Cardinalis cardinalis</i>	9.89%	2015	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	8.68%	2015	2022
White-eyed Vireo	<i>Vireo griseus</i>	8.02%	2015	2022
Prothonotary Warbler	<i>Protonotaria citrea</i>	6.22%	2015	2022
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	5.92%	2015	2022
Acadian Flycatcher	<i>Empidonax virescens</i>	5.16%	2015	2022
Indigo Bunting	<i>Passerina cyanea</i>	4.96%	2015	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	4.68%	2015	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	4.28%	2015	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	3.87%	2015	2022
Carolina Chickadee	<i>Poecile carolinensis</i>	2.88%	2015	2022
American Redstart	<i>Setophaga ruticilla</i>	2.81%	2015	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	2.66%	2015	2022
Summer Tanager	<i>Piranga rubra</i>	2.63%	2015	2022
Pine Warbler	<i>Setophaga pinus</i>	2.45%	2015	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	2.05%	2015	2022
Common Grackle	<i>Quiscalus quiscula</i>	1.77%	2015	2022
Blue Jay	<i>Cyanocitta cristata</i>	1.67%	2015	2022
American Crow	<i>Corvus brachyrhynchos</i>	1.49%	2015	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	1.47%	2015	2022
Fish Crow	<i>Corvus ossifragus</i>	1.39%	2015	2022
Downy Woodpecker	<i>Picoides pubescens</i>	1.27%	2015	2022
Kentucky Warbler	<i>Geothlypis formosa</i>	1.27%	2015	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.89%	2015	2022
Swainson's Warbler	<i>Limnothlypis swainsonii</i>	0.89%	2015	2022
Yellow-throated Warbler	<i>Setophaga dominica</i>	0.86%	2015	2022
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.78%	2015	2022
Northern Parula	<i>Setophaga americana</i>	0.73%	2015	2022
Yellow-breasted Chat	<i>Icteria virens</i>	0.58%	2015	2020
Mourning Dove	<i>Zenaida macroura</i>	0.53%	2015	2022
Yellow-throated Vireo	<i>Vireo flavifrons</i>	0.40%	2015	2022
Barred Owl	<i>Strix varia</i>	0.38%	2015	2022
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.28%	2015	2022
Purple Martin	<i>Progne subis</i>	0.28%	2017	2022
Wood Duck	<i>Aix sponsa</i>	0.25%	2020	2022

commonName	scientificName	meanRA	minYear	maxYear
Wild Turkey	<i>Meleagris gallopavo</i>	0.25%	2017	2020
Canada Goose	<i>Branta canadensis</i>	0.25%	2020	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	0.23%	2015	2022
Great Egret	<i>Ardea alba</i>	0.23%	2017	2022
Great Blue Heron	<i>Ardea herodias</i>	0.20%	2017	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	0.18%	2017	2022
Turkey Vulture	<i>Cathartes aura</i>	0.18%	2015	2021
Wood Thrush	<i>Hylocichla mustelina</i>	0.18%	2015	2022
American Robin	<i>Turdus migratorius</i>	0.15%	2017	2022
Chimney Swift	<i>Chaetura pelagica</i>	0.15%	2015	2021
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	0.15%	2015	2019
Green Heron	<i>Butorides virescens</i>	0.13%	2015	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.13%	2020	2020
Northern Mockingbird	<i>Mimus polyglottos</i>	0.13%	2019	2021
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.13%	2015	2022
Mississippi Kite	<i>Ictinia mississippiensis</i>	0.13%	2020	2021
Hooded Warbler	<i>Setophaga citrina</i>	0.10%	2021	2022
Orchard Oriole	<i>Icterus spurius</i>	0.10%	2020	2022
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.08%	2021	2022
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.08%	2015	2015
Yellow-crowned Night-Heron	<i>Nyctanassa violacea</i>	0.08%	2015	2022
Blue Grosbeak	<i>Passerina caerulea</i>	0.05%	2020	2020
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.05%	2020	2022
Killdeer	<i>Charadrius vociferus</i>	0.05%	2020	2022
Northern Flicker	<i>Colaptes auratus</i>	0.05%	2017	2017
Anhinga	<i>Anhinga anhinga</i>	0.03%	2015	2015
Black Vulture	<i>Coragyps atratus</i>	0.03%	2015	2015
Brown-headed Nuthatch	<i>Sitta pusilla</i>	0.03%	2019	2019
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0.03%	2021	2021
Cooper's Hawk	<i>Accipiter cooperii</i>	0.03%	2017	2017
Eastern Bluebird	<i>Sialia sialis</i>	0.03%	2017	2017
Northern Bobwhite	<i>Colinus virginianus</i>	0.03%	2020	2020
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.03%	2022	2022
Pine Grosbeak	<i>Pinicola enucleator</i>	0.03%	2017	2017
Prairie Warbler	<i>Setophaga discolor</i>	0.03%	2015	2015
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.03%	2017	2017
Rock Wren	<i>Salpinctes obsoletus</i>	0.03%	2015	2015

D.23 D09 – WOOD – Chase Lake National Wildlife Refuge NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	14.35%	2015	2022
Clay-colored Sparrow	<i>Spizella pallida</i>	5.75%	2015	2022
Common Grackle	<i>Quiscalus quiscula</i>	4.80%	2015	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	4.73%	2015	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	4.43%	2015	2022
Marsh Wren	<i>Cistothorus palustris</i>	3.90%	2015	2022
Song Sparrow	<i>Melospiza melodia</i>	3.76%	2015	2022
Western Meadowlark	<i>Sturnella neglecta</i>	3.30%	2015	2022
American White Pelican	<i>Pelecanus erythrorhynchos</i>	2.86%	2015	2022
Black Tern	<i>Chlidonias niger</i>	2.25%	2015	2022
Wilson's Snipe	<i>Gallinago delicata</i>	2.23%	2015	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	2.05%	2015	2022
Killdeer	<i>Charadrius vociferus</i>	1.97%	2015	2022
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	1.93%	2015	2022
Ring-billed Gull	<i>Larus delawarensis</i>	1.89%	2015	2022
Lesser Scaup	<i>Aythya affinis</i>	1.69%	2015	2021
Mourning Dove	<i>Zenaida macroura</i>	1.60%	2015	2022
Savannah Sparrow	<i>Passerculus sandwichensis</i>	1.57%	2015	2022
Gadwall	<i>Anas strepera</i>	1.42%	2015	2022
Bobolink	<i>Dolichonyx oryzivorus</i>	1.26%	2015	2022
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	1.22%	2017	2022
Mallard	<i>Anas platyrhynchos</i>	1.12%	2015	2022
Sedge Wren	<i>Cistothorus platensis</i>	1.11%	2015	2022
Blue-winged Teal	<i>Anas discors</i>	1.02%	2015	2022
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	0.99%	2017	2022
California Gull	<i>Larus californicus</i>	0.91%	2015	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.87%	2015	2022
Upland Sandpiper	<i>Bartramia longicauda</i>	0.83%	2015	2022
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	0.80%	2015	2022
American Coot	<i>Fulica americana</i>	0.77%	2015	2022
American Goldfinch	<i>Spinus tristis</i>	0.74%	2015	2022
Sora	<i>Porzana carolina</i>	0.69%	2015	2022
Great Egret	<i>Ardea alba</i>	0.68%	2015	2022
Canada Goose	<i>Branta canadensis</i>	0.66%	2017	2022
Orchard Oriole	<i>Icterus spurius</i>	0.54%	2015	2022

commonName	scientificName	meanRA	minYear	maxYear
Unknown Gull	<i>Laridae sp.</i>	0.53%	2015	2019
Ring-necked Pheasant	<i>Phasianus colchicus</i>	0.47%	2015	2021
Barn Swallow	<i>Hirundo rustica</i>	0.44%	2015	2022
Tree Swallow	<i>Tachycineta bicolor</i>	0.44%	2017	2022
Pied-billed Grebe	<i>Podilymbus podiceps</i>	0.42%	2015	2022
Redhead	<i>Aythya americana</i>	0.42%	2017	2021
Western Kingbird	<i>Tyrannus verticalis</i>	0.40%	2015	2022
Greater Yellowlegs	<i>Tringa melanoleuca</i>	0.40%	2017	2022
Willow Flycatcher	<i>Empidonax traillii</i>	0.34%	2015	2021
Northern Pintail	<i>Anas acuta</i>	0.34%	2017	2021
Lesser Yellowlegs	<i>Tringa flavipes</i>	0.31%	2017	2021
Bank Swallow	<i>Riparia riparia</i>	0.31%	2015	2022
American Bittern	<i>Botaurus lentiginosus</i>	0.30%	2015	2022
House Wren	<i>Troglodytes aedon</i>	0.29%	2015	2022
Least Flycatcher	<i>Empidonax minimus</i>	0.29%	2015	2022
Northern Shoveler	<i>Anas clypeata</i>	0.28%	2015	2022
American Robin	<i>Turdus migratorius</i>	0.28%	2015	2021
Least Sandpiper	<i>Calidris minutilla</i>	0.23%	2017	2021
Willet	<i>Tringa semipalmata</i>	0.22%	2017	2021
Ruddy Duck	<i>Oxyura jamaicensis</i>	0.19%	2017	2022
Red-necked Grebe	<i>Podiceps grisegena</i>	0.19%	2018	2022
Vesper Sparrow	<i>Poocetes gramineus</i>	0.18%	2017	2022
Forster's Tern	<i>Sterna forsteri</i>	0.17%	2018	2020
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	0.16%	2017	2022
American Wigeon	<i>Anas americana</i>	0.16%	2017	2021
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0.16%	2017	2022
Horned Lark	<i>Eremophila alpestris</i>	0.14%	2017	2022
Warbling Vireo	<i>Vireo gilvus</i>	0.13%	2015	2022
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	0.13%	2015	2021
Northern Flicker	<i>Colaptes auratus</i>	0.11%	2015	2021
Chipping Sparrow	<i>Spizella passerina</i>	0.10%	2017	2021
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.10%	2015	2022
Franklin's Gull	<i>Leucophaeus pipixcan</i>	0.10%	2018	2022
White-faced Ibis	<i>Plegadis chihi</i>	0.10%	2018	2021
Northern Harrier	<i>Circus cyaneus</i>	0.10%	2015	2021
Nelson's Sparrow	<i>Ammodramus nelsoni</i>	0.10%	2017	2022
Canvasback	<i>Aythya valisineria</i>	0.10%	2018	2020
European Starling	<i>Sturnus vulgaris</i>	0.08%	2017	2021
Snowy Egret	<i>Egretta thula</i>	0.08%	2017	2022
Marbled Godwit	<i>Limosa fedoa</i>	0.07%	2015	2021

commonName	scientificName	meanRA	minYear	maxYear
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.07%	2018	2021
Gray Catbird	<i>Dumetella carolinensis</i>	0.05%	2017	2022
Virginia Rail	<i>Rallus limicola</i>	0.05%	2017	2020
Spotted Sandpiper	<i>Actitis macularius</i>	0.05%	2017	2022
Solitary Sandpiper	<i>Tringa solitaria</i>	0.04%	2017	2021
Swamp Sparrow	<i>Melospiza georgiana</i>	0.04%	2017	2020
Dickcissel	<i>Spiza americana</i>	0.04%	2018	2018
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.04%	2019	2021
Semipalmated Plover	<i>Charadrius semipalmatus</i>	0.04%	2021	2021
Rock Pigeon	<i>Columba livia</i>	0.04%	2020	2021
Downy Woodpecker	<i>Picoides pubescens</i>	0.03%	2015	2020
Western Grebe	<i>Aechmophorus occidentalis</i>	0.03%	2019	2022
Baird's Sandpiper	<i>Calidris bairdii</i>	0.03%	2018	2021
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>	0.03%	2021	2021
Ring-necked Duck	<i>Aythya collaris</i>	0.02%	2019	2021
Pectoral Sandpiper	<i>Calidris melanotos</i>	0.02%	2018	2021
Common Tern	<i>Sterna hirundo</i>	0.02%	2021	2021
Brown Thrasher	<i>Toxostoma rufum</i>	0.02%	2017	2020
Great Blue Heron	<i>Ardea herodias</i>	0.02%	2015	2022
Great Horned Owl	<i>Bubo virginianus</i>	0.02%	2020	2021
Hairy Woodpecker	<i>Picoides villosus</i>	0.02%	2015	2021
Short-eared Owl	<i>Asio flammeus</i>	0.02%	2017	2017
Swainson's Hawk	<i>Buteo swainsoni</i>	0.02%	2015	2022
American Avocet	<i>Recurvirostra americana</i>	0.02%	2020	2021
Green-winged Teal	<i>Anas crecca</i>	0.02%	2022	2022
Semipalmated Sandpiper	<i>Calidris pusilla</i>	0.02%	2017	2022
Unknown Meadowlark	<i>Sturnella sp.</i>	0.02%	2018	2018
Bufflehead	<i>Bucephala albeola</i>	0.02%	2020	2020
Baltimore Oriole	<i>Icterus galbula</i>	0.01%	2021	2021
Eastern Bluebird	<i>Sialia sialis</i>	0.01%	2017	2020
Herring Gull	<i>Larus argentatus</i>	0.01%	2020	2020
Lincoln's Sparrow	<i>Melospiza lincolni</i>	0.01%	2015	2021
Pine Siskin	<i>Spinus pinus</i>	0.01%	2020	2020
Red Crossbill	<i>Loxia curvirostra</i>	0.01%	2019	2020
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	0.01%	2019	2021
Wood Duck	<i>Aix sponsa</i>	0.01%	2015	2018
Horned Grebe	<i>Podiceps auritus</i>	0.01%	2019	2019
Unknown Buteo	<i>Buteo sp.</i>	0.01%	2015	2015
Alder Flycatcher	<i>Empidonax alnorum</i>	0.01%	2021	2021
American Kestrel	<i>Falco sparverius</i>	0.01%	2015	2015

commonName	scientificName	meanRA	minYear	maxYear
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	0.01%	2020	2020
Bullock's Oriole	<i>Icterus bullockii</i>	0.01%	2015	2015
Caspian Tern	<i>Hydroprogne caspia</i>	0.01%	2019	2019
Chestnut-collared Longspur	<i>Calcarius ornatus</i>	0.01%	2020	2020
Common Nighthawk	<i>Chordeiles minor</i>	0.01%	2017	2017
Cooper's Hawk	<i>Accipiter cooperii</i>	0.01%	2021	2021
Eastern Phoebe	<i>Sayornis phoebe</i>	0.01%	2021	2021
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	0.01%	2019	2019
Greater Scaup	<i>Aythya marila</i>	0.01%	2018	2018
Green Heron	<i>Butorides virescens</i>	0.01%	2021	2021
Indigo Bunting	<i>Passerina cyanea</i>	0.01%	2015	2015
Lark Bunting	<i>Calamospiza melanocorys</i>	0.01%	2015	2015
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	0.01%	2019	2019
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	0.01%	2017	2017
Magnolia Warbler	<i>Setophaga magnolia</i>	0.01%	2015	2015
Mountain Bluebird	<i>Sialia currucoides</i>	0.01%	2015	2015
Red-eyed Vireo	<i>Vireo olivaceus</i>	0.01%	2015	2015
Red-necked Phalarope	<i>Phalaropus lobatus</i>	0.01%	2021	2021
Ringed Kingfisher	<i>Megaceryle torquata</i>	0.01%	2020	2020
Ruddy Turnstone	<i>Arenaria interpres</i>	0.01%	2022	2022
Say's Phoebe	<i>Sayornis saya</i>	0.01%	2021	2021
Short-billed Dowitcher	<i>Limnodromus griseus</i>	0.01%	2021	2021
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.01%	2021	2021
Wild Turkey	<i>Meleagris gallopavo</i>	0.01%	2018	2018
Wilson's Phalarope	<i>Phalaropus tricolor</i>	0.01%	2018	2018
Yellow Rail	<i>Coturnicops noveboracensis</i>	0.01%	2019	2019

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Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	11.11%	2017	2022
Western Meadowlark	<i>Sturnella neglecta</i>	7.29%	2017	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	5.48%	2017	2022
Clay-colored Sparrow	<i>Spizella pallida</i>	4.61%	2017	2022
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	3.71%	2017	2022
Common Grackle	<i>Quiscalus quiscula</i>	3.27%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	3.00%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Black Tern	<i>Chlidonias niger</i>	2.73%	2017	2022
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	2.65%	2017	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	2.59%	2017	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	2.57%	2017	2022
Wilson's Snipe	<i>Gallinago delicata</i>	2.37%	2017	2022
Upland Sandpiper	<i>Bartramia longicauda</i>	2.35%	2017	2022
Killdeer	<i>Charadrius vociferus</i>	2.32%	2017	2022
Savannah Sparrow	<i>Passerculus sandwichensis</i>	2.16%	2017	2022
Song Sparrow	<i>Melospiza melodia</i>	1.88%	2017	2022
Marsh Wren	<i>Cistothorus palustris</i>	1.85%	2017	2022
Ring-billed Gull	<i>Larus delawarensis</i>	1.85%	2017	2022
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	1.45%	2017	2022
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	1.45%	2017	2022
American White Pelican	<i>Pelecanus erythrorhynchos</i>	1.45%	2017	2022
Bobolink	<i>Dolichonyx oryzivorus</i>	1.39%	2017	2022
Mallard	<i>Anas platyrhynchos</i>	1.36%	2017	2022
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	1.26%	2017	2022
American Goldfinch	<i>Spinus tristis</i>	1.15%	2017	2022
Gadwall	<i>Anas strepera</i>	1.14%	2017	2022
Blue-winged Teal	<i>Anas discors</i>	1.03%	2017	2022
Greater Yellowlegs	<i>Tringa melanoleuca</i>	1.01%	2018	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.98%	2017	2022
Ruddy Duck	<i>Oxyura jamaicensis</i>	0.92%	2017	2022
Horned Lark	<i>Eremophila alpestris</i>	0.76%	2017	2022
Chestnut-collared Longspur	<i>Calcarius ornatus</i>	0.74%	2017	2021
American Robin	<i>Turdus migratorius</i>	0.71%	2017	2022
Sedge Wren	<i>Cistothorus platensis</i>	0.69%	2017	2022
Barn Swallow	<i>Hirundo rustica</i>	0.62%	2017	2022
Orchard Oriole	<i>Icterus spurius</i>	0.60%	2017	2022
Vesper Sparrow	<i>Poocetes gramineus</i>	0.58%	2017	2022
Sora	<i>Porzana carolina</i>	0.57%	2017	2022
American Coot	<i>Fulica americana</i>	0.57%	2018	2022
Redhead	<i>Aythya americana</i>	0.57%	2017	2022
Unknown Gull	<i>Laridae sp.</i>	0.55%	2017	2021
Western Kingbird	<i>Tyrannus verticalis</i>	0.54%	2017	2021
Pied-billed Grebe	<i>Podilymbus podiceps</i>	0.51%	2019	2022
Lesser Yellowlegs	<i>Tringa flavipes</i>	0.49%	2017	2022
Tree Swallow	<i>Tachycineta bicolor</i>	0.46%	2017	2022
Northern Shoveler	<i>Anas clypeata</i>	0.43%	2017	2022
Least Sandpiper	<i>Calidris minutilla</i>	0.43%	2017	2021

commonName	scientificName	meanRA	minYear	maxYear
Lesser Scaup	<i>Aythya affinis</i>	0.41%	2017	2022
Willow Flycatcher	<i>Empidonax traillii</i>	0.39%	2017	2021
Dickcissel	<i>Spiza americana</i>	0.38%	2017	2022
Great Egret	<i>Ardea alba</i>	0.38%	2017	2022
Stilt Sandpiper	<i>Calidris himantopus</i>	0.35%	2021	2021
American Bittern	<i>Botaurus lentiginosus</i>	0.27%	2019	2022
Bank Swallow	<i>Riparia riparia</i>	0.27%	2017	2022
Canada Goose	<i>Branta canadensis</i>	0.27%	2017	2021
European Starling	<i>Sturnus vulgaris</i>	0.27%	2020	2021
Canvasback	<i>Aythya valisineria</i>	0.22%	2020	2021
Swamp Sparrow	<i>Melospiza georgiana</i>	0.21%	2017	2022
Willet	<i>Tringa semipalmata</i>	0.21%	2017	2021
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	0.21%	2017	2022
Ring-necked Duck	<i>Aythya collaris</i>	0.21%	2019	2022
White-faced Ibis	<i>Plegadis chihi</i>	0.21%	2021	2021
American Crow	<i>Corvus brachyrhynchos</i>	0.19%	2017	2021
Chipping Sparrow	<i>Spizella passerina</i>	0.19%	2017	2022
Wilson's Phalarope	<i>Phalaropus tricolor</i>	0.19%	2017	2019
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.17%	2018	2021
American Wigeon	<i>Anas americana</i>	0.14%	2017	2019
California Gull	<i>Larus californicus</i>	0.14%	2021	2022
Least Flycatcher	<i>Empidonax minimus</i>	0.13%	2019	2021
Northern Harrier	<i>Circus cyaneus</i>	0.13%	2017	2021
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.13%	2017	2021
Ring-necked Pheasant	<i>Phasianus colchicus</i>	0.13%	2018	2021
House Wren	<i>Troglodytes aedon</i>	0.11%	2018	2022
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	0.08%	2017	2021
Gray Catbird	<i>Dumetella carolinensis</i>	0.08%	2020	2021
Northern Pintail	<i>Anas acuta</i>	0.08%	2017	2021
Franklin's Gull	<i>Leucophaeus pipixcan</i>	0.06%	2020	2021
Nelson's Sparrow	<i>Ammodramus nelsoni</i>	0.06%	2018	2020
Swainson's Hawk	<i>Buteo swainsoni</i>	0.06%	2017	2020
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	0.05%	2020	2021
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.05%	2020	2022
Solitary Sandpiper	<i>Tringa solitaria</i>	0.05%	2019	2020
Spotted Sandpiper	<i>Actitis macularius</i>	0.05%	2019	2022
House Sparrow	<i>Passer domesticus</i>	0.05%	2019	2019
American Avocet	<i>Recurvirostra americana</i>	0.03%	2019	2021
Brown Thrasher	<i>Toxostoma rufum</i>	0.03%	2019	2021
Common Nighthawk	<i>Chordeiles minor</i>	0.03%	2020	2021

commonName	scientificName	meanRA	minYear	maxYear
Forster's Tern	<i>Sterna forsteri</i>	0.03%	2020	2022
Say's Phoebe	<i>Sayornis saya</i>	0.03%	2021	2021
Virginia Rail	<i>Rallus limicola</i>	0.03%	2019	2019
Red-necked Grebe	<i>Podiceps grisegena</i>	0.03%	2019	2019
Alder Flycatcher	<i>Empidonax alnorum</i>	0.02%	2021	2021
American Redstart	<i>Setophaga ruticilla</i>	0.02%	2021	2021
Baird's Sparrow	<i>Ammodramus bairdii</i>	0.02%	2022	2022
Baltimore Oriole	<i>Icterus galbula</i>	0.02%	2021	2021
Cooper's Hawk	<i>Accipiter cooperii</i>	0.02%	2017	2017
Downy Woodpecker	<i>Picoides pubescens</i>	0.02%	2018	2018
Eared Grebe	<i>Podiceps nigricollis</i>	0.02%	2019	2019
Eastern Bluebird	<i>Sialia sialis</i>	0.02%	2018	2018
Great Blue Heron	<i>Ardea herodias</i>	0.02%	2021	2021
Great Horned Owl	<i>Bubo virginianus</i>	0.02%	2021	2021
Green-winged Teal	<i>Anas crecca</i>	0.02%	2022	2022
Lark Sparrow	<i>Chondestes grammacus</i>	0.02%	2021	2021
Least Bittern	<i>Ixobrychus exilis</i>	0.02%	2020	2020
Northern Flicker	<i>Colaptes auratus</i>	0.02%	2021	2021
Pine Siskin	<i>Spinus pinus</i>	0.02%	2020	2020
Rock Pigeon	<i>Columba livia</i>	0.02%	2021	2021
Short-eared Owl	<i>Asio flammeus</i>	0.02%	2020	2020
Snowy Egret	<i>Egretta thula</i>	0.02%	2017	2017
Sprague's Pipit	<i>Anthus spragueii</i>	0.02%	2019	2019
Unknown Meadowlark	<i>Sturnella sp.</i>	0.02%	2018	2018
Warbling Vireo	<i>Vireo gilvus</i>	0.02%	2020	2020
Western Grebe	<i>Aechmophorus occidentalis</i>	0.02%	2019	2019

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Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Western Meadowlark	<i>Sturnella neglecta</i>	9.94%	2017	2022
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	8.55%	2017	2022
Clay-colored Sparrow	<i>Spizella pallida</i>	5.40%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	5.32%	2017	2022
American Goldfinch	<i>Spinus tristis</i>	5.17%	2017	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	4.94%	2017	2022
European Starling	<i>Sturnus vulgaris</i>	4.87%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Barn Swallow	<i>Hirundo rustica</i>	4.18%	2017	2022
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	3.65%	2017	2022
Ring-necked Pheasant	<i>Phasianus colchicus</i>	2.87%	2017	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	2.72%	2017	2022
American Robin	<i>Turdus migratorius</i>	2.68%	2017	2022
Spotted Towhee	<i>Pipilo maculatus</i>	2.28%	2017	2022
Upland Sandpiper	<i>Bartramia longicauda</i>	2.26%	2017	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	2.07%	2017	2022
Field Sparrow	<i>Spizella pusilla</i>	1.90%	2017	2022
Song Sparrow	<i>Melospiza melodia</i>	1.90%	2017	2022
Yellow-breasted Chat	<i>Icteria virens</i>	1.86%	2017	2022
Chipping Sparrow	<i>Spizella passerina</i>	1.63%	2017	2022
Bobolink	<i>Dolichonyx oryzivorus</i>	1.54%	2017	2022
House Wren	<i>Troglodytes aedon</i>	1.39%	2017	2022
Yellow Warbler	<i>Setophaga petechia</i>	1.39%	2017	2022
Dickcissel	<i>Spiza americana</i>	1.14%	2018	2022
Lark Sparrow	<i>Chondestes grammacus</i>	1.14%	2017	2022
Gray Catbird	<i>Dumetella carolinensis</i>	1.10%	2017	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.84%	2017	2022
Black-capped Chickadee	<i>Poecile atricapillus</i>	0.78%	2017	2022
Black-billed Magpie	<i>Pica hudsonia</i>	0.76%	2017	2022
Western Kingbird	<i>Tyrannus verticalis</i>	0.74%	2017	2022
House Sparrow	<i>Passer domesticus</i>	0.74%	2017	2022
American Crow	<i>Corvus brachyrhynchos</i>	0.70%	2017	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	0.63%	2017	2021
Killdeer	<i>Charadrius vociferus</i>	0.63%	2017	2022
Brown Thrasher	<i>Toxostoma rufum</i>	0.61%	2017	2022
Turkey Vulture	<i>Cathartes aura</i>	0.55%	2017	2022
Mallard	<i>Anas platyrhynchos</i>	0.51%	2017	2022
Vesper Sparrow	<i>Poocetes gramineus</i>	0.49%	2017	2020
Common Grackle	<i>Quiscalus quiscula</i>	0.49%	2017	2021
Northern Flicker	<i>Colaptes auratus</i>	0.48%	2017	2021
Horned Lark	<i>Eremophila alpestris</i>	0.44%	2018	2022
Indigo Bunting	<i>Passerina cyanea</i>	0.30%	2019	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.30%	2017	2021
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.30%	2019	2021
Tree Swallow	<i>Tachycineta bicolor</i>	0.29%	2017	2021
Gadwall	<i>Anas strepera</i>	0.29%	2018	2019
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	0.27%	2017	2021
Lark Bunting	<i>Calamospiza melanocorys</i>	0.25%	2019	2019

commonName	scientificName	meanRA	minYear	maxYear
Swainson's Hawk	<i>Buteo swainsoni</i>	0.25%	2019	2021
American Kestrel	<i>Falco sparverius</i>	0.25%	2017	2021
Lazuli Bunting	<i>Passerina amoena</i>	0.23%	2017	2019
Savannah Sparrow	<i>Passerculus sandwichensis</i>	0.23%	2019	2020
Sedge Wren	<i>Cistothorus platensis</i>	0.23%	2017	2020
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	0.23%	2017	2021
Great Blue Heron	<i>Ardea herodias</i>	0.23%	2017	2019
Eastern Bluebird	<i>Sialia sialis</i>	0.21%	2018	2020
Downy Woodpecker	<i>Picoides pubescens</i>	0.17%	2018	2022
Rock Pigeon	<i>Columba livia</i>	0.17%	2018	2021
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.15%	2018	2021
Wild Turkey	<i>Meleagris gallopavo</i>	0.15%	2017	2020
American Redstart	<i>Setophaga ruticilla</i>	0.13%	2020	2021
Willow Flycatcher	<i>Empidonax traillii</i>	0.13%	2017	2022
House Finch	<i>Haemorhous mexicanus</i>	0.13%	2017	2022
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	0.11%	2017	2020
Blue Grosbeak	<i>Passerina caerulea</i>	0.10%	2017	2022
Orchard Oriole	<i>Icterus spurius</i>	0.10%	2017	2020
Ovenbird	<i>Seiurus aurocapilla</i>	0.10%	2017	2021
Warbling Vireo	<i>Vireo gilvus</i>	0.10%	2020	2021
Unknown Meadowlark	<i>Sturnella sp.</i>	0.10%	2018	2018
Blue-winged Teal	<i>Anas discors</i>	0.08%	2017	2022
Cooper's Hawk	<i>Accipiter cooperii</i>	0.08%	2019	2021
Great Horned Owl	<i>Bubo virginianus</i>	0.08%	2017	2019
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	0.08%	2019	2021
Red-breasted Nuthatch	<i>Sitta canadensis</i>	0.08%	2017	2021
Red-eyed Vireo	<i>Vireo olivaceus</i>	0.08%	2017	2020
Wilson's Snipe	<i>Gallinago delicata</i>	0.08%	2018	2022
Pine Siskin	<i>Spinus pinus</i>	0.08%	2020	2020
Eastern Phoebe	<i>Sayornis phoebe</i>	0.06%	2018	2018
Hairy Woodpecker	<i>Picoides villosus</i>	0.06%	2017	2019
Canada Goose	<i>Branta canadensis</i>	0.06%	2020	2020
Baltimore Oriole	<i>Icterus galbula</i>	0.04%	2020	2022
Bank Swallow	<i>Riparia riparia</i>	0.04%	2022	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	0.04%	2018	2019
Least Flycatcher	<i>Empidonax minimus</i>	0.04%	2018	2018
Least Sandpiper	<i>Calidris minutilla</i>	0.04%	2020	2020
Pied-billed Grebe	<i>Podilymbus podiceps</i>	0.04%	2022	2022
Say's Phoebe	<i>Sayornis saya</i>	0.04%	2020	2021
Sora	<i>Porzana carolina</i>	0.04%	2018	2022

commonName	scientificName	meanRA	minYear	maxYear
American Coot	<i>Fulica americana</i>	0.02%	2019	2019
Black-and-white Warbler	<i>Mniotilta varia</i>	0.02%	2017	2017
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	0.02%	2022	2022
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	0.02%	2021	2021
Blue Jay	<i>Cyanocitta cristata</i>	0.02%	2019	2019
Brewer's Sparrow	<i>Spizella breweri</i>	0.02%	2019	2019
Bullock's Oriole	<i>Icterus bullockii</i>	0.02%	2017	2017
California Gull	<i>Larus californicus</i>	0.02%	2020	2020
Caspian Tern	<i>Hydroprogne caspia</i>	0.02%	2018	2018
Franklin's Gull	<i>Leucophaeus pipixcan</i>	0.02%	2021	2021
Long-eared Owl	<i>Asio otus</i>	0.02%	2017	2017
Nelson's Sparrow	<i>Ammodramus nelsoni</i>	0.02%	2018	2018
Northern Harrier	<i>Circus cyaneus</i>	0.02%	2019	2019
Swamp Sparrow	<i>Melospiza georgiana</i>	0.02%	2019	2019

D.26 D10 – CPER – Central Plains Experimental Range NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Western Meadowlark	<i>Sturnella neglecta</i>	32.46%	2013	2022
Lark Bunting	<i>Calamospiza melanocorys</i>	26.15%	2013	2022
Horned Lark	<i>Eremophila alpestris</i>	14.87%	2013	2022
Brewer's Sparrow	<i>Spizella breweri</i>	8.46%	2013	2022
Mourning Dove	<i>Zenaida macroura</i>	4.05%	2013	2022
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	3.90%	2013	2022
Cassin's Sparrow	<i>Peucaea cassinii</i>	2.02%	2013	2022
Western Kingbird	<i>Tyrannus verticalis</i>	0.94%	2013	2022
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0.73%	2013	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	0.65%	2013	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.58%	2013	2022
Killdeer	<i>Charadrius vociferus</i>	0.56%	2013	2022
Barn Swallow	<i>Hirundo rustica</i>	0.49%	2015	2022
Common Nighthawk	<i>Chordeiles minor</i>	0.49%	2013	2021
Thick-billed Longspur	<i>Rhynchophanes mccownii</i>	0.35%	2013	2017
Lark Sparrow	<i>Chondestes grammacus</i>	0.21%	2013	2022
Say's Phoebe	<i>Sayornis saya</i>	0.16%	2013	2022
Loggerhead Shrike	<i>Lanius ludovicianus</i>	0.15%	2013	2022
Common Grackle	<i>Quiscalus quiscula</i>	0.15%	2013	2022

commonName	scientificName	meanRA	minYear	maxYear
Swainson's Hawk	<i>Buteo swainsoni</i>	0.14%	2015	2021
Vesper Sparrow	<i>Poocetes gramineus</i>	0.13%	2013	2022
Mallard	<i>Anas platyrhynchos</i>	0.11%	2013	2022
Bullock's Oriole	<i>Icterus bullockii</i>	0.10%	2015	2021
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.10%	2013	2021
Rock Wren	<i>Salpinctes obsoletus</i>	0.09%	2015	2020
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.08%	2013	2021
Chipping Sparrow	<i>Spizella passerina</i>	0.08%	2015	2015
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	0.08%	2018	2021
Brown Thrasher	<i>Toxostoma rufum</i>	0.07%	2013	2022
Western Wood-Pewee	<i>Contopus sordidulus</i>	0.06%	2013	2020
Common Raven	<i>Corvus corax</i>	0.06%	2016	2022
Bank Swallow	<i>Riparia riparia</i>	0.06%	2016	2019
Northern Mockingbird	<i>Mimus polyglottos</i>	0.05%	2013	2018
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.05%	2013	2022
Burrowing Owl	<i>Athene cunicularia</i>	0.04%	2015	2022
Western Bluebird	<i>Sialia mexicana</i>	0.04%	2016	2022
Golden Eagle	<i>Aquila chrysaetos</i>	0.03%	2015	2018
Ring-necked Pheasant	<i>Phasianus colchicus</i>	0.03%	2015	2019
Canada Goose	<i>Branta canadensis</i>	0.03%	2015	2018
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	0.03%	2015	2015
Clay-colored Sparrow	<i>Spizella pallida</i>	0.03%	2015	2015
Yellow Warbler	<i>Setophaga petechia</i>	0.03%	2013	2018
American Robin	<i>Turdus migratorius</i>	0.03%	2013	2021
Great Blue Heron	<i>Ardea herodias</i>	0.02%	2015	2018
Northern Harrier	<i>Circus cyaneus</i>	0.02%	2016	2018
Turkey Vulture	<i>Cathartes aura</i>	0.02%	2015	2018
American Goldfinch	<i>Spinus tristis</i>	0.01%	2013	2018
Black-billed Magpie	<i>Pica hudsonia</i>	0.01%	2018	2022
European Starling	<i>Sturnus vulgaris</i>	0.01%	2013	2013
Mountain Plover	<i>Charadrius montanus</i>	0.01%	2017	2017
Violet-green Swallow	<i>Tachycineta thalassina</i>	0.01%	2015	2018
Chestnut-collared Longspur	<i>Calcarius ornatus</i>	0.01%	2013	2013
Rock Pigeon	<i>Columba livia</i>	0.01%	2020	2020
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	0.01%	2013	2013
American Kestrel	<i>Falco sparverius</i>	0.01%	2013	2013
Ferruginous Hawk	<i>Buteo regalis</i>	0.01%	2015	2015
Great Horned Owl	<i>Bubo virginianus</i>	0.01%	2021	2021
House Finch	<i>Haemorhous mexicanus</i>	0.01%	2015	2015
House Sparrow	<i>Passer domesticus</i>	0.01%	2021	2021

commonName	scientificName	meanRA	minYear	maxYear
Prairie Falcon	<i>Falco mexicanus</i>	0.01%	2015	2015
Red-necked Phalarope	<i>Phalaropus lobatus</i>	0.01%	2016	2016
Upland Sandpiper	<i>Bartramia longicauda</i>	0.01%	2018	2018
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	0.01%	2017	2017
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	0.01%	2018	2018

D.27 D10 – STER – North Sterling NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Horned Lark	<i>Eremophila alpestris</i>	29.80%	2013	2022
Western Meadowlark	<i>Sturnella neglecta</i>	21.46%	2013	2022
Lark Bunting	<i>Calamospiza melanocorys</i>	14.55%	2013	2022
Mourning Dove	<i>Zenaida macroura</i>	7.56%	2013	2022
Common Grackle	<i>Quiscalus quiscula</i>	5.44%	2013	2022
Ring-necked Pheasant	<i>Phasianus colchicus</i>	5.17%	2013	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	4.21%	2013	2022
Western Kingbird	<i>Tyrannus verticalis</i>	2.39%	2013	2022
Barn Swallow	<i>Hirundo rustica</i>	1.00%	2015	2022
European Starling	<i>Sturnus vulgaris</i>	0.96%	2015	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	0.89%	2015	2022
American Robin	<i>Turdus migratorius</i>	0.73%	2015	2022
Killdeer	<i>Charadrius vociferus</i>	0.69%	2015	2022
House Finch	<i>Haemorhous mexicanus</i>	0.58%	2015	2022
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	0.46%	2018	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.46%	2015	2022
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	0.39%	2013	2022
Black-billed Magpie	<i>Pica hudsonia</i>	0.31%	2015	2021
House Sparrow	<i>Passer domesticus</i>	0.31%	2015	2022
Say's Phoebe	<i>Sayornis saya</i>	0.27%	2015	2020
Northern Mockingbird	<i>Mimus polyglottos</i>	0.23%	2018	2020
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0.19%	2016	2021
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	0.19%	2016	2018
Lark Sparrow	<i>Chondestes grammacus</i>	0.15%	2018	2020
Loggerhead Shrike	<i>Lanius ludovicianus</i>	0.15%	2017	2021
Mallard	<i>Anas platyrhynchos</i>	0.12%	2015	2015
Chipping Sparrow	<i>Spizella passerina</i>	0.08%	2015	2016
Northern Harrier	<i>Circus cyaneus</i>	0.08%	2018	2018

commonName	scientificName	meanRA	minYear	maxYear
Swainson's Hawk	<i>Buteo swainsoni</i>	0.08%	2015	2019
Spotted Sandpiper	<i>Actitis macularius</i>	0.08%	2015	2015
Wilson's Phalarope	<i>Phalaropus tricolor</i>	0.08%	2015	2015
American Goldfinch	<i>Spinus tristis</i>	0.04%	2015	2015
Bank Swallow	<i>Riparia riparia</i>	0.04%	2020	2020
Blue Grosbeak	<i>Passerina caerulea</i>	0.04%	2015	2015
Blue-winged Teal	<i>Anas discors</i>	0.04%	2015	2015
Bullock's Oriole	<i>Icterus bullockii</i>	0.04%	2018	2018
Common Raven	<i>Corvus corax</i>	0.04%	2020	2020
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.04%	2019	2019
Rock Pigeon	<i>Columba livia</i>	0.04%	2015	2015
Western Bluebird	<i>Sialia mexicana</i>	0.04%	2021	2021

D.28 D10 – RMNP – Rocky Mountains NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Mountain Chickadee	<i>Poecile gambeli</i>	9.79%	2017	2022
Dark-eyed Junco	<i>Junco hyemalis</i>	9.06%	2017	2022
Yellow-rumped Warbler	<i>Setophaga coronata</i>	7.09%	2017	2022
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	6.55%	2017	2022
American Robin	<i>Turdus migratorius</i>	6.18%	2017	2022
Ruby-crowned Kinglet	<i>Regulus calendula</i>	5.84%	2017	2022
Hermit Thrush	<i>Catharus guttatus</i>	5.30%	2017	2022
Red Crossbill	<i>Loxia curvirostra</i>	4.65%	2017	2022
Pine Siskin	<i>Spinus pinus</i>	4.03%	2017	2022
Pygmy Nuthatch	<i>Sitta pygmaea</i>	3.30%	2017	2022
Townsend's Solitaire	<i>Myadestes townsendi</i>	3.06%	2017	2022
Steller's Jay	<i>Cyanocitta stelleri</i>	3.06%	2017	2022
House Wren	<i>Troglodytes aedon</i>	2.76%	2017	2022
Red-breasted Nuthatch	<i>Sitta canadensis</i>	2.42%	2017	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	2.32%	2017	2022
Western Wood-Pewee	<i>Contopus sordidulus</i>	2.09%	2017	2022
Clark's Nutcracker	<i>Nucifraga columbiana</i>	2.03%	2017	2022
Green-tailed Towhee	<i>Pipilo chlorurus</i>	1.91%	2017	2022
American Crow	<i>Corvus brachyrhynchos</i>	1.81%	2017	2022
Western Tanager	<i>Piranga ludoviciana</i>	1.75%	2017	2022
Common Raven	<i>Corvus corax</i>	1.75%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Warbling Vireo	<i>Vireo gilvus</i>	1.65%	2017	2022
Northern Flicker	<i>Colaptes auratus</i>	1.29%	2017	2022
Cordilleran Flycatcher	<i>Empidonax occidentalis</i>	1.07%	2017	2022
Hairy Woodpecker	<i>Picoides villosus</i>	1.01%	2017	2022
Brown Creeper	<i>Certhia americana</i>	0.91%	2017	2022
Virginia's Warbler	<i>Oreothlypis virginiae</i>	0.89%	2018	2018
Violet-green Swallow	<i>Tachycineta thalassina</i>	0.83%	2018	2022
Dusky Flycatcher	<i>Empidonax oberholseri</i>	0.75%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	0.56%	2017	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.44%	2017	2022
Tree Swallow	<i>Tachycineta bicolor</i>	0.40%	2019	2022
Olive-sided Flycatcher	<i>Contopus cooperi</i>	0.30%	2017	2021
Golden-crowned Kinglet	<i>Regulus satrapa</i>	0.30%	2017	2020
Plumbeous Vireo	<i>Vireo plumbeus</i>	0.24%	2018	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.22%	2018	2022
Spotted Towhee	<i>Pipilo maculatus</i>	0.20%	2017	2022
Mountain Bluebird	<i>Sialia currucoides</i>	0.16%	2018	2021
Swainson's Thrush	<i>Catharus ustulatus</i>	0.16%	2017	2017
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	0.14%	2018	2022
Canada Jay	<i>Perisoreus canadensis</i>	0.12%	2017	2022
Cassin's Finch	<i>Haemorhous cassinii</i>	0.12%	2018	2022
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	0.10%	2021	2022
Pine Grosbeak	<i>Pinicola enucleator</i>	0.10%	2017	2022
Black-billed Magpie	<i>Pica hudsonia</i>	0.08%	2021	2022
American Three-toed Woodpecker	<i>Picoides dorsalis</i>	0.06%	2017	2020
Dusky Grouse	<i>Dendragapus obscurus</i>	0.06%	2018	2020
Lesser Goldfinch	<i>Spinus psaltria</i>	0.06%	2018	2018
Turkey Vulture	<i>Cathartes aura</i>	0.06%	2018	2019
Common Nighthawk	<i>Chordeiles minor</i>	0.04%	2018	2018
House Finch	<i>Haemorhous mexicanus</i>	0.04%	2018	2018
Sharp-shinned Hawk	<i>Accipiter striatus</i>	0.04%	2018	2021
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>	0.04%	2018	2021
Berylline Hummingbird	<i>Amazilia beryllina</i>	0.02%	2019	2019
Black-capped Chickadee	<i>Poecile atricapillus</i>	0.02%	2022	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	0.02%	2019	2019
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	0.02%	2018	2018
Great Horned Owl	<i>Bubo virginianus</i>	0.02%	2020	2020
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	0.02%	2020	2020
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	0.02%	2022	2022
American Goshawk	<i>Accipiter gentilis</i>	0.02%	2022	2022

commonName	scientificName	meanRA	minYear	maxYear
Orange-crowned Warbler	<i>Oreothlypis celata</i>	0.02%	2019	2019
Prairie Falcon	<i>Falco mexicanus</i>	0.02%	2018	2018
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	0.02%	2020	2020
Vesper Sparrow	<i>Poecetes gramineus</i>	0.02%	2022	2022
Wilson's Warbler	<i>Cardellina pusilla</i>	0.02%	2018	2018

D.29 D11 – CLBJ – Lyndon B. Johnson National Grassland NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Cedar Waxwing	<i>Bombycilla cedrorum</i>	16.27%	2017	2022
Franklin's Gull	<i>Leucophaeus pipixcan</i>	10.63%	2018	2021
Northern Cardinal	<i>Cardinalis cardinalis</i>	7.79%	2017	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	4.58%	2017	2022
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	4.47%	2017	2022
American Crow	<i>Corvus brachyrhynchos</i>	4.44%	2017	2022
Painted Bunting	<i>Passerina ciris</i>	3.85%	2017	2022
Carolina Wren	<i>Thryothorus ludovicianus</i>	3.84%	2017	2022
White-eyed Vireo	<i>Vireo griseus</i>	3.78%	2017	2022
Dickcissel	<i>Spiza americana</i>	2.89%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	2.52%	2017	2022
Indigo Bunting	<i>Passerina cyanea</i>	2.10%	2017	2022
Summer Tanager	<i>Piranga rubra</i>	2.08%	2017	2022
Carolina Chickadee	<i>Poecile carolinensis</i>	1.99%	2017	2022
Black-and-white Warbler	<i>Mniotilta varia</i>	1.94%	2017	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	1.73%	2017	2022
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	1.65%	2018	2022
Swainson's Thrush	<i>Catharus ustulatus</i>	1.65%	2017	2022
Blue Jay	<i>Cyanocitta cristata</i>	1.58%	2017	2022
Blue Grosbeak	<i>Passerina caerulea</i>	1.33%	2017	2022
Pine Siskin	<i>Spinus pinus</i>	1.27%	2018	2021
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	1.18%	2017	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	1.05%	2017	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.73%	2017	2022
Red-eyed Vireo	<i>Vireo olivaceus</i>	0.68%	2017	2022
Turkey Vulture	<i>Cathartes aura</i>	0.68%	2017	2022
Field Sparrow	<i>Spizella pusilla</i>	0.67%	2017	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	0.64%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.61%	2017	2022
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.61%	2017	2022
Yellow-rumped Warbler	<i>Setophaga coronata</i>	0.53%	2018	2021
Clay-colored Sparrow	<i>Spizella pallida</i>	0.47%	2018	2022
Purple Martin	<i>Progne subis</i>	0.43%	2017	2022
House Wren	<i>Troglodytes aedon</i>	0.42%	2017	2022
Louisiana Waterthrush	<i>Parkesia motacilla</i>	0.39%	2017	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.38%	2017	2022
Bewick's Wren	<i>Thryomanes bewickii</i>	0.36%	2017	2022
Scissor-tailed Flycatcher	<i>Tyrannus forficatus</i>	0.36%	2017	2022
Eastern Bluebird	<i>Sialia sialis</i>	0.34%	2017	2022
Least Flycatcher	<i>Empidonax minimus</i>	0.29%	2017	2022
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	0.27%	2018	2022
American Goldfinch	<i>Spinus tristis</i>	0.26%	2017	2022
Mississippi Kite	<i>Ictinia mississippiensis</i>	0.26%	2017	2022
Canada Goose	<i>Branta canadensis</i>	0.25%	2017	2022
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.22%	2018	2022
Northern Bobwhite	<i>Colinus virginianus</i>	0.22%	2017	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.22%	2017	2022
Brown Thrasher	<i>Toxostoma rufum</i>	0.20%	2017	2022
Orange-crowned Warbler	<i>Oreothlypis celata</i>	0.20%	2018	2022
White-throated Sparrow	<i>Zonotrichia albicollis</i>	0.19%	2018	2021
Lark Sparrow	<i>Chondestes grammacus</i>	0.17%	2017	2022
Eastern Wood-Pewee	<i>Contopus virens</i>	0.16%	2017	2022
Spotted Towhee	<i>Pipilo maculatus</i>	0.15%	2018	2021
Eastern Phoebe	<i>Sayornis phoebe</i>	0.14%	2017	2022
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0.13%	2017	2021
Upland Sandpiper	<i>Bartramia longicauda</i>	0.13%	2018	2022
Barn Swallow	<i>Hirundo rustica</i>	0.10%	2018	2022
Common Yellowthroat	<i>Geothlypis trichas</i>	0.10%	2017	2022
Common Grackle	<i>Quiscalus quiscula</i>	0.10%	2018	2021
Lincoln's Sparrow	<i>Melospiza lincolni</i>	0.10%	2018	2021
Orchard Oriole	<i>Icterus spurius</i>	0.09%	2017	2022
Ruby-crowned Kinglet	<i>Regulus calendula</i>	0.09%	2018	2021
Baltimore Oriole	<i>Icterus galbula</i>	0.08%	2018	2022
Chuck-will's-widow	<i>Antrostomus carolinensis</i>	0.08%	2019	2022
Great Blue Heron	<i>Ardea herodias</i>	0.08%	2017	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.08%	2017	2022
Pine Warbler	<i>Setophaga pinus</i>	0.08%	2018	2022
Ovenbird	<i>Seiurus aurocapilla</i>	0.07%	2019	2022

commonName	scientificName	meanRA	minYear	maxYear
Wild Turkey	<i>Meleagris gallopavo</i>	0.07%	2017	2022
Wood Duck	<i>Aix sponsa</i>	0.07%	2020	2022
Barred Owl	<i>Strix varia</i>	0.07%	2017	2022
Yellow-breasted Chat	<i>Icteria virens</i>	0.07%	2018	2022
Cattle Egret	<i>Bubulcus ibis</i>	0.07%	2021	2021
Wilson's Warbler	<i>Cardellina pusilla</i>	0.06%	2018	2022
Black Vulture	<i>Coragyps atratus</i>	0.06%	2018	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	0.05%	2019	2022
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	0.05%	2019	2022
American Robin	<i>Turdus migratorius</i>	0.04%	2018	2022
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	0.04%	2018	2022
Eastern Meadowlark	<i>Sturnella magna</i>	0.04%	2018	2018
Warbling Vireo	<i>Vireo gilvus</i>	0.04%	2019	2022
Oak Titmouse	<i>Baeolophus inornatus</i>	0.04%	2022	2022
Gray Catbird	<i>Dumetella carolinensis</i>	0.04%	2019	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.04%	2018	2021
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.03%	2017	2022
Broad-winged Hawk	<i>Buteo platypterus</i>	0.03%	2017	2022
Greater Roadrunner	<i>Geococcyx californianus</i>	0.03%	2018	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.03%	2019	2021
Blue-headed Vireo	<i>Vireo solitarius</i>	0.02%	2017	2022
Cassin's Sparrow	<i>Peucaea cassinii</i>	0.02%	2022	2022
Common Nighthawk	<i>Chordeiles minor</i>	0.02%	2017	2021
Great Horned Owl	<i>Bubo virginianus</i>	0.02%	2018	2021
Green Heron	<i>Butorides virescens</i>	0.02%	2017	2021
Hermit Thrush	<i>Catharus guttatus</i>	0.02%	2017	2019
Killdeer	<i>Charadrius vociferus</i>	0.02%	2018	2019
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.02%	2020	2022
Solitary Sandpiper	<i>Tringa solitaria</i>	0.02%	2018	2020
Tennessee Warbler	<i>Oreothlypis peregrina</i>	0.02%	2019	2021
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.02%	2017	2019
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	0.02%	2017	2018
Vesper Sparrow	<i>Poocetes gramineus</i>	0.02%	2018	2021
American Bittern	<i>Botaurus lentiginosus</i>	0.01%	2022	2022
American Redstart	<i>Setophaga ruticilla</i>	0.01%	2018	2022
Black-throated Green Warbler	<i>Setophaga virens</i>	0.01%	2021	2021
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	0.01%	2019	2020
Harris's Sparrow	<i>Zonotrichia querula</i>	0.01%	2018	2018
Mourning Warbler	<i>Geothlypis philadelphia</i>	0.01%	2017	2021
Sedge Wren	<i>Cistothorus platensis</i>	0.01%	2018	2018

commonName	scientificName	meanRA	minYear	maxYear
Rock Pigeon	<i>Columba livia</i>	0.01%	2018	2018
American Pipit	<i>Anthus rubescens</i>	0.01%	2018	2018
Bell's Vireo	<i>Vireo bellii</i>	0.01%	2019	2019
Black-bellied Whistling-Duck	<i>Dendrocygna autumnalis</i>	0.01%	2020	2020
Blackpoll Warbler	<i>Setophaga striata</i>	0.01%	2021	2021
Bobolink	<i>Dolichonyx oryzivorus</i>	0.01%	2021	2021
Great Egret	<i>Ardea alba</i>	0.01%	2021	2021
House Finch	<i>Haemorhous mexicanus</i>	0.01%	2019	2019
Ladder-backed Woodpecker	<i>Picoides scalaris</i>	0.01%	2019	2019
Lazuli Bunting	<i>Passerina amoena</i>	0.01%	2022	2022
Philadelphia Vireo	<i>Vireo philadelphicus</i>	0.01%	2022	2022
Red-breasted Nuthatch	<i>Sitta canadensis</i>	0.01%	2021	2021
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	0.01%	2017	2017
Scarlet Tanager	<i>Piranga olivacea</i>	0.01%	2019	2019
Spotted Sandpiper	<i>Actitis macularius</i>	0.01%	2020	2020
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	0.01%	2018	2018
Yellow-throated Warbler	<i>Setophaga dominica</i>	0.01%	2022	2022

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Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Dickcissel	<i>Spiza americana</i>	16.96%	2017	2022
Eastern Meadowlark	<i>Sturnella magna</i>	13.15%	2017	2022
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	8.83%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	7.13%	2017	2022
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	5.64%	2018	2022
Northern Bobwhite	<i>Colinus virginianus</i>	5.13%	2017	2022
Cassin's Sparrow	<i>Peucaea cassinii</i>	3.58%	2017	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	3.18%	2017	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	2.76%	2017	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	2.63%	2017	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	2.47%	2017	2022
Painted Bunting	<i>Passerina ciris</i>	1.74%	2017	2022
Western Meadowlark	<i>Sturnella neglecta</i>	1.63%	2017	2022
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	1.62%	2017	2022
Bewick's Wren	<i>Thryomanes bewickii</i>	1.42%	2017	2022
Scissor-tailed Flycatcher	<i>Tyrannus forficatus</i>	1.32%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Blue Grosbeak	<i>Passerina caerulea</i>	1.22%	2017	2022
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	1.13%	2017	2022
Common Nighthawk	<i>Chordeiles minor</i>	1.07%	2017	2022
Clay-colored Sparrow	<i>Spizella pallida</i>	1.04%	2018	2021
Killdeer	<i>Charadrius vociferus</i>	0.93%	2017	2022
American Crow	<i>Corvus brachyrhynchos</i>	0.80%	2017	2022
Barn Swallow	<i>Hirundo rustica</i>	0.77%	2017	2022
Eastern Bluebird	<i>Sialia sialis</i>	0.67%	2017	2022
Lark Sparrow	<i>Chondestes grammacus</i>	0.67%	2017	2022
Wild Turkey	<i>Meleagris gallopavo</i>	0.61%	2017	2022
Brown Thrasher	<i>Toxostoma rufum</i>	0.58%	2017	2022
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0.56%	2017	2022
Pied-billed Grebe	<i>Podilymbus podiceps</i>	0.52%	2017	2022
Canada Goose	<i>Branta canadensis</i>	0.50%	2017	2022
Bell's Vireo	<i>Vireo bellii</i>	0.44%	2017	2022
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	0.39%	2018	2018
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.34%	2018	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.31%	2017	2022
European Starling	<i>Sturnus vulgaris</i>	0.31%	2017	2022
Common Grackle	<i>Quiscalus quiscula</i>	0.31%	2017	2022
Eastern Phoebe	<i>Sayornis phoebe</i>	0.30%	2017	2020
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0.29%	2017	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.28%	2018	2021
Unknown Meadowlark	<i>Sturnella sp.</i>	0.23%	2017	2020
Pine Siskin	<i>Spinus pinus</i>	0.21%	2018	2021
Carolina Chickadee	<i>Poecile carolinensis</i>	0.19%	2017	2022
Horned Lark	<i>Eremophila alpestris</i>	0.19%	2018	2022
Orchard Oriole	<i>Icterus spurius</i>	0.19%	2019	2022
Least Flycatcher	<i>Empidonax minimus</i>	0.18%	2018	2021
Hairy Woodpecker	<i>Picoides villosus</i>	0.17%	2017	2021
Turkey Vulture	<i>Cathartes aura</i>	0.17%	2018	2022
Upland Sandpiper	<i>Bartramia longicauda</i>	0.17%	2018	2022
Blue-winged Teal	<i>Anas discors</i>	0.17%	2018	2019
Belted Kingfisher	<i>Megaceryle alcyon</i>	0.15%	2018	2022
Blue Jay	<i>Cyanocitta cristata</i>	0.15%	2018	2020
Common Yellowthroat	<i>Geothlypis trichas</i>	0.13%	2017	2021
Carolina Wren	<i>Thryothorus ludovicianus</i>	0.12%	2017	2020
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	0.11%	2017	2021
House Wren	<i>Troglodytes aedon</i>	0.11%	2018	2022
Western Kingbird	<i>Tyrannus verticalis</i>	0.11%	2018	2020

commonName	scientificName	meanRA	minYear	maxYear
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	0.11%	2018	2019
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	0.10%	2017	2021
Wood Duck	<i>Aix sponsa</i>	0.10%	2017	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.10%	2018	2021
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0.08%	2017	2019
Ladder-backed Woodpecker	<i>Picoides scalaris</i>	0.08%	2017	2022
Tufted Titmouse	<i>Baeolophus bicolor</i>	0.08%	2018	2021
American Goldfinch	<i>Spinus tristis</i>	0.07%	2017	2021
Downy Woodpecker	<i>Picoides pubescens</i>	0.07%	2017	2018
Great Blue Heron	<i>Ardea herodias</i>	0.07%	2017	2018
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	0.07%	2018	2018
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	0.06%	2017	2019
Bank Swallow	<i>Riparia riparia</i>	0.06%	2019	2021
Great Horned Owl	<i>Bubo virginianus</i>	0.06%	2017	2022
Cattle Egret	<i>Bubulcus ibis</i>	0.06%	2019	2019
Spotted Towhee	<i>Pipilo maculatus</i>	0.06%	2018	2018
Mallard	<i>Anas platyrhynchos</i>	0.05%	2017	2020
Northern Shoveler	<i>Anas clypeata</i>	0.05%	2018	2018
Greater Roadrunner	<i>Geococcyx californianus</i>	0.04%	2018	2022
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.04%	2018	2022
Spotted Sandpiper	<i>Actitis macularius</i>	0.04%	2019	2019
Swainson's Hawk	<i>Buteo swainsoni</i>	0.04%	2018	2018
White-winged Dove	<i>Zenaida asiatica</i>	0.04%	2017	2017
Purple Martin	<i>Progne subis</i>	0.04%	2017	2020
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	0.02%	2019	2022
Chestnut-collared Longspur	<i>Calcarius ornatus</i>	0.02%	2018	2021
Field Sparrow	<i>Spizella pusilla</i>	0.02%	2020	2020
Harris's Sparrow	<i>Zonotrichia querula</i>	0.02%	2018	2018
Lark Bunting	<i>Calamospiza melanocorys</i>	0.02%	2019	2019
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	0.02%	2018	2021
Orange-crowned Warbler	<i>Oreothlypis celata</i>	0.02%	2018	2019
Rock Pigeon	<i>Columba livia</i>	0.02%	2017	2017
American Redstart	<i>Setophaga ruticilla</i>	0.01%	2019	2019
Baird's Sandpiper	<i>Calidris bairdii</i>	0.01%	2022	2022
Barred Owl	<i>Strix varia</i>	0.01%	2021	2021
Black-and-white Warbler	<i>Mniotilta varia</i>	0.01%	2019	2019
Bullock's Oriole	<i>Icterus bullockii</i>	0.01%	2018	2018
Great Egret	<i>Ardea alba</i>	0.01%	2017	2017
Greater Yellowlegs	<i>Tringa melanoleuca</i>	0.01%	2018	2018
Great-tailed Grackle	<i>Quiscalus mexicanus</i>	0.01%	2017	2017

commonName	scientificName	meanRA	minYear	maxYear
Green Heron	<i>Butorides virescens</i>	0.01%	2017	2017
House Sparrow	<i>Passer domesticus</i>	0.01%	2018	2018
Indigo Bunting	<i>Passerina cyanea</i>	0.01%	2021	2021
Loggerhead Shrike	<i>Lanius ludovicianus</i>	0.01%	2017	2017
Northern Harrier	<i>Circus cyaneus</i>	0.01%	2019	2019
Peregrine Falcon	<i>Falco peregrinus</i>	0.01%	2018	2018
Savannah Sparrow	<i>Passerculus sandwichensis</i>	0.01%	2018	2018
Solitary Sandpiper	<i>Tringa solitaria</i>	0.01%	2022	2022
Sora	<i>Porzana carolina</i>	0.01%	2021	2021
Vesper Sparrow	<i>Poocetes gramineus</i>	0.01%	2019	2019
Whimbrel	<i>Numenius phaeopus</i>	0.01%	2018	2018
Willet	<i>Tringa semipalmata</i>	0.01%	2021	2021
Yellow-rumped Warbler	<i>Setophaga coronata</i>	0.01%	2018	2018

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Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Brewer's Sparrow	<i>Spizella breweri</i>	7.55%	2018	2021
American Robin	<i>Turdus migratorius</i>	6.33%	2018	2021
Pine Siskin	<i>Spinus pinus</i>	5.50%	2018	2021
Warbling Vireo	<i>Vireo gilvus</i>	4.61%	2018	2021
Vesper Sparrow	<i>Poocetes gramineus</i>	4.57%	2018	2021
Green-tailed Towhee	<i>Pipilo chlorurus</i>	4.33%	2018	2021
Yellow-rumped Warbler	<i>Setophaga coronata</i>	4.23%	2018	2021
Chipping Sparrow	<i>Spizella passerina</i>	3.97%	2018	2021
Northern Flicker	<i>Colaptes auratus</i>	3.91%	2018	2021
House Wren	<i>Troglodytes aedon</i>	3.58%	2018	2021
Western Tanager	<i>Piranga ludoviciana</i>	3.19%	2018	2021
Dark-eyed Junco	<i>Junco hyemalis</i>	2.83%	2018	2021
Mountain Bluebird	<i>Sialia currucoides</i>	2.80%	2018	2021
Mountain Chickadee	<i>Poecile gambeli</i>	2.78%	2018	2021
Ruby-crowned Kinglet	<i>Regulus calendula</i>	2.59%	2018	2021
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	1.95%	2018	2021
Clark's Nutcracker	<i>Nucifraga columbiana</i>	1.87%	2018	2021
Red Crossbill	<i>Loxia curvirostra</i>	1.87%	2018	2021
Dusky Flycatcher	<i>Empidonax oberholseri</i>	1.84%	2018	2021
Hermit Thrush	<i>Catharus guttatus</i>	1.61%	2018	2021

commonName	scientificName	meanRA	minYear	maxYear
Common Raven	<i>Corvus corax</i>	1.61%	2018	2021
Western Wood-Pewee	<i>Contopus sordidulus</i>	1.56%	2018	2021
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	1.25%	2018	2019
Tree Swallow	<i>Tachycineta bicolor</i>	1.14%	2018	2021
Violet-green Swallow	<i>Tachycineta thalassina</i>	1.09%	2018	2021
Hammond's Flycatcher	<i>Empidonax hammondii</i>	1.07%	2018	2021
Lincoln's Sparrow	<i>Melospiza lincolni</i>	1.07%	2018	2021
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	1.06%	2018	2021
Red-breasted Nuthatch	<i>Sitta canadensis</i>	0.99%	2018	2021
Cassin's Finch	<i>Haemorhous cassinii</i>	0.99%	2018	2021
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	0.99%	2018	2021
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	0.90%	2018	2021
Olive-sided Flycatcher	<i>Contopus cooperi</i>	0.90%	2018	2021
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.60%	2018	2021
Brown-headed Cowbird	<i>Molothrus ater</i>	0.55%	2018	2021
Sandhill Crane	<i>Grus canadensis</i>	0.55%	2018	2021
Common Yellowthroat	<i>Geothlypis trichas</i>	0.54%	2018	2021
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>	0.54%	2018	2021
Western Meadowlark	<i>Sturnella neglecta</i>	0.50%	2018	2021
Yellow Warbler	<i>Setophaga petechia</i>	0.47%	2018	2021
Swainson's Thrush	<i>Catharus ustulatus</i>	0.41%	2018	2021
Rock Wren	<i>Salpinctes obsoletus</i>	0.39%	2018	2021
Song Sparrow	<i>Melospiza melodia</i>	0.39%	2018	2021
Townsend's Solitaire	<i>Myadestes townsendi</i>	0.36%	2018	2021
Sora	<i>Porzana carolina</i>	0.34%	2018	2020
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.33%	2018	2021
Sage Thrasher	<i>Oreoscoptes montanus</i>	0.31%	2018	2021
Wilson's Snipe	<i>Gallinago delicata</i>	0.29%	2018	2021
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	0.29%	2018	2021
Killdeer	<i>Charadrius vociferus</i>	0.28%	2018	2021
Cordilleran Flycatcher	<i>Empidonax occidentalis</i>	0.24%	2018	2021
Black-billed Magpie	<i>Pica hudsonia</i>	0.23%	2018	2021
Lazuli Bunting	<i>Passerina amoena</i>	0.23%	2018	2021
European Starling	<i>Sturnus vulgaris</i>	0.23%	2018	2020
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>	0.20%	2018	2021
Mallard	<i>Anas platyrhynchos</i>	0.20%	2018	2020
Horned Lark	<i>Eremophila alpestris</i>	0.18%	2018	2021
Savannah Sparrow	<i>Passerculus sandwichensis</i>	0.18%	2019	2020
Hairy Woodpecker	<i>Picoides villosus</i>	0.16%	2018	2020
American Coot	<i>Fulica americana</i>	0.16%	2018	2021

commonName	scientificName	meanRA	minYear	maxYear
American Kestrel	<i>Falco sparverius</i>	0.11%	2018	2020
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.10%	2019	2021
Willow Flycatcher	<i>Empidonax traillii</i>	0.10%	2018	2021
Ruffed Grouse	<i>Bonasa umbellus</i>	0.10%	2021	2021
Common Nighthawk	<i>Chordeiles minor</i>	0.08%	2018	2020
Sagebrush Sparrow	<i>Artemisiospiza nevadensis</i>	0.08%	2021	2021
Dusky Grouse	<i>Dendragapus obscurus</i>	0.08%	2019	2020
American Goldfinch	<i>Spinus tristis</i>	0.08%	2018	2019
Canada Goose	<i>Branta canadensis</i>	0.08%	2018	2018
American Crow	<i>Corvus brachyrhynchos</i>	0.07%	2018	2020
Canada Jay	<i>Perisoreus canadensis</i>	0.07%	2018	2019
Spotted Sandpiper	<i>Actitis macularius</i>	0.07%	2018	2021
Gadwall	<i>Anas strepera</i>	0.07%	2018	2018
Hooded Merganser	<i>Lophodytes cucullatus</i>	0.07%	2021	2021
Wilson's Warbler	<i>Cardellina pusilla</i>	0.05%	2019	2020
Mourning Dove	<i>Zenaida macroura</i>	0.05%	2018	2020
Blue-winged Teal	<i>Anas discors</i>	0.03%	2018	2018
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	0.03%	2018	2019
Brown Creeper	<i>Certhia americana</i>	0.03%	2020	2021
Downy Woodpecker	<i>Picoides pubescens</i>	0.03%	2019	2020
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	0.03%	2019	2019
Lesser Scaup	<i>Aythya affinis</i>	0.03%	2018	2018
American Dipper	<i>Cinclus mexicanus</i>	0.02%	2018	2018
Barn Swallow	<i>Hirundo rustica</i>	0.02%	2018	2018
Black-capped Chickadee	<i>Poecile atricapillus</i>	0.02%	2021	2021
Bullock's Oriole	<i>Icterus bullockii</i>	0.02%	2019	2019
Common Merganser	<i>Mergus merganser</i>	0.02%	2018	2018
Golden-crowned Kinglet	<i>Regulus satrapa</i>	0.02%	2018	2018
Gray Catbird	<i>Dumetella carolinensis</i>	0.02%	2018	2018
Green-throated Carib	<i>Eulampis holosericeus</i>	0.02%	2019	2019
Harlequin Duck	<i>Histrionicus histrionicus</i>	0.02%	2019	2019
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.02%	2018	2018
Ring-necked Duck	<i>Aythya collaris</i>	0.02%	2019	2019
Spotted Towhee	<i>Pipilo maculatus</i>	0.02%	2020	2020
White-throated Swift	<i>Aeronautes saxatalis</i>	0.02%	2019	2019

D.32 D13 – NIWO – Niwot Ridge NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	12.93%	2015	2022
Hermit Thrush	<i>Catharus guttatus</i>	10.00%	2015	2022
Dark-eyed Junco	<i>Junco hyemalis</i>	9.43%	2015	2022
Mountain Chickadee	<i>Poecile gambeli</i>	7.90%	2015	2022
Ruby-crowned Kinglet	<i>Regulus calendula</i>	7.77%	2015	2022
American Pipit	<i>Anthus rubescens</i>	7.17%	2015	2022
Yellow-rumped Warbler	<i>Setophaga coronata</i>	7.13%	2015	2022
American Robin	<i>Turdus migratorius</i>	5.27%	2015	2022
Red Crossbill	<i>Loxia curvirostra</i>	3.87%	2015	2022
Lincoln's Sparrow	<i>Melospiza lincolni</i>	3.77%	2015	2022
Pine Siskin	<i>Spinus pinus</i>	3.73%	2015	2022
Horned Lark	<i>Eremophila alpestris</i>	2.77%	2015	2022
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	2.20%	2015	2022
Red-breasted Nuthatch	<i>Sitta canadensis</i>	1.67%	2015	2022
Clark's Nutcracker	<i>Nucifraga columbiana</i>	1.37%	2017	2022
Steller's Jay	<i>Cyanocitta stelleri</i>	1.20%	2015	2022
Brown Creeper	<i>Certhia americana</i>	1.13%	2015	2022
Cordilleran Flycatcher	<i>Empidonax occidentalis</i>	0.97%	2015	2022
Canada Jay	<i>Perisoreus canadensis</i>	0.87%	2015	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.77%	2015	2022
Common Raven	<i>Corvus corax</i>	0.67%	2018	2022
Dusky Flycatcher	<i>Empidonax oberholseri</i>	0.60%	2015	2022
Northern Flicker	<i>Colaptes auratus</i>	0.57%	2017	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.50%	2015	2022
Pine Grosbeak	<i>Pinicola enucleator</i>	0.47%	2018	2022
Rock Wren	<i>Salpinctes obsoletus</i>	0.43%	2017	2022
Brown-capped Rosy-Finch	<i>Leucosticte australis</i>	0.37%	2018	2018
Townsend's Solitaire	<i>Myadestes townsendi</i>	0.33%	2015	2022
Wilson's Warbler	<i>Cardellina pusilla</i>	0.33%	2015	2019
Mountain Bluebird	<i>Sialia currucoides</i>	0.30%	2015	2020
Dusky Grouse	<i>Dendragapus obscurus</i>	0.30%	2018	2022
White-tailed Ptarmigan	<i>Lagopus leucura</i>	0.27%	2015	2021
American Crow	<i>Corvus brachyrhynchos</i>	0.23%	2019	2022
Golden-crowned Kinglet	<i>Regulus satrapa</i>	0.20%	2015	2018
House Wren	<i>Troglodytes aedon</i>	0.17%	2015	2018
Pygmy Nuthatch	<i>Sitta pygmaea</i>	0.17%	2015	2020
American Three-toed Woodpecker	<i>Picoides dorsalis</i>	0.13%	2017	2018
Hammond's Flycatcher	<i>Empidonax hammondii</i>	0.13%	2015	2018
Western Tanager	<i>Piranga ludoviciana</i>	0.13%	2015	2022
Mourning Dove	<i>Zenaida macroura</i>	0.10%	2020	2021

commonName	scientificName	meanRA	minYear	maxYear
Chipping Sparrow	<i>Spizella passerina</i>	0.07%	2021	2021
Orange-crowned Warbler	<i>Oreothlypis celata</i>	0.07%	2019	2019
Cassin's Finch	<i>Haemorhous cassinii</i>	0.03%	2017	2017
Downy Woodpecker	<i>Picoides pubescens</i>	0.03%	2015	2015
Great Horned Owl	<i>Bubo virginianus</i>	0.03%	2015	2015
Prairie Falcon	<i>Falco mexicanus</i>	0.03%	2017	2017
Sharp-shinned Hawk	<i>Accipiter striatus</i>	0.03%	2018	2018
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>	0.03%	2017	2017
Wilson's Snipe	<i>Gallinago delicata</i>	0.03%	2017	2017

D.33 D13 – MOAB – Moab NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Horned Lark	<i>Eremophila alpestris</i>	17.36%	2015	2022
Common Raven	<i>Corvus corax</i>	7.19%	2015	2022
Lark Sparrow	<i>Chondestes grammacus</i>	6.96%	2015	2022
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	5.63%	2015	2022
Black-throated Sparrow	<i>Amphispiza bilineata</i>	5.42%	2015	2022
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	5.18%	2015	2022
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	3.87%	2015	2022
Sagebrush Sparrow	<i>Artemisospiza nevadensis</i>	3.77%	2015	2022
Western Meadowlark	<i>Sturnella neglecta</i>	3.43%	2015	2022
Bewick's Wren	<i>Thryomanes bewickii</i>	3.21%	2015	2022
Gray Vireo	<i>Vireo vicinior</i>	2.83%	2015	2022
White-throated Swift	<i>Aeronautes saxatalis</i>	2.61%	2015	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	2.29%	2015	2022
Chipping Sparrow	<i>Spizella passerina</i>	2.20%	2015	2022
Mourning Dove	<i>Zenaida macroura</i>	2.18%	2015	2022
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	1.97%	2015	2022
House Finch	<i>Haemorhous mexicanus</i>	1.95%	2015	2022
Violet-green Swallow	<i>Tachycineta thalassina</i>	1.88%	2015	2022
Gray Flycatcher	<i>Empidonax wrightii</i>	1.60%	2015	2022
Juniper Titmouse	<i>Baeolophus ridgwayi</i>	1.54%	2015	2022
Rock Wren	<i>Salpinctes obsoletus</i>	1.48%	2015	2022
Mountain Bluebird	<i>Sialia currucoides</i>	1.30%	2015	2022
Bushtit	<i>Psaltriparus minimus</i>	1.13%	2015	2022
Brewer's Sparrow	<i>Spizella breweri</i>	1.03%	2015	2022

commonName	scientificName	meanRA	minYear	maxYear
Woodhouse's Scrub-Jay	<i>Aphelocoma woodhouseii</i>	0.75%	2017	2022
Vesper Sparrow	<i>Poocetes gramineus</i>	0.73%	2015	2019
Say's Phoebe	<i>Sayornis saya</i>	0.71%	2015	2022
Cassin's Kingbird	<i>Tyrannus vociferans</i>	0.68%	2015	2021
Canyon Wren	<i>Catherpes mexicanus</i>	0.60%	2015	2022
Black-billed Magpie	<i>Pica hudsonia</i>	0.56%	2015	2021
Brown-headed Cowbird	<i>Molothrus ater</i>	0.43%	2015	2022
Spotted Towhee	<i>Pipilo maculatus</i>	0.36%	2015	2022
California Scrub-Jay	<i>Aphelocoma californica</i>	0.34%	2015	2015
Plumbeous Vireo	<i>Vireo plumbeus</i>	0.30%	2015	2019
Northern Flicker	<i>Colaptes auratus</i>	0.28%	2015	2021
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0.19%	2017	2022
Loggerhead Shrike	<i>Lanius ludovicianus</i>	0.19%	2015	2021
Canada Goose	<i>Branta canadensis</i>	0.19%	2019	2022
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	0.17%	2017	2020
American Crow	<i>Corvus brachyrhynchos</i>	0.17%	2015	2017
Sage Thrasher	<i>Oreoscoptes montanus</i>	0.15%	2019	2021
Barn Swallow	<i>Hirundo rustica</i>	0.13%	2017	2020
Common Nighthawk	<i>Chordeiles minor</i>	0.13%	2015	2021
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.13%	2015	2022
American Kestrel	<i>Falco sparverius</i>	0.11%	2015	2022
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	0.11%	2015	2021
Western Tanager	<i>Piranga ludoviciana</i>	0.11%	2015	2022
White-throated Sparrow	<i>Zonotrichia albicollis</i>	0.11%	2015	2015
Warbling Vireo	<i>Vireo gilvus</i>	0.08%	2017	2019
Western Wood-Pewee	<i>Contopus sordidulus</i>	0.08%	2017	2020
Golden Eagle	<i>Aquila chrysaetos</i>	0.08%	2015	2017
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	0.04%	2021	2022
Bullock's Oriole	<i>Icterus bullockii</i>	0.04%	2019	2019
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	0.04%	2015	2020
Cooper's Hawk	<i>Accipiter cooperii</i>	0.04%	2015	2022
Great Horned Owl	<i>Bubo virginianus</i>	0.04%	2015	2020
Northern Harrier	<i>Circus cyaneus</i>	0.04%	2017	2017
Pine Siskin	<i>Spinus pinus</i>	0.04%	2018	2021
Turkey Vulture	<i>Cathartes aura</i>	0.04%	2015	2015
Virginia's Warbler	<i>Oreothlypis virginiae</i>	0.04%	2019	2019
Western Bluebird	<i>Sialia mexicana</i>	0.04%	2019	2021
Western Kingbird	<i>Tyrannus verticalis</i>	0.04%	2015	2017
Hammond's Flycatcher	<i>Empidonax hammondi</i>	0.04%	2015	2015
American Robin	<i>Turdus migratorius</i>	0.02%	2021	2021

commonName	scientificName	meanRA	minYear	maxYear
Band-tailed Pigeon	<i>Patagioenas fasciata</i>	0.02%	2020	2020
Blue Grosbeak	<i>Passerina caerulea</i>	0.02%	2015	2015
Dusky Flycatcher	<i>Empidonax oberholseri</i>	0.02%	2017	2017
Green-tailed Towhee	<i>Pipilo chlorurus</i>	0.02%	2019	2019
Lazuli Bunting	<i>Passerina amoena</i>	0.02%	2022	2022
Lesser Goldfinch	<i>Spinus psaltria</i>	0.02%	2020	2020
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.02%	2020	2020
Peregrine Falcon	<i>Falco peregrinus</i>	0.02%	2022	2022
Prairie Falcon	<i>Falco mexicanus</i>	0.02%	2019	2019
Red-breasted Nuthatch	<i>Sitta canadensis</i>	0.02%	2018	2018
Unknown Finch	<i>Fringillidae sp.</i>	0.02%	2018	2018
Wilson's Warbler	<i>Cardellina pusilla</i>	0.02%	2018	2018
Yellow-breasted Chat	<i>Icteria virens</i>	0.02%	2020	2020
Yellow-rumped Warbler	<i>Setophaga coronata</i>	0.02%	2019	2019

D.34 D14 – SRER – Santa Rita Experimental Range NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Cactus Wren	<i>Campylorhynchus brunneicapillus</i>	11.52%	2017	2022
White-winged Dove	<i>Zenaida asiatica</i>	9.06%	2017	2022
Gambel's Quail	<i>Callipepla gambelii</i>	9.03%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	8.00%	2017	2022
Curve-billed Thrasher	<i>Toxostoma curvirostre</i>	5.59%	2017	2022
Rufous-winged Sparrow	<i>Peucaea carpalis</i>	5.21%	2017	2022
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	5.00%	2017	2022
Lucy's Warbler	<i>Oreothlypis luciae</i>	4.55%	2017	2022
Black-throated Sparrow	<i>Amphispiza bilineata</i>	4.22%	2017	2022
Pyrrhuloxia	<i>Cardinalis sinuatus</i>	3.69%	2017	2022
Verdin	<i>Auriparus flaviceps</i>	3.41%	2017	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	2.70%	2017	2022
Canyon Towhee	<i>Melospiza fusca</i>	2.35%	2017	2022
Gila Woodpecker	<i>Melanerpes uropygialis</i>	2.02%	2017	2022
Ladder-backed Woodpecker	<i>Picoides scalaris</i>	1.81%	2017	2022
Phainopepla	<i>Phainopepla nitens</i>	1.34%	2017	2022
Black-tailed Gnatcatcher	<i>Poliophtila melanura</i>	1.23%	2017	2022
Common Raven	<i>Corvus corax</i>	1.16%	2017	2022
Green-tailed Towhee	<i>Pipilo chlorurus</i>	1.15%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Greater Roadrunner	<i>Geococcyx californianus</i>	1.14%	2017	2022
Brewer's Sparrow	<i>Spizella breweri</i>	1.05%	2018	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	1.04%	2017	2022
House Finch	<i>Haemorhous mexicanus</i>	0.87%	2017	2022
Bullock's Oriole	<i>Icterus bullockii</i>	0.86%	2017	2022
Turkey Vulture	<i>Cathartes aura</i>	0.84%	2017	2021
Bell's Vireo	<i>Vireo bellii</i>	0.83%	2017	2022
Lark Bunting	<i>Calamospiza melanocorys</i>	0.80%	2019	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.58%	2018	2021
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.54%	2017	2022
Scaled Quail	<i>Callipepla squamata</i>	0.53%	2017	2022
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>	0.49%	2017	2022
Botteri's Sparrow	<i>Peucaea botterii</i>	0.43%	2017	2022
Scott's Oriole	<i>Icterus parisorum</i>	0.43%	2017	2022
White-throated Swift	<i>Aeronautes saxatalis</i>	0.38%	2021	2021
Gray Flycatcher	<i>Empidonax wrightii</i>	0.37%	2017	2022
Wilson's Warbler	<i>Cardellina pusilla</i>	0.37%	2017	2022
Gilded Flicker	<i>Colaptes chrysoides</i>	0.36%	2017	2022
Lesser Nighthawk	<i>Chordeiles acutipennis</i>	0.35%	2018	2022
Great Horned Owl	<i>Bubo virginianus</i>	0.31%	2018	2022
Lark Sparrow	<i>Chondestes grammacus</i>	0.29%	2018	2022
Western Kingbird	<i>Tyrannus verticalis</i>	0.27%	2017	2022
Northern Cardinal	<i>Cardinalis cardinalis</i>	0.25%	2017	2022
Swainson's Hawk	<i>Buteo swainsoni</i>	0.23%	2017	2022
Cassin's Kingbird	<i>Tyrannus vociferans</i>	0.23%	2017	2022
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	0.22%	2018	2022
Cassin's Sparrow	<i>Peucaea cassinii</i>	0.22%	2018	2020
Western Tanager	<i>Piranga ludoviciana</i>	0.17%	2017	2022
Costa's Hummingbird	<i>Calypte costae</i>	0.14%	2017	2022
Vermilion Flycatcher	<i>Pyrocephalus rubinus</i>	0.14%	2017	2022
Chihuahuan Raven	<i>Corvus cryptoleucus</i>	0.14%	2017	2017
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	0.13%	2017	2021
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	0.13%	2017	2022
Lesser Goldfinch	<i>Spinus psaltria</i>	0.13%	2018	2022
Violet-green Swallow	<i>Tachycineta thalassina</i>	0.12%	2018	2021
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.10%	2017	2021
Rock Wren	<i>Salpinctes obsoletus</i>	0.09%	2018	2022
Orange-crowned Warbler	<i>Oreothlypis celata</i>	0.09%	2018	2022
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	0.09%	2019	2020
Bewick's Wren	<i>Thryomanes bewickii</i>	0.06%	2018	2021
Loggerhead Shrike	<i>Lanius ludovicianus</i>	0.06%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Lazuli Bunting	<i>Passerina amoena</i>	0.05%	2018	2020
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	0.04%	2018	2022
Townsend's Warbler	<i>Setophaga townsendi</i>	0.04%	2017	2019
Virginia's Warbler	<i>Oreothlypis virginiae</i>	0.04%	2017	2019
Common Nighthawk	<i>Chordeiles minor</i>	0.04%	2017	2017
Gray Hawk	<i>Buteo plagiatus</i>	0.04%	2017	2017
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	0.04%	2019	2021
Cassin's Vireo	<i>Vireo cassinii</i>	0.03%	2019	2021
Hepatic Tanager	<i>Piranga flava</i>	0.03%	2022	2022
Olive-sided Flycatcher	<i>Contopus cooperi</i>	0.03%	2017	2019
Western Wood-Pewee	<i>Contopus sordidulus</i>	0.03%	2017	2017
American Kestrel	<i>Falco sparverius</i>	0.02%	2017	2021
Barn Swallow	<i>Hirundo rustica</i>	0.02%	2021	2022
Black-chinned Sparrow	<i>Spizella atrogularis</i>	0.02%	2020	2020
Canyon Wren	<i>Catherpes mexicanus</i>	0.02%	2018	2018
Cooper's Hawk	<i>Accipiter cooperii</i>	0.02%	2021	2021
Montezuma Quail	<i>Cyrtonyx montezumae</i>	0.02%	2017	2017
Yellow Warbler	<i>Setophaga petechia</i>	0.02%	2019	2021
Hermit Thrush	<i>Catharus guttatus</i>	0.02%	2021	2021
Mexican Jay	<i>Aphelocoma wollweberi</i>	0.02%	2017	2017
Purple Martin	<i>Progne subis</i>	0.02%	2017	2017
Rock Pigeon	<i>Columba livia</i>	0.02%	2021	2021
Tree Swallow	<i>Tachycineta bicolor</i>	0.02%	2017	2017
American Pipit	<i>Anthus rubescens</i>	0.01%	2019	2019
Anna's Hummingbird	<i>Calypte anna</i>	0.01%	2022	2022
Cackling Goose	<i>Branta hutchinsii</i>	0.01%	2020	2020
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0.01%	2021	2021
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	0.01%	2021	2021
Dusky Flycatcher	<i>Empidonax oberholseri</i>	0.01%	2019	2019
Hermit Warbler	<i>Setophaga occidentalis</i>	0.01%	2021	2021
House Wren	<i>Troglodytes aedon</i>	0.01%	2020	2020
Hutton's Vireo	<i>Vireo huttoni</i>	0.01%	2021	2021
Plumbeous Vireo	<i>Vireo plumbeus</i>	0.01%	2022	2022
Sage Thrasher	<i>Oreoscoptes montanus</i>	0.01%	2021	2021
Sharp-shinned Hawk	<i>Accipiter striatus</i>	0.01%	2020	2020
Varied Bunting	<i>Passerina versicolor</i>	0.01%	2019	2019
Vesper Sparrow	<i>Pooecetes gramineus</i>	0.01%	2022	2022
Warbling Vireo	<i>Vireo gilvus</i>	0.01%	2022	2022
Western Bluebird	<i>Sialia mexicana</i>	0.01%	2019	2019
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.01%	2021	2021
Zone-tailed Hawk	<i>Buteo albonotatus</i>	0.01%	2018	2018

D.35 D14 – JORN – Jornada Experimental Range NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Black-throated Sparrow	<i>Amphispiza bilineata</i>	16.22%	2017	2022
Chihuahuan Raven	<i>Corvus cryptoleucus</i>	13.81%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	7.52%	2017	2022
Brewer's Sparrow	<i>Spizella breweri</i>	6.59%	2017	2022
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	5.95%	2017	2022
Cactus Wren	<i>Campylorhynchus brunneicapillus</i>	5.33%	2017	2022
Scaled Quail	<i>Callipepla squamata</i>	4.32%	2017	2022
Swainson's Hawk	<i>Buteo swainsoni</i>	4.09%	2017	2022
Scott's Oriole	<i>Icterus parisorum</i>	3.89%	2017	2022
Lark Bunting	<i>Calamospiza melanocorys</i>	3.43%	2017	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	2.97%	2017	2022
Chipping Sparrow	<i>Spizella passerina</i>	2.81%	2017	2022
Loggerhead Shrike	<i>Lanius ludovicianus</i>	2.72%	2017	2022
Western Kingbird	<i>Tyrannus verticalis</i>	1.59%	2017	2022
Pyrrhuloxia	<i>Cardinalis sinuatus</i>	1.53%	2017	2022
Northern Harrier	<i>Circus cyaneus</i>	1.28%	2017	2022
Horned Lark	<i>Eremophila alpestris</i>	1.19%	2018	2022
Violet-green Swallow	<i>Tachycineta thalassina</i>	1.04%	2017	2022
Black-tailed Gnatcatcher	<i>Polioptila melanura</i>	0.91%	2018	2021
Greater Roadrunner	<i>Geococcyx californianus</i>	0.80%	2017	2022
Crissal Thrasher	<i>Toxostoma crissale</i>	0.69%	2017	2021
House Finch	<i>Haemorhous mexicanus</i>	0.60%	2017	2022
Curve-billed Thrasher	<i>Toxostoma curvirostre</i>	0.53%	2018	2022
Lesser Nighthawk	<i>Chordeiles acutipennis</i>	0.49%	2017	2022
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	0.46%	2017	2022
Verdin	<i>Auriparus flaviceps</i>	0.44%	2018	2022
Turkey Vulture	<i>Cathartes aura</i>	0.42%	2018	2022
Golden Eagle	<i>Aquila chrysaetos</i>	0.42%	2018	2021
Barn Swallow	<i>Hirundo rustica</i>	0.42%	2017	2021
Bewick's Wren	<i>Thryomanes bewickii</i>	0.40%	2018	2021
Gambel's Quail	<i>Callipepla gambelii</i>	0.40%	2019	2022
Clay-colored Sparrow	<i>Spizella pallida</i>	0.40%	2017	2022
Blue Grosbeak	<i>Passerina caerulea</i>	0.33%	2017	2021
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.31%	2017	2021
Sandhill Crane	<i>Grus canadensis</i>	0.31%	2019	2019

commonName	scientificName	meanRA	minYear	maxYear
Say's Phoebe	<i>Sayornis saya</i>	0.27%	2018	2022
Cassin's Sparrow	<i>Peucaea cassinii</i>	0.24%	2019	2022
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	0.18%	2018	2020
Lesser Goldfinch	<i>Spinus psaltria</i>	0.15%	2017	2020
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	0.13%	2017	2022
Ladder-backed Woodpecker	<i>Picoides scalaris</i>	0.13%	2017	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	0.11%	2021	2022
Green-tailed Towhee	<i>Pipilo chlorurus</i>	0.11%	2018	2019
Savannah Sparrow	<i>Passerculus sandwichensis</i>	0.11%	2018	2022
Lark Sparrow	<i>Chondestes grammacus</i>	0.11%	2020	2022
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.11%	2017	2018
Cooper's Hawk	<i>Accipiter cooperii</i>	0.09%	2017	2019
Thick-billed Longspur	<i>Rhynchophanes mccownii</i>	0.09%	2019	2021
Unknown Thrasher	<i>Toxostoma sp.</i>	0.09%	2019	2022
White-winged Dove	<i>Zenaida asiatica</i>	0.09%	2017	2021
American Kestrel	<i>Falco sparverius</i>	0.07%	2018	2021
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0.07%	2017	2017
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	0.04%	2020	2020
Eastern Meadowlark	<i>Sturnella magna</i>	0.04%	2018	2018
Lucy's Warbler	<i>Oreothlypis luciae</i>	0.04%	2017	2017
Prairie Falcon	<i>Falco mexicanus</i>	0.04%	2019	2019
Wilson's Warbler	<i>Cardellina pusilla</i>	0.04%	2017	2021
Cassin's Kingbird	<i>Tyrannus vociferans</i>	0.02%	2017	2017
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	0.02%	2021	2021
Dusky Flycatcher	<i>Empidonax oberholseri</i>	0.02%	2017	2017
Killdeer	<i>Charadrius vociferus</i>	0.02%	2018	2018
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	0.02%	2017	2017
Purple Martin	<i>Progne subis</i>	0.02%	2018	2018
White-throated Swift	<i>Aeronautes saxatalis</i>	0.02%	2020	2020

D.36 D15 – ONAQ – Onaqui NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Western Meadowlark	<i>Sturnella neglecta</i>	24.21%	2017	2022
Brewer's Sparrow	<i>Spizella breweri</i>	9.64%	2017	2022
Horned Lark	<i>Eremophila alpestris</i>	8.73%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	6.12%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Lark Sparrow	<i>Chondestes grammacus</i>	4.11%	2017	2022
Gray Flycatcher	<i>Empidonax wrightii</i>	3.61%	2017	2022
Common Raven	<i>Corvus corax</i>	3.67%	2017	2022
Sagebrush Sparrow	<i>Artemisospiza nevadensis</i>	3.05%	2017	2022
Sage Thrasher	<i>Oreoscoptes montanus</i>	2.17%	2017	2022
House Finch	<i>Haemorhous mexicanus</i>	1.92%	2017	2022
Bewick's Wren	<i>Thryomanes bewickii</i>	1.57%	2017	2022
Chipping Sparrow	<i>Spizella passerina</i>	1.54%	2017	2022
Black-throated Sparrow	<i>Amphispiza bilineata</i>	1.41%	2018	2022
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	1.38%	2017	2022
Spotted Towhee	<i>Pipilo maculatus</i>	1.32%	2017	2022
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	1.32%	2017	2022
Juniper Titmouse	<i>Baeolophus ridgwayi</i>	1.10%	2017	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	1.07%	2017	2022
Gray Vireo	<i>Vireo vicinior</i>	0.94%	2018	2022
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	5.84%	2017	2021
Brown-headed Cowbird	<i>Molothrus ater</i>	0.82%	2017	2022
Loggerhead Shrike	<i>Lanius ludovicianus</i>	0.69%	2017	2022
Mountain Bluebird	<i>Sialia currucoides</i>	0.63%	2017	2020
Woodhouse's Scrub-Jay	<i>Aphelocoma woodhouseii</i>	0.60%	2018	2022
Sandhill Crane	<i>Grus canadensis</i>	0.85%	2017	2022
Western Tanager	<i>Piranga ludoviciana</i>	0.60%	2017	2021
Common Nighthawk	<i>Chordeiles minor</i>	0.50%	2018	2022
American Robin	<i>Turdus migratorius</i>	0.50%	2018	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.91%	2017	2022
Canada Goose	<i>Branta canadensis</i>	0.47%	2017	2022
Plumbeous Vireo	<i>Vireo plumbeus</i>	0.28%	2017	2022
Swainson's Hawk	<i>Buteo swainsoni</i>	0.28%	2018	2021
Lazuli Bunting	<i>Passerina amoena</i>	0.25%	2017	2022
Northern Harrier	<i>Circus cyaneus</i>	0.25%	2019	2022
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	0.22%	2017	2022
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	0.22%	2017	2022
Black-billed Magpie	<i>Pica hudsonia</i>	0.19%	2019	2021
Yellow-rumped Warbler	<i>Setophaga coronata</i>	0.50%	2017	2019
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	0.35%	2020	2022
Killdeer	<i>Charadrius vociferus</i>	0.16%	2022	2022
Rock Wren	<i>Salpinctes obsoletus</i>	0.16%	2017	2021
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	0.13%	2017	2020
Bushtit	<i>Psaltriparus minimus</i>	0.19%	2018	2022

commonName	scientificName	meanRA	minYear	maxYear
Long-billed Curlew	<i>Numenius americanus</i>	0.41%	2022	2022
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	0.13%	2017	2020
American Coot	<i>Fulica americana</i>	0.63%	2022	2022
American Kestrel	<i>Falco sparverius</i>	0.09%	2019	2019
Pine Siskin	<i>Spinus pinus</i>	0.09%	2017	2020
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	0.06%	2017	2022
Cooper's Hawk	<i>Accipiter cooperii</i>	0.06%	2022	2022
Dusky Flycatcher	<i>Empidonax oberholseri</i>	0.06%	2018	2020
Golden Eagle	<i>Aquila chrysaetos</i>	0.06%	2019	2019
Green-tailed Towhee	<i>Pipilo chlorurus</i>	0.06%	2018	2020
Northern Flicker	<i>Colaptes auratus</i>	0.06%	2021	2021
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.06%	2017	2019
Say's Phoebe	<i>Sayornis saya</i>	0.06%	2018	2022
Vesper Sparrow	<i>Pooecetes gramineus</i>	0.06%	2018	2020
Violet-green Swallow	<i>Tachycineta thalassina</i>	0.09%	2017	2017
Western Kingbird	<i>Tyrannus verticalis</i>	0.06%	2018	2021
Barn Swallow	<i>Hirundo rustica</i>	0.03%	2021	2021
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	0.03%	2020	2020
Bullock's Oriole	<i>Icterus bullockii</i>	0.03%	2022	2022
Cassin's Finch	<i>Haemorhous cassinii</i>	0.03%	2020	2020
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	0.03%	2022	2022
Forster's Tern	<i>Sterna forsteri</i>	0.03%	2022	2022
Great Horned Owl	<i>Bubo virginianus</i>	0.03%	2020	2020
House Sparrow	<i>Passer domesticus</i>	0.06%	2022	2022
Lark Bunting	<i>Calamospiza melanocorys</i>	0.06%	2019	2019
Lesser Goldfinch	<i>Spinus psaltria</i>	0.03%	2020	2020
Mallard	<i>Anas platyrhynchos</i>	0.16%	2022	2022
Peregrine Falcon	<i>Falco peregrinus</i>	0.06%	2021	2021
Prairie Falcon	<i>Falco mexicanus</i>	0.03%	2019	2019
Turkey Vulture	<i>Cathartes aura</i>	0.03%	2019	2019
Warbling Vireo	<i>Vireo gilvus</i>	0.03%	2019	2019
Western Wood-Pewee	<i>Contopus sordidulus</i>	0.03%	2017	2017
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	0.03%	2017	2017
Willet	<i>Tringa semipalmata</i>	0.03%	2020	2020

D.37 D16 – WREF – Wind River Experimental Forest NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Red-breasted Nuthatch	<i>Sitta canadensis</i>	11.87%	2018	2022
Pacific Wren	<i>Troglodytes pacificus</i>	7.89%	2018	2022
Townsend's or Hermit Warbler	<i>Setophaga occidentalis/townsendi</i>	7.74%	2021	2022
Hermit Thrush	<i>Catharus guttatus</i>	7.70%	2018	2022
Dark-eyed Junco	<i>Junco hyemalis</i>	7.29%	2018	2022
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>	6.74%	2018	2022
Chestnut-backed Chickadee	<i>Poecile rufescens</i>	5.40%	2018	2022
Golden-crowned Kinglet	<i>Regulus satrapa</i>	3.65%	2018	2022
Western Tanager	<i>Piranga ludoviciana</i>	3.50%	2018	2022
Brown Creeper	<i>Certhia americana</i>	3.20%	2018	2022
Red Crossbill	<i>Loxia curvirostra</i>	3.13%	2018	2022
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	2.94%	2018	2022
Swainson's Thrush	<i>Catharus ustulatus</i>	2.83%	2018	2022
Hermit Warbler	<i>Setophaga occidentalis</i>	2.79%	2018	2022
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	1.97%	2018	2022
Steller's Jay	<i>Cyanocitta stelleri</i>	1.82%	2018	2022
Varied Thrush	<i>Ixoreus naevius</i>	1.79%	2018	2021
Hairy Woodpecker	<i>Picoides villosus</i>	1.56%	2018	2022
American Robin	<i>Turdus migratorius</i>	1.38%	2018	2022
Canada Jay	<i>Perisoreus canadensis</i>	1.34%	2018	2022
Northern Flicker	<i>Colaptes auratus</i>	1.08%	2018	2022
Common Raven	<i>Corvus corax</i>	0.89%	2018	2022
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	0.82%	2018	2022
Pine Siskin	<i>Spinus pinus</i>	0.82%	2018	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.74%	2018	2022
Band-tailed Pigeon	<i>Patagioenas fasciata</i>	0.71%	2018	2022
Black-capped Chickadee	<i>Poecile atricapillus</i>	0.60%	2018	2021
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	0.48%	2019	2022
Olive-sided Flycatcher	<i>Contopus cooperi</i>	0.48%	2018	2022
Hammond's Flycatcher	<i>Empidonax hammondii</i>	0.41%	2018	2022
Townsend's Warbler	<i>Setophaga townsendi</i>	0.41%	2018	2019
Wilson's Warbler	<i>Cardellina pusilla</i>	0.30%	2018	2022
Barred Owl	<i>Strix varia</i>	0.26%	2018	2021

commonName	scientificName	meanRA	minYear	maxYear
Warbling Vireo	<i>Vireo gilvus</i>	0.22%	2018	2022
Vaux's Swift	<i>Chaetura vauxi</i>	0.22%	2018	2022
Western Wood-Pewee	<i>Contopus sordidulus</i>	0.15%	2019	2021
American Goldfinch	<i>Spinus tristis</i>	0.15%	2019	2021
Orange-crowned Warbler	<i>Oreothlypis celata</i>	0.11%	2021	2021
Rufous Hummingbird	<i>Selasphorus rufus</i>	0.11%	2018	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.07%	2018	2018
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	0.07%	2021	2021
Ruby-crowned Kinglet	<i>Regulus calendula</i>	0.07%	2018	2018
Spotted Towhee	<i>Pipilo maculatus</i>	0.07%	2018	2018
Townsend's Solitaire	<i>Myadestes townsendi</i>	0.07%	2018	2018
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	0.07%	2021	2021
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	0.04%	2021	2021
Cassin's Vireo	<i>Vireo cassinii</i>	0.04%	2021	2021
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.04%	2022	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.04%	2021	2021
Dusky Flycatcher	<i>Empidonax oberholseri</i>	0.04%	2018	2018
Flammulated Owl	<i>Psiloscoops flammeolus</i>	0.04%	2021	2021
Hutton's Vireo	<i>Vireo huttoni</i>	0.04%	2018	2018
American Goshawk	<i>Accipiter gentilis</i>	0.04%	2022	2022
Osprey	<i>Pandion haliaetus</i>	0.04%	2018	2018
Ruffed Grouse	<i>Bonasa umbellus</i>	0.04%	2022	2022
Sharp-shinned Hawk	<i>Accipiter striatus</i>	0.04%	2018	2018

D.38 D16 – ABBY – Abby Road NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Swainson's Thrush	<i>Catharus ustulatus</i>	7.46%	2017	2022
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	7.37%	2017	2022
Western Tanager	<i>Piranga ludoviciana</i>	7.03%	2017	2022
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	6.39%	2017	2022
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	6.09%	2017	2022
Wilson's Warbler	<i>Cardellina pusilla</i>	4.93%	2017	2022
Willow Flycatcher	<i>Empidonax traillii</i>	4.33%	2017	2022
Steller's Jay	<i>Cyanocitta stelleri</i>	4.16%	2017	2022
Spotted Towhee	<i>Pipilo maculatus</i>	3.99%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Pacific Wren	<i>Troglodytes pacificus</i>	3.39%	2017	2022
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>	3.21%	2017	2022
Dark-eyed Junco	<i>Junco hyemalis</i>	2.74%	2018	2022
Warbling Vireo	<i>Vireo gilvus</i>	2.70%	2017	2022
Band-tailed Pigeon	<i>Patagioenas fasciata</i>	2.14%	2017	2022
Chestnut-backed Chickadee	<i>Poecile rufescens</i>	1.93%	2017	2022
Song Sparrow	<i>Melospiza melodia</i>	1.93%	2017	2022
American Robin	<i>Turdus migratorius</i>	1.89%	2017	2022
Hermit Warbler	<i>Setophaga occidentalis</i>	1.89%	2017	2022
Northern Flicker	<i>Colaptes auratus</i>	1.84%	2017	2022
House Wren	<i>Troglodytes aedon</i>	1.76%	2017	2022
Hairy Woodpecker	<i>Picoides villosus</i>	1.50%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	1.46%	2017	2022
Olive-sided Flycatcher	<i>Contopus cooperi</i>	1.37%	2017	2022
Oregon Dark-eyed Junco	<i>Junco hyemalis oregonus</i>	1.29%	2017	2022
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	1.20%	2017	2022
Orange-crowned Warbler	<i>Oreothlypis celata</i>	1.20%	2017	2021
Brown Creeper	<i>Certhia americana</i>	1.11%	2017	2022
Townsend's Warbler	<i>Setophaga townsendi</i>	1.07%	2019	2022
American Goldfinch	<i>Spinus tristis</i>	0.86%	2017	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.86%	2017	2022
Red-breasted Nuthatch	<i>Sitta canadensis</i>	0.86%	2017	2022
Common Raven	<i>Corvus corax</i>	0.73%	2017	2022
Red Crossbill	<i>Loxia curvirostra</i>	0.69%	2019	2021
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	0.60%	2017	2021
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>	0.60%	2017	2022
Pine Siskin	<i>Spinus pinus</i>	0.56%	2021	2022
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	0.56%	2017	2022
Golden-crowned Kinglet	<i>Regulus satrapa</i>	0.51%	2017	2022
Varied Thrush	<i>Ixoreus naevius</i>	0.39%	2017	2021
Bewick's Wren	<i>Thryomanes bewickii</i>	0.34%	2017	2021
Rufous Hummingbird	<i>Selasphorus rufus</i>	0.34%	2017	2022
Canada Jay	<i>Perisoreus canadensis</i>	0.30%	2017	2021
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.30%	2017	2021
Western Bluebird	<i>Sialia mexicana</i>	0.26%	2017	2017
Black-capped Chickadee	<i>Poecile atricapillus</i>	0.17%	2018	2021
Mountain Quail	<i>Oreortyx pictus</i>	0.17%	2019	2022
American Crow	<i>Corvus brachyrhynchos</i>	0.13%	2018	2021
Downy Woodpecker	<i>Picoides pubescens</i>	0.13%	2017	2017

commonName	scientificName	meanRA	minYear	maxYear
Dusky Flycatcher	<i>Empidonax oberholseri</i>	0.13%	2019	2021
Hutton's Vireo	<i>Vireo huttoni</i>	0.13%	2019	2021
Lesser Goldfinch	<i>Spinus psaltria</i>	0.13%	2017	2017
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.13%	2017	2021
Purple Finch	<i>Haemorhous purpureus</i>	0.13%	2018	2018
Violet-green Swallow	<i>Tachycineta thalassina</i>	0.13%	2018	2018
Western Wood-Pewee	<i>Contopus sordidulus</i>	0.13%	2021	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.13%	2017	2021
Anna's Hummingbird	<i>Calypte anna</i>	0.09%	2017	2017
Common Yellowthroat	<i>Geothlypis trichas</i>	0.09%	2018	2018
Great Horned Owl	<i>Bubo virginianus</i>	0.09%	2021	2021
Lazuli Bunting	<i>Passerina amoena</i>	0.09%	2017	2018
Sooty Grouse	<i>Dendragapus fuliginosus</i>	0.09%	2021	2022
Townsend's Solitaire	<i>Myadestes townsendi</i>	0.09%	2017	2022
Western Red-shafted flicker	<i>Colaptes auratus cafer</i>	0.09%	2018	2022
Barred Owl	<i>Strix varia</i>	0.04%	2022	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	0.04%	2019	2019
Bullock's Oriole	<i>Icterus bullockii</i>	0.04%	2022	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.04%	2021	2021
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	0.04%	2021	2021
Hammond's Flycatcher	<i>Empidonax hammondii</i>	0.04%	2017	2017
Hermit Thrush	<i>Catharus guttatus</i>	0.04%	2021	2021
Hooded Warbler	<i>Setophaga citrina</i>	0.04%	2019	2019
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	0.04%	2018	2018
Oak Titmouse	<i>Baeolophus inornatus</i>	0.04%	2017	2017
Painted Bunting	<i>Passerina ciris</i>	0.04%	2017	2017
Yellow-rumped Warbler	<i>Setophaga coronata auduboni</i>	0.04%	2017	2017

D.39 D17 – SJER – San Joaquin Experimental Range NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	12.80%	2017	2022
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	7.17%	2017	2022
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	5.93%	2017	2022
Yellow-rumped Warbler	<i>Setophaga coronata</i>	5.03%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	4.61%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
California Quail	<i>Callipepla californica</i>	4.58%	2017	2022
Violet-green Swallow	<i>Tachycineta thalassina</i>	4.39%	2017	2022
Oak Titmouse	<i>Baeolophus inornatus</i>	4.38%	2017	2022
House Wren	<i>Troglodytes aedon</i>	4.17%	2017	2022
Common Raven	<i>Corvus corax</i>	3.92%	2017	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	3.10%	2017	2022
House Finch	<i>Haemorhous mexicanus</i>	2.88%	2017	2022
California Scrub-Jay	<i>Aphelocoma californica</i>	2.85%	2017	2022
European Starling	<i>Sturnus vulgaris</i>	1.86%	2017	2022
Gull species	<i>Laridae sp.</i>	1.85%	2018	2018
Turkey Vulture	<i>Cathartes aura</i>	1.73%	2017	2022
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>	1.64%	2017	2022
Bewick's Wren	<i>Thryomanes bewickii</i>	1.57%	2017	2022
Western Kingbird	<i>Tyrannus verticalis</i>	1.55%	2017	2022
California Towhee	<i>Melospiza crissalis</i>	1.48%	2017	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	1.47%	2017	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	1.43%	2017	2022
Ruby-crowned Kinglet	<i>Regulus calendula</i>	1.26%	2017	2022
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	1.25%	2017	2022
Lewis's Woodpecker	<i>Melanerpes lewis</i>	1.19%	2017	2019
Western Bluebird	<i>Sialia mexicana</i>	1.03%	2017	2022
Lesser Goldfinch	<i>Spinus psaltria</i>	1.01%	2017	2022
Nuttall's Woodpecker	<i>Picoides nuttallii</i>	0.98%	2017	2022
Bushtit	<i>Psaltriparus minimus</i>	0.96%	2017	2022
Anna's Hummingbird	<i>Calypte anna</i>	0.83%	2017	2022
Phainopepla	<i>Phainopepla nitens</i>	0.71%	2017	2022
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	0.51%	2017	2022
Lark Sparrow	<i>Chondestes grammacus</i>	0.48%	2017	2022
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	0.41%	2017	2022
Bullock's Oriole	<i>Icterus bullockii</i>	0.40%	2017	2022
Orange-crowned Warbler	<i>Oreothlypis celata</i>	0.38%	2017	2022
Lawrence's Goldfinch	<i>Spinus lawrencei</i>	0.38%	2017	2021
Wilson's Warbler	<i>Cardellina pusilla</i>	0.36%	2017	2022
Gray Flycatcher	<i>Empidonax wrightii</i>	0.36%	2017	2022
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0.35%	2017	2022
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	0.32%	2017	2022
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	0.30%	2017	2022
Canyon Wren	<i>Catherpes mexicanus</i>	0.30%	2017	2022
Savannah Sparrow	<i>Passerculus sandwichensis</i>	0.29%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.29%	2019	2021
Wild Turkey	<i>Meleagris gallopavo</i>	0.27%	2017	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.27%	2017	2021
Northern Flicker	<i>Colaptes auratus</i>	0.24%	2017	2022
Spotted Towhee	<i>Pipilo maculatus</i>	0.24%	2017	2019
American Kestrel	<i>Falco sparverius</i>	0.24%	2017	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.23%	2017	2022
Dark-eyed Junco	<i>Junco hyemalis</i>	0.22%	2017	2022
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	0.20%	2018	2022
Greater Roadrunner	<i>Geococcyx californianus</i>	0.17%	2017	2021
Cassin's Vireo	<i>Vireo cassinii</i>	0.16%	2017	2022
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	0.15%	2017	2021
Hammond's Flycatcher	<i>Empidonax hammondi</i>	0.14%	2017	2021
Lazuli Bunting	<i>Passerina amoena</i>	0.14%	2017	2022
Northern Mockingbird	<i>Mimus polyglottos</i>	0.14%	2017	2022
Black Phoebe	<i>Sayornis nigricans</i>	0.12%	2017	2022
Canada Goose	<i>Branta canadensis</i>	0.12%	2017	2021
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>	0.11%	2018	2018
Rock Wren	<i>Salpinctes obsoletus</i>	0.11%	2017	2021
Cooper's Hawk	<i>Accipiter cooperii</i>	0.09%	2017	2019
Western Meadowlark	<i>Sturnella neglecta</i>	0.09%	2017	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.08%	2017	2022
Hermit Thrush	<i>Catharus guttatus</i>	0.08%	2017	2021
Hutton's Vireo	<i>Vireo huttoni</i>	0.08%	2017	2019
White-collared Seedeater	<i>Sporophila torqueola</i>	0.08%	2018	2018
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>	0.07%	2018	2022
Barn Swallow	<i>Hirundo rustica</i>	0.07%	2017	2022
American Goldfinch	<i>Spinus tristis</i>	0.07%	2017	2022
Warbling Vireo	<i>Vireo gilvus</i>	0.06%	2017	2019
Great Horned Owl	<i>Bubo virginianus</i>	0.06%	2017	2022
Brewer's Sparrow	<i>Spizella breweri</i>	0.05%	2021	2022
Mallard	<i>Anas platyrhynchos</i>	0.05%	2017	2018
Dusky Flycatcher	<i>Empidonax oberholseri</i>	0.04%	2017	2018
Golden Eagle	<i>Aquila chrysaetos</i>	0.04%	2018	2021
Pine Siskin	<i>Spinus pinus</i>	0.04%	2018	2021
Red-shouldered Hawk	<i>Buteo lineatus</i>	0.04%	2017	2019
Western Tanager	<i>Piranga ludoviciana</i>	0.04%	2017	2021
American Crow	<i>Corvus brachyrhynchos</i>	0.03%	2018	2018
Killdeer	<i>Charadrius vociferus</i>	0.03%	2017	2018

commonName	scientificName	meanRA	minYear	maxYear
Purple Finch	<i>Haemorhous purpureus</i>	0.03%	2017	2019
Sharp-shinned Hawk	<i>Accipiter striatus</i>	0.03%	2017	2019
Steller's Jay	<i>Cyanocitta stelleri</i>	0.03%	2017	2018
American Robin	<i>Turdus migratorius</i>	0.02%	2019	2019
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	0.02%	2019	2021
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	0.02%	2017	2021
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0.02%	2017	2019
Osprey	<i>Pandion haliaetus</i>	0.02%	2017	2022
Townsend's Warbler	<i>Setophaga townsendi</i>	0.02%	2017	2021
White-throated Swift	<i>Aeronautes saxatalis</i>	0.02%	2017	2017
American Pipit	<i>Anthus rubescens</i>	0.01%	2017	2017
California Gull	<i>Larus californicus</i>	0.01%	2017	2017
California Thrasher	<i>Toxostoma redivivum</i>	0.01%	2019	2019
Calliope Hummingbird	<i>Selasphorus calliope</i>	0.01%	2017	2017
Cassin's Finch	<i>Haemorhous cassinii</i>	0.01%	2021	2021
Common Yellowthroat	<i>Geothlypis trichas</i>	0.01%	2017	2017
Great Blue Heron	<i>Ardea herodias</i>	0.01%	2017	2017
Hermit Warbler	<i>Setophaga occidentalis</i>	0.01%	2018	2018
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	0.01%	2017	2017
Olive-sided Flycatcher	<i>Contopus cooperi</i>	0.01%	2018	2018
Peregrine Falcon	<i>Falco peregrinus</i>	0.01%	2021	2021
Swainson's Hawk	<i>Buteo swainsoni</i>	0.01%	2022	2022
Tree Swallow	<i>Tachycineta bicolor</i>	0.01%	2019	2019
Wood Duck	<i>Aix sponsa</i>	0.01%	2018	2018
Wrentit	<i>Chamaea fasciata</i>	0.01%	2018	2018

D.40 D17 – SOAP – Soaproot Saddle NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Spotted Towhee	<i>Pipilo maculatus</i>	12.21%	2017	2022
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	8.34%	2017	2022
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	7.32%	2017	2022
Mountain Quail	<i>Oreortyx pictus</i>	7.23%	2017	2022
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	6.19%	2017	2022
Western Tanager	<i>Piranga ludoviciana</i>	5.65%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Dark-eyed Junco	<i>Junco hyemalis</i>	5.40%	2017	2022
Western Wood-Pewee	<i>Contopus sordidulus</i>	5.31%	2017	2022
Steller's Jay	<i>Cyanocitta stelleri</i>	3.96%	2017	2022
Mourning Dove	<i>Zenaida macroura</i>	3.93%	2017	2022
Wrentit	<i>Chamaea fasciata</i>	2.12%	2017	2022
Brown Creeper	<i>Certhia americana</i>	2.06%	2017	2022
Lazuli Bunting	<i>Passerina amoena</i>	2.01%	2017	2022
Cassin's Vireo	<i>Vireo cassinii</i>	1.98%	2017	2022
Purple Finch	<i>Haemorhous purpureus</i>	1.98%	2017	2022
American Robin	<i>Turdus migratorius</i>	1.98%	2017	2022
Northern Flicker	<i>Colaptes auratus</i>	1.50%	2017	2022
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>	1.50%	2017	2022
Hairy Woodpecker	<i>Picoides villosus</i>	1.30%	2017	2022
Red-breasted Nuthatch	<i>Sitta canadensis</i>	1.30%	2017	2022
Black-throated Gray Warbler	<i>Setophaga nigrescens</i>	1.19%	2017	2022
Orange-crowned Warbler	<i>Oreothlypis celata</i>	1.19%	2017	2022
House Wren	<i>Troglodytes aedon</i>	1.07%	2017	2022
Olive-sided Flycatcher	<i>Contopus cooperi</i>	1.05%	2017	2022
Hutton's Vireo	<i>Vireo huttoni</i>	0.90%	2017	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	0.79%	2017	2022
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	0.68%	2017	2022
Mountain Chickadee	<i>Poecile gambeli</i>	0.62%	2017	2022
Warbling Vireo	<i>Vireo gilvus</i>	0.57%	2017	2022
California Scrub-Jay	<i>Aphelocoma californica</i>	0.54%	2017	2022
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	0.54%	2017	2022
Common Raven	<i>Corvus corax</i>	0.51%	2017	2022
Lawrence's Goldfinch	<i>Spinus lawrencei</i>	0.54%	2017	2022
Hermit Warbler	<i>Setophaga occidentalis</i>	0.48%	2017	2021
White-headed Woodpecker	<i>Picoides albolarvatus</i>	0.45%	2017	2022
Hammond's Flycatcher	<i>Empidonax hammondii</i>	0.40%	2017	2021
Lesser Goldfinch	<i>Spinus psaltria</i>	0.31%	2017	2022
Bushtit	<i>Psaltriparus minimus</i>	0.34%	2018	2022
California Quail	<i>Callipepla californica</i>	0.25%	2019	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.25%	2017	2019
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.25%	2019	2022

commonName	scientificName	meanRA	minYear	maxYear
Anna's Hummingbird	<i>Calypte anna</i>	0.23%	2017	2019
Bewick's Wren	<i>Thryomanes bewickii</i>	0.23%	2017	2021
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	0.20%	2017	2022
Dusky Flycatcher	<i>Empidonax oberholseri</i>	0.20%	2017	2018
Wilson's Warbler	<i>Cardellina pusilla</i>	0.20%	2017	2021
Bullock's Oriole	<i>Icterus bullockii</i>	0.17%	2019	2022
Downy Woodpecker	<i>Picoides pubescens</i>	0.14%	2017	2019
Townsend's Warbler	<i>Setophaga townsendi</i>	0.11%	2018	2021
Band-tailed Pigeon	<i>Patagioenas fasciata</i>	0.11%	2017	2022
Black Phoebe	<i>Sayornis nigricans</i>	0.08%	2017	2019
Black Swift	<i>Cypseloides niger</i>	0.11%	2017	2019
Pacific Wren	<i>Troglodytes pacificus</i>	0.08%	2017	2018
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.08%	2018	2022
Western Bluebird	<i>Sialia mexicana</i>	0.08%	2022	2022
Yellow-rumped Warbler	<i>Setophaga coronata</i>	0.08%	2017	2018
Golden-crowned Kinglet	<i>Regulus satrapa</i>	0.06%	2017	2017
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	0.06%	2019	2019
Pine Siskin	<i>Spinus pinus</i>	0.06%	2018	2021
Townsend's Solitaire	<i>Myadestes townsendi</i>	0.06%	2017	2018
Turkey Vulture	<i>Cathartes aura</i>	0.06%	2021	2022
Western Kingbird	<i>Tyrannus verticalis</i>	0.06%	2021	2021
White-throated Swift	<i>Aeronautes saxatalis</i>	0.06%	2022	2022
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0.03%	2019	2019
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	0.03%	2019	2019
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	0.03%	2018	2018
Fox Sparrow	<i>Passerella iliaca</i>	0.03%	2019	2019
Green-tailed Towhee	<i>Pipilo chlorurus</i>	0.03%	2018	2018
House Finch	<i>Haemorhous mexicanus</i>	0.03%	2022	2022
Lark Sparrow	<i>Chondestes grammacus</i>	0.03%	2019	2019
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>	0.03%	2018	2018
Osprey	<i>Pandion haliaetus</i>	0.03%	2017	2017
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	0.03%	2022	2022
Swainson's Thrush	<i>Catharus ustulatus</i>	0.03%	2021	2021

D.41 D17 – TEAK – Lower Teakettle NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Fox Sparrow	<i>Passerella iliaca</i>	10.20%	2017	2022
Mountain Chickadee	<i>Poecile gambeli</i>	8.16%	2017	2022
Red-breasted Nuthatch	<i>Sitta canadensis</i>	7.97%	2017	2022
Yellow-rumped Warbler	<i>Setophaga coronata</i>	7.63%	2017	2022
Golden-crowned Kinglet	<i>Regulus satrapa</i>	6.53%	2017	2022
Dark-eyed Junco	<i>Junco hyemalis</i>	5.91%	2017	2022
Steller's Jay	<i>Cyanocitta stelleri</i>	5.96%	2017	2022
Western Tanager	<i>Piranga ludoviciana</i>	5.87%	2017	2022
Dusky Flycatcher	<i>Empidonax oberholseri</i>	3.82%	2017	2022
Green-tailed Towhee	<i>Pipilo chlorurus</i>	3.37%	2017	2022
American Robin	<i>Turdus migratorius</i>	3.00%	2017	2022
Mountain Quail	<i>Oreortyx pictus</i>	2.24%	2017	2022
White-headed Woodpecker	<i>Picoides albolarvatus</i>	2.21%	2017	2022
Brown Creeper	<i>Certhia americana</i>	2.02%	2017	2022
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	1.79%	2017	2022
Cassin's Finch	<i>Haemorhous cassinii</i>	1.67%	2017	2022
Olive-sided Flycatcher	<i>Contopus cooperi</i>	1.60%	2017	2022
Townsend's Solitaire	<i>Myadestes townsendi</i>	1.44%	2017	2022
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	1.38%	2017	2022
Western Wood-Pewee	<i>Contopus sordidulus</i>	1.21%	2017	2022
Common Raven	<i>Corvus corax</i>	1.20%	2017	2022
Northern Flicker	<i>Colaptes auratus</i>	1.14%	2017	2022
Hermit Thrush	<i>Catharus guttatus</i>	1.09%	2017	2022
Lincoln's Sparrow	<i>Melospiza lincolni</i>	1.06%	2017	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.95%	2017	2022
Hammond's Flycatcher	<i>Empidonax hammondii</i>	0.94%	2017	2022
Hermit Warbler	<i>Setophaga occidentalis</i>	0.90%	2017	2022
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	0.77%	2017	2022
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>	0.69%	2017	2022
White-breasted Nuthatch	<i>Sitta carolinensis</i>	0.56%	2017	2022
Western Bluebird	<i>Sialia mexicana</i>	0.52%	2017	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.40%	2017	2022
House Wren	<i>Troglodytes aedon</i>	0.40%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Warbling Vireo	<i>Vireo gilvus</i>	0.36%	2017	2022
Lazuli Bunting	<i>Passerina amoena</i>	0.33%	2017	2022
Cassin's Vireo	<i>Vireo cassinii</i>	0.25%	2017	2022
Pileated Woodpecker	<i>Dryocopus pileatus</i>	0.23%	2017	2022
Pine Siskin	<i>Spinus pinus</i>	0.23%	2017	2022
Clark's Nutcracker	<i>Nucifraga columbiana</i>	0.19%	2017	2022
Wilson's Warbler	<i>Cardellina pusilla</i>	0.18%	2018	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.17%	2018	2022
Anna's Hummingbird	<i>Calypte anna</i>	0.14%	2017	2022
Band-tailed Pigeon	<i>Patagioenas fasciata</i>	0.13%	2017	2022
Orange-crowned Warbler	<i>Oreothlypis celata</i>	0.13%	2017	2022
Yellow Warbler	<i>Setophaga petechia</i>	0.08%	2017	2022
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	0.07%	2017	2022
Red Crossbill	<i>Loxia curvirostra</i>	0.07%	2019	2021
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	0.07%	2017	2022
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	0.07%	2018	2021
Black-backed Woodpecker	<i>Picoides arcticus</i>	0.06%	2017	2022
Pine Grosbeak	<i>Pinicola enucleator</i>	0.06%	2017	2022
Rufous Hummingbird	<i>Selasphorus rufus</i>	0.06%	2017	2017
Mountain Bluebird	<i>Sialia currucoides</i>	0.05%	2017	2019
Purple Finch	<i>Haemorhous purpureus</i>	0.05%	2018	2022
White-throated Swift	<i>Aeronautes saxatalis</i>	0.05%	2022	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	0.04%	2018	2019
Lawrence's Goldfinch	<i>Spinus lawrencei</i>	0.04%	2021	2021
Pacific Wren	<i>Troglodytes pacificus</i>	0.04%	2017	2022
Song Sparrow	<i>Melospiza melodia</i>	0.04%	2019	2021
Calliope Hummingbird	<i>Selasphorus calliope</i>	0.02%	2022	2022
Lesser Goldfinch	<i>Spinus psaltria</i>	0.02%	2021	2022
Sooty Grouse	<i>Dendragapus fuliginosus</i>	0.02%	2017	2021
American Dipper	<i>Cinclus mexicanus</i>	0.01%	2021	2021
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	0.01%	2017	2017
Black Swift	<i>Cypseloides niger</i>	0.01%	2021	2021
Field Sparrow	<i>Spizella pusilla</i>	0.01%	2018	2018
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>	0.01%	2019	2019
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>	0.01%	2022	2022
Spotted Towhee	<i>Pipilo maculatus</i>	0.01%	2018	2018
Swainson's Hawk	<i>Buteo swainsoni</i>	0.01%	2018	2018
Turkey Vulture	<i>Cathartes aura</i>	0.01%	2022	2022
White-eyed Vireo	<i>Vireo griseus</i>	0.01%	2017	2017

D.42 D18 – TOOL – Toolik Field Station NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Lapland Longspur	<i>Calcarius lapponicus</i>	40.39%	2017	2022
Savannah Sparrow	<i>Passerculus sandwichensis</i>	11.02%	2017	2022
Common Redpoll	<i>Acanthis flammea</i>	8.42%	2017	2019
American Tree Sparrow	<i>Spizelloides arborea</i>	5.94%	2017	2022
Long-tailed Jaeger	<i>Stercorarius longicaudus</i>	4.54%	2018	2022
American Golden-Plover	<i>Pluvialis dominica</i>	4.32%	2017	2022
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	4.10%	2017	2022
Unknown Redpoll	<i>Acanthis sp.</i>	3.78%	2021	2022
Whimbrel	<i>Numenius phaeopus</i>	2.70%	2017	2022
Greater White-fronted Goose	<i>Anser albifrons</i>	2.16%	2018	2022
Canada Goose	<i>Branta canadensis</i>	1.62%	2017	2021
Rock Ptarmigan	<i>Lagopus muta</i>	1.40%	2021	2022
Wilson's Snipe	<i>Gallinago delicata</i>	1.19%	2018	2022
Common Raven	<i>Corvus corax</i>	1.08%	2017	2022
American Robin	<i>Turdus migratorius</i>	0.76%	2017	2018
Smith's Longspur	<i>Calcarius pictus</i>	0.65%	2017	2021
Yellow-billed Loon	<i>Gavia adamsii</i>	0.65%	2018	2021
Glaucous Gull	<i>Larus hyperboreus</i>	0.65%	2018	2021
Horned Lark	<i>Eremophila alpestris</i>	0.54%	2017	2021
Short-eared Owl	<i>Asio flammeus</i>	0.54%	2018	2021
Yellow Warbler	<i>Setophaga petechia</i>	0.43%	2017	2019
Rough-legged Hawk	<i>Buteo lagopus</i>	0.32%	2018	2018
Hoary Redpoll	<i>Acanthis hornemanni</i>	0.32%	2017	2017
Bluethroat	<i>Luscinia svecica</i>	0.22%	2019	2022
Tundra Swan	<i>Cygnus columbianus</i>	0.22%	2022	2022
Brown-headed Cowbird	<i>Molothrus ater</i>	0.11%	2017	2017
Least Sandpiper	<i>Calidris minutilla</i>	0.11%	2018	2018
Northern Harrier	<i>Circus cyaneus</i>	0.11%	2017	2017
Northern Pintail	<i>Anas acuta</i>	0.11%	2022	2022
Pectoral Sandpiper	<i>Calidris melanotos</i>	0.11%	2022	2022
Red-necked Phalarope	<i>Phalaropus lobatus</i>	0.11%	2019	2019
Say's Phoebe	<i>Sayornis saya</i>	0.11%	2021	2021
Willow Ptarmigan	<i>Lagopus lagopus</i>	0.11%	2021	2021

commonName	scientificName	meanRA	minYear	maxYear
Wilson's Warbler	<i>Cardellina pusilla</i>	0.11%	2017	2017

D.43 D18 – BARR – Utqiagvik NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Lapland Longspur	<i>Calcarius lapponicus</i>	18.47%	2017	2022
Pectoral Sandpiper	<i>Calidris melanotos</i>	10.39%	2017	2022
Dunlin	<i>Calidris alpina</i>	10.36%	2017	2022
Red Phalarope	<i>Phalaropus fulicarius</i>	10.18%	2017	2022
Semipalmated Sandpiper	<i>Calidris pusilla</i>	9.16%	2017	2022
Glaucous Gull	<i>Larus hyperboreus</i>	8.55%	2017	2022
Greater White-fronted Goose	<i>Anser albifrons</i>	7.93%	2017	2022
Long-tailed Duck	<i>Clangula hyemalis</i>	3.69%	2017	2022
Snow Bunting	<i>Plectrophenax nivalis</i>	2.32%	2017	2022
Parasitic Jaeger	<i>Stercorarius parasiticus</i>	2.25%	2017	2022
American Golden-Plover	<i>Pluvialis dominica</i>	2.21%	2017	2022
Tundra Swan	<i>Cygnus columbianus</i>	2.03%	2017	2022
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>	1.77%	2017	2021
Red-necked Phalarope	<i>Phalaropus lobatus</i>	1.59%	2017	2022
Pomarine Jaeger	<i>Stercorarius pomarinus</i>	1.20%	2018	2022
Northern Pintail	<i>Anas acuta</i>	1.16%	2018	2021
Pacific Loon	<i>Gavia pacifica</i>	0.94%	2017	2021
Brant	<i>Branta bernicla</i>	0.62%	2017	2022
Wilson's Snipe	<i>Gallinago delicata</i>	0.54%	2017	2019
Snowy Owl	<i>Bubo scandiacus</i>	0.51%	2018	2021
Common Raven	<i>Corvus corax</i>	0.47%	2017	2021
Red-throated Loon	<i>Gavia stellata</i>	0.40%	2017	2021
King Eider	<i>Somateria spectabilis</i>	0.36%	2017	2022
Long-tailed Jaeger	<i>Stercorarius longicaudus</i>	0.36%	2017	2019
Hoary Redpoll	<i>Acanthis hornemanni</i>	0.11%	2017	2017
Sandhill Crane	<i>Grus canadensis</i>	0.11%	2017	2021
Western Sandpiper	<i>Calidris mauri</i>	0.11%	2019	2021
Baird's Sandpiper	<i>Calidris bairdii</i>	0.07%	2019	2021
Savannah Sparrow	<i>Passerculus sandwichensis</i>	0.07%	2017	2017
Snow Goose	<i>Chen caerulescens</i>	0.07%	2017	2017

commonName	scientificName	meanRA	minYear	maxYear
Red Knot	<i>Calidris canutus</i>	0.04%	2017	2017
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>	0.04%	2019	2019
Short-billed Dowitcher	<i>Limnodromus griseus</i>	0.04%	2019	2019
Slaty-backed Gull	<i>Larus schistisagus</i>	0.04%	2022	2022
Yellow-billed Loon	<i>Gavia adamsii</i>	0.04%	2019	2019

D.44 D19 – BONA – Caribou-Poker Creeks Research Watershed NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Swainson's Thrush	<i>Catharus ustulatus</i>	29.39%	2017	2022
Varied Thrush	<i>Ixoreus naevius</i>	9.39%	2017	2022
American Robin	<i>Turdus migratorius</i>	9.36%	2017	2022
Dark-eyed Junco	<i>Junco hyemalis</i>	9.28%	2017	2022
Hermit Thrush	<i>Catharus guttatus</i>	5.85%	2017	2022
Yellow-rumped Warbler	<i>Setophaga coronata</i>	5.08%	2017	2022
Ruby-crowned Kinglet	<i>Regulus calendula</i>	4.02%	2017	2022
Canada Jay	<i>Perisoreus canadensis</i>	3.95%	2017	2022
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	3.55%	2017	2022
Common Redpoll	<i>Acanthis flammea</i>	2.85%	2017	2022
Alder Flycatcher	<i>Empidonax alnorum</i>	2.63%	2017	2022
Lincoln's Sparrow	<i>Melospiza lincolni</i>	1.83%	2017	2022
White-winged Crossbill	<i>Loxia leucoptera</i>	1.72%	2017	2022
Orange-crowned Warbler	<i>Oreothlypis celata</i>	1.13%	2017	2022
Fox Sparrow	<i>Passerella iliaca</i>	0.99%	2017	2022
Hammond's Flycatcher	<i>Empidonax hammondii</i>	0.99%	2017	2022
Spruce Grouse	<i>Falcapennis canadensis</i>	0.95%	2017	2022
Black-capped Chickadee	<i>Poecile atricapillus</i>	0.69%	2017	2022
Boreal Chickadee	<i>Poecile hudsonicus</i>	0.69%	2017	2022
Common Raven	<i>Corvus corax</i>	0.69%	2017	2022
Wilson's Warbler	<i>Cardellina pusilla</i>	0.55%	2017	2022
Savannah Sparrow	<i>Passerculus sandwichensis</i>	0.48%	2018	2021
Olive-sided Flycatcher	<i>Contopus cooperi</i>	0.44%	2019	2022
American Tree Sparrow	<i>Spizelloides arborea</i>	0.40%	2018	2021
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	0.26%	2019	2022
Hairy Woodpecker	<i>Picoides villosus</i>	0.22%	2017	2022
American Goshawk	<i>Accipiter gentilis</i>	0.22%	2017	2019

commonName	scientificName	meanRA	minYear	maxYear
Varied Bunting	<i>Passerina versicolor</i>	0.18%	2018	2021
Pine Siskin	<i>Spinus pinus</i>	0.15%	2019	2021
Solitary Sandpiper	<i>Tringa solitaria</i>	0.15%	2019	2022
American Three-toed Woodpecker	<i>Picoides dorsalis</i>	0.11%	2019	2020
Black-billed Magpie	<i>Pica hudsonia</i>	0.11%	2019	2022
Merlin	<i>Falco columbarius</i>	0.11%	2020	2021
Northern Flicker	<i>Colaptes auratus</i>	0.11%	2018	2019
Say's Phoebe	<i>Sayornis saya</i>	0.11%	2018	2020
Black-backed Woodpecker	<i>Picoides arcticus</i>	0.07%	2017	2018
Downy Woodpecker	<i>Picoides pubescens</i>	0.07%	2018	2020
Osprey	<i>Pandion haliaetus</i>	0.07%	2018	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.07%	2017	2022
Townsend's Warbler	<i>Setophaga townsendi</i>	0.07%	2020	2022
Bohemian Waxwing	<i>Bombycilla garrulus</i>	0.04%	2022	2022
Hepatic Tanager	<i>Piranga flava</i>	0.04%	2018	2018
Pine Grosbeak	<i>Pinicola enucleator</i>	0.04%	2021	2021
Rough-legged Hawk	<i>Buteo lagopus</i>	0.04%	2021	2021
Sharp-shinned Hawk	<i>Accipiter striatus</i>	0.04%	2021	2021
Western Wood-Pewee	<i>Contopus sordidulus</i>	0.04%	2019	2019
Yellow Warbler	<i>Setophaga petechia</i>	0.04%	2022	2022

D.45 D19 – DEJU – Delta Junction NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
Dark-eyed Junco	<i>Junco hyemalis</i>	19.20%	2017	2022
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	17.48%	2017	2022
Swainson's Thrush	<i>Catharus ustulatus</i>	15.29%	2017	2022
Common Raven	<i>Corvus corax</i>	5.27%	2017	2022
Yellow-rumped Warbler	<i>Setophaga coronata</i>	5.07%	2017	2022
American Robin	<i>Turdus migratorius</i>	4.22%	2017	2022
Fox Sparrow	<i>Passerella iliaca</i>	4.18%	2017	2022
Lincoln's Sparrow	<i>Melospiza lincolni</i>	4.05%	2017	2022
Common Redpoll	<i>Acanthis flammea</i>	4.05%	2017	2022
Hermit Thrush	<i>Catharus guttatus</i>	3.84%	2017	2022
White-winged Crossbill	<i>Loxia leucoptera</i>	3.67%	2017	2022

commonName	scientificName	meanRA	minYear	maxYear
Ruby-crowned Kinglet	<i>Regulus calendula</i>	3.40%	2017	2022
Canada Jay	<i>Perisoreus canadensis</i>	3.35%	2017	2022
Orange-crowned Warbler	<i>Oreothlypis celata</i>	2.02%	2017	2022
Savannah Sparrow	<i>Passerculus sandwichensis</i>	1.14%	2017	2022
Alder Flycatcher	<i>Empidonax alnorum</i>	1.09%	2017	2022
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	0.27%	2017	2019
Bohemian Waxwing	<i>Bombycilla garrulus</i>	0.24%	2021	2022
Northern Flicker	<i>Colaptes auratus</i>	0.22%	2017	2021
Yellow Warbler	<i>Setophaga petechia</i>	0.19%	2017	2021
Boreal Chickadee	<i>Poecile hudsonicus</i>	0.15%	2018	2022
Wilson's Warbler	<i>Cardellina pusilla</i>	0.15%	2017	2020
Black-capped Chickadee	<i>Poecile atricapillus</i>	0.12%	2019	2022
Blackpoll Warbler	<i>Setophaga striata</i>	0.07%	2017	2022
Chipping Sparrow	<i>Spizella passerina</i>	0.07%	2018	2022
Hammond's Flycatcher	<i>Empidonax hammondii</i>	0.07%	2018	2021
Herring Gull	<i>Larus argentatus</i>	0.07%	2018	2018
Lesser Yellowlegs	<i>Tringa flavipes</i>	0.07%	2021	2021
Olive-sided Flycatcher	<i>Contopus cooperi</i>	0.07%	2020	2020
Upland Sandpiper	<i>Bartramia longicauda</i>	0.07%	2017	2020
Western Wood-Pewee	<i>Contopus sordidulus</i>	0.07%	2017	2020
Sandhill Crane	<i>Grus canadensis</i>	0.07%	2020	2020
Gray-cheeked Thrush	<i>Catharus minimus</i>	0.05%	2017	2020
American Goshawk	<i>Accipiter gentilis</i>	0.05%	2018	2020
American Kestrel	<i>Falco sparverius</i>	0.02%	2021	2021
American Redstart	<i>Setophaga ruticilla</i>	0.02%	2020	2020
American Tree Sparrow	<i>Spizelloides arborea</i>	0.02%	2017	2017
Arctic Tern	<i>Sterna paradisaea</i>	0.02%	2019	2019
Arctic Warbler	<i>Phylloscopus borealis</i>	0.02%	2022	2022
Black-billed Magpie	<i>Pica hudsonia</i>	0.02%	2021	2021
Downy Woodpecker	<i>Picoides pubescens</i>	0.02%	2021	2021
Great Horned Owl	<i>Bubo virginianus</i>	0.02%	2020	2020
Greater Yellowlegs	<i>Tringa melanoleuca</i>	0.02%	2018	2018
Mew Gull	<i>Larus canus</i>	0.02%	2017	2017
Northern Harrier	<i>Circus cyaneus</i>	0.02%	2018	2018
Northern Hawk Owl	<i>Surnia ulula</i>	0.02%	2017	2017
Red Avadavat	<i>Amandava amandava</i>	0.02%	2018	2018
Red-breasted Nuthatch	<i>Sitta canadensis</i>	0.02%	2022	2022
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0.02%	2018	2018
Sharp-shinned Hawk	<i>Accipiter striatus</i>	0.02%	2020	2020

commonName	scientificName	meanRA	minYear	maxYear
Solitary Sandpiper	<i>Tringa solitaria</i>	0.02%	2022	2022
Townsend's Warbler	<i>Setophaga townsendi</i>	0.02%	2022	2022
White-collared Seedeater	<i>Sporophila torqueola</i>	0.02%	2018	2018
White-striped Woodcreeper	<i>Lepidocolaptes leucogaster</i>	0.02%	2019	2019
Wilson's Snipe	<i>Gallinago delicata</i>	0.02%	2017	2017

D.46 D19 – HEAL – Healy NEON

Species List:

Mean relative abundance percent (species abundance/total community abundance) of bird species observed during NEON sampling from most to least abundant, including the years observed.

commonName	scientificName	meanRA	minYear	maxYear
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	35.54%	2017	2022
Savannah Sparrow	<i>Passerculus sandwichensis</i>	22.03%	2017	2022
American Tree Sparrow	<i>Spizelloides arborea</i>	9.45%	2017	2022
Common Redpoll	<i>Acanthis flammea</i>	5.00%	2017	2022
Lincoln's Sparrow	<i>Melospiza lincolni</i>	3.72%	2017	2022
Orange-crowned Warbler	<i>Oreothlypis celata</i>	3.69%	2017	2022
Dark-eyed Junco	<i>Junco hyemalis</i>	2.79%	2017	2022
Wilson's Warbler	<i>Cardellina pusilla</i>	2.38%	2017	2022
Canada Jay	<i>Perisoreus canadensis</i>	1.45%	2017	2021
Fox Sparrow	<i>Passerella iliaca</i>	1.34%	2017	2022
American Robin	<i>Turdus migratorius</i>	1.34%	2017	2022
Swainson's Thrush	<i>Catharus ustulatus</i>	1.14%	2017	2022
Yellow-rumped Warbler	<i>Setophaga coronata</i>	1.03%	2017	2022
Whimbrel	<i>Numenius phaeopus</i>	1.00%	2017	2021
Gray-cheeked Thrush	<i>Catharus minimus</i>	0.62%	2017	2022
Northern Hawk Owl	<i>Surnia ulula</i>	0.62%	2017	2022
Pine Siskin	<i>Spinus pinus</i>	0.62%	2017	2020
Common Raven	<i>Corvus corax</i>	0.59%	2017	2022
Upland Sandpiper	<i>Bartramia longicauda</i>	0.41%	2018	2022
Alder Flycatcher	<i>Empidonax alnorum</i>	0.38%	2017	2022
Short-eared Owl	<i>Asio flammeus</i>	0.28%	2017	2021
Willow Ptarmigan	<i>Lagopus lagopus</i>	0.24%	2017	2022
Boreal Chickadee	<i>Poecile hudsonicus</i>	0.17%	2017	2020
White-winged Crossbill	<i>Loxia leucoptera</i>	0.17%	2017	2021
Northern Harrier	<i>Circus cyaneus</i>	0.14%	2019	2021
Unknown Gull	<i>Laridae sp.</i>	0.14%	2019	2019
Ruby-crowned Kinglet	<i>Regulus calendula</i>	0.10%	2019	2022

commonName	scientificName	meanRA	minYear	maxYear
Yellow Warbler	<i>Setophaga petechia</i>	0.10%	2020	2022
Mew Gull	<i>Larus canus</i>	0.10%	2021	2021
Great Gray Owl	<i>Strix nebulosa</i>	0.07%	2017	2018
Long-eared Owl	<i>Asio otus</i>	0.07%	2017	2017
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	0.03%	2017	2017
Bald Eagle	<i>Haliaeetus leucocephalus</i>	0.03%	2019	2019
Black-capped Chickadee	<i>Poecile atricapillus</i>	0.03%	2017	2017
American Goshawk	<i>Accipiter gentilis</i>	0.03%	2018	2018
Trumpeter Swan	<i>Cygnus buccinator</i>	0.03%	2021	2021
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	0.03%	2022	2022

D.47 D20 – PUUM – Pu’u Maka’ala Natural Area Reserve NEON

Species List: Because of the prevalence of endangered species in Hawai’i, abundances and years of observation are not provided for observed birds.

commonName	scientificName
‘Apapane	<i>Himatione sanguinea</i>
Hawai’i ‘Amakihi	<i>Chlorodrepanis virens</i>
‘Oma’o	<i>Myadestes obscurus</i>
Warbling White-eye	<i>Zosterops japonicus</i>
Hawai’i ‘Elepaio	<i>Chasiempis sandwichensis</i>
‘Iwi	<i>Drepanis coccinea</i>
Common Waxbill	<i>Estrilda astrild</i>
Japanese Bush-Warbler	<i>Cettia diphone</i>
‘Akiapola’au	<i>Hemignathus wilsoni</i>
Red-billed Leiothrix	<i>Leiothrix lutea</i>
Scaly-breasted Munia	<i>Lonchura punctulata</i>
Hawai’i ‘Akepa	<i>Loxops coccineus</i>
‘Alawi	<i>Loxops mana</i>
Yellow-fronted Canary	<i>Serinus mozambicus</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Kalij Pheasant	<i>Lophura leucomelanos</i>
Common Myna	<i>Acridotheres tristis</i>
‘Io	<i>Buteo solitarius</i>
Kolea (Pacific Golden Plover)	<i>Pluvialis fulva</i>
Chinese Hwamei	<i>Garrulax canorus</i>
Spotted Dove	<i>Spilopelia chinensis</i>
North American Turkey	<i>Meleagris gallopavo</i>
Nene	<i>Branta sandvicensis</i>

APPENDIX E EQUIPMENT

The following equipment is needed to implement the procedures in this document. Equipment lists are organized by task. They do not include standard field and laboratory supplies such as charging stations, first aid kits, drying ovens, ultra-low refrigerators, etc. Contracted observers are encouraged to coordinate with the NEON Field Operations Manager for a given domain as soon as possible, to ensure availability of the required equipment.

Table 5. Equipment list – Field sampling.

Supplier/ Item No.	Exact Brand	Description	Purpose	Quantity
Forestry Suppliers	N	Handheld weather meter (maximum, average, and current temperature; +- 1 degree F, humidity +- 3%, and wind speed +- 3%)	Measure temperature, RH, and wind speed	1
Grainger	N	Binoculars, 7, 8 or 10 x 42, Field of View 264 ft. @ 1000 yd	Aid in visual identification of birds	1
Amazon	N	Stopwatch, with notification chime every minute	Time minutes of point count	1
B&H Photo	N	Laser Rangefinder, 1 yard accuracy	Measure distances to observed bird	1
Sibley	Y	The Sibley Guide to Birds	Aid in visual identification of birds	1
Amazon Cabela's REI	N	GPS receiver, recreational accuracy	Navigate to points	1
Ben Meadows Forestry Suppliers	N	Compass with mirror and declination adjustment	Navigate between points	1
	N	AA battery	Spare battery for GPS receiver	4
Ben Meadows Forestry Suppliers	N	All weather copy paper	Print datasheets	5 sheets