Wintering Grassland Raptor Survey Report

Beacon Harbor Solar Project

Towns of Brownville and Clayton

Jefferson County, New York

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TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ATTACHMENTS

ACRONYM AND ABBREVIATION LIST

Applicant	Beacon Harbor Solar Project, LLC
BESS	Battery energy storage system
DC	direct current
in	inches
inHG	inches of mercury
mi	miles
mph	miles per hour
MW	megawatts
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
ORES	Office of Renewable Energy Siting and Electric Transmission
Project	Beacon Harbor Solar Project
PSL	Public Service Law
PV	photovoltaic
WGRS	wintering grassland raptor survey
WSCR	Wildlife Site Characterization Report

1.0 INTRODUCTION

Beacon Harbor Solar Project, LLC (the Applicant) is developing the Beacon Harbor Solar Project (the Project), a utility-scale photovoltaic (PV) solar energy facility and battery energy storage system (BESS) with a proposed nameplate capacity of 150 megawatts (MW) direct current (DC) and an associated 75 MW BESS located in the Towns of Brownville and Clayton, Jefferson County, New York. The Project Area consists of approximately 1,582 acres of land leased from owners of private property and represents the larger area in which the Project will be sited (Figure 1).

On behalf of the Applicant, TRC has prepared this Wintering Grassland Raptor Survey (WGRS) Report in accordance with the permitting requirements for this Project and to document the results of the WGRS conducted by TRC.

1.1 Background

In accordance with Article VIII of the New York State Public Service Law (PSL) New York Codes, Rules and Regulations (NYCRR) Chapter XI, Title 16 §1100-1.3 (g)(1), a Wildlife Site Characterization Report (WSCR) for the Project was submitted to Office of Renewable Energy Siting and Electric Transmission (ORES) in August 2024. A meeting with ORES, the New York State Department of Environmental Conservation (NYSDEC), the Applicant, and their representatives was held on October 15, 2024, during which the WSCR was discussed, along with recommended pre-application surveys, including WGRS. The Pre-application Wildlife Site Characterization Consultation letter was received from ORES on October 25, 2024, summarizing the recommendations from this call, including that it was recommended that the Applicant conduct WGRS during the 2024-2025 season.

In accordance with *New York State Department of Environmental Conservation Survey Protocol for State-listed Wintering Grassland Raptor Species Protocol* (August 2021; *Protocol)*, a WGRS Study Plan was submitted to ORES on October 4, 2024. Comments from ORES on the WGRS Study Plan were received on October 30, 2024, asking that two of the stationary points be shifted, and the comments were incorporated into the WGRS (i.e., the two stationary points were shifted accordingly). Following the recommendations from ORES, TRC, on behalf of the Applicant performed WGRS at the Project Area during the 2024-2025 winter season.

1.2 Purpose and Objectives

The primary purpose of the WGRS were:

- Document the presence of the [redacted]) and [redacted]); and
- Record particular areas used by the [redacted], such as suspected [redacted], within the Project Area.

Other objectives of these surveys included documenting and mapping presence and use of the Project Area by non-target state-listed raptor species, non-listed raptor species, and any other state-listed species.

Information obtained from these surveys will help determine the need for additional comprehensive studies, regulatory review, and if necessary, avoidance, minimization, and/or mitigation strategies.

2.0 METHODS

Field survey methods for the WGRS followed the *Protocol*, the Project-specific WGRS Study Plan, and comments from ORES as described above in Section 1.1.

2.1 Survey Periods

Surveys were conducted generally weekly between November 15, 2024 through April 15, 2025, (study period; exact dates were November 18, 2024 through April 10, 2025), with two survey periods in November (survey periods 1 and 2) and four survey periods each in December (survey periods 3-6), January (survey periods 7-10), February (survey periods 11-14), March (survey periods 15-18), and two extended survey periods in April (survey periods 19 and 20). Due to the observations of [redacted] during the last two weeks in March (survey periods 17 and 18), two additional survey periods (survey periods 19 and 20) were added in April to the study period in accordance with the *Protocol*.

A total of 20 complete survey periods (i.e., visits) occurred during the study period. One complete survey period encompassed stationary surveys at all stationary locations and one daytime driving survey, conducted approximately weekly. Generally, surveys were not conducted during inclement weather, such as heavy precipitation, fog, or sustained strong winds.

2.2 Stationary Evening Surveys

Per the *Protocol,* stationary evening surveys are the primary survey method for [redacted] and [redacted] During the WGRS, TRC conducted stationary evening surveys at nine stationary survey locations (Figure 1).

As outlined in the Study Plan, stationary survey locations were selected to provide full visibility of open habitats greater than 25 acres at the Project Area. Review of aerial imagery of potential habitat within the Project Area was used to pre-determine locations for stationary points with consideration of site-specific topographical conditions and visual obstructions. Survey locations were established within or on the edge of open habitat at vantage points with visibility of the open habitat. Locations were situated along public rights-of-way or on participating parcels within the Project Area and were established along hedgerows or forest edges or were conducted within or next to vehicles to conceal surveyors from raptors flying overhead. Survey stations were sited no more than 1,000 meters apart within open habitat within the Project Area. Several locations also provided views of presumed reference/control areas (e.g., open habitat not located within the proposed Project Area or area intended for development). During the first visit to each evening stationary survey, surveyors mapped the viewshed within the 1,000-meter radius of the stationary point, showing specific areas that were obstructed from view (e.g., by topography, vegetation, infrastructure, etc.). The visibility viewshed shapefiles are included in Attachment B, along with the shapefiles of the stationary evening survey point locations. Additionally, during the first visit to each stationary point, biologists considered safety, access logistics, and viewshed, in order to micro-site the final location of each point (Figure 1).

Stationary evening surveys were initiated one hour before sunset and concluded when it was too dark to observe flying birds, at least one-half hour after sunset, or up to one hour after sunset, if conditions such as clear, moonlit skies, or complete snow cover, allowed for observing flying birds after dark. This timing targeted the temporal window when overwintering raptors are foraging and leaving/returning to their roosts. When performing surveys, biologists used binoculars and/or spotting scopes, along with the naked eye, to scan the open habitat visible from survey locations. One survey station was sampled by one biologist per night and on occasion this biologist was supported by an additional observer for training purposes.

2.3 Daytime Driving Routes

TRC conducted daytime driving surveys along a route with eight pre-determined stops which were established approximately 0.5 miles apart and adjacent to open habitats along roads within the Project Area (Figure 1). Per the *Protocol,* these surveys are considered supplemental information to detect [redacted] and other diurnal raptors, however they are not necessarily suitable for detecting [redacted]

Similar to the stationary evening surveys, the driving route and stops were selected via desktop review and were finalized after the first visit to each stop after a consideration of safety, access logistics, and visibility (Figure 1). Shapefiles of the survey points and driving routes/stops are included in a zipped package as Attachment B.

The daytime driving route survey was initiated prior to stationary surveys scheduled for the day, providing for ample time to complete the driving route and mobilize to stationary survey locations within the required timeframe. The daytime driving survey was also conducted approximately weekly throughout the survey period. At each stop, biologists conducted a five-minute point count survey, visually scanning with the naked eye and with binoculars, the adjacent open habitat. Two biologists performed the daytime driving route surveys, allowing the driver to focus primarily on safe driving and the passenger to focus on raptor observations.

2.4 Data Collection

Detailed weather and bird observation data was collected during each survey. All data was entered onto digital data forms accessed by smartphone or tablet. Any observed roost sites, foraging paths, or flight paths were recorded and appended to the digital data form. Data was collected for any raptor species observed at the Project Area. Incidental observations included species documented within the Project Area, outside of the scheduled survey window (e.g., when walking to or from a survey location, driving from point to point, etc.). Survey Data Forms are provided as Attachment A.

A data form was completed for each survey, regardless of anything observed. General information that was recorded on the forms includes:

- client;
- project name;
- survey type (driving or stationary);
- survey location;
- visit number (*i.e., survey period*);
- date;
- observer(s) name(s);
- whether or not the survey was completed, and if not, the reason why;
- survey start and end time;
- duration of survey (minutes);
- sunset time;
- disturbances;
- habitat type within 1,000-meter radius of point (i.e., row crop, fallow field, etc.) – *this was recorded only during the first visit and if it changed significantly during the study period*; and
- photos from the survey location facing each of the cardinal directions. (*Note, photos were only taken during the first driving route survey, however, they were taken for each of the stationary surveys.)*

2.4.1 Weather Observations

Weather conditions were noted at the beginning of each survey (i.e., first stop of the driving survey or the beginning of the evening stationary survey) and as conditions changed significantly throughout the survey. Weather parameters that were recorded included:

- wind speed (in miles per hour [mph]);
- wind direction (compass direction from which the wind is coming, or “variable”);
- temperature (degrees Fahrenheit).
- relative humidity (percent relative);
- barometric pressure (inches of mercury [inHG]);
- percent cloud cover;
- visibility (approximate distance in miles [mi]);
- precipitation;
- snow condition (i.e., powder, crust, slush, etc.); and
- snow depth (inches [in]).

Appendix C includes the weather conditions recorded during the survey.

2.4.2 Individual Raptor Observations

Observations of any raptor (owls, hawks, falcons, eagles, osprey, and vultures) were recorded continuously throughout each survey. When collecting data, surveyors performed continuous scanning of the habitat, both with the naked eye and with binoculars. Particular attention was paid to birds perching on fence posts, utility poles, and hay bales, coursing low over the ground, or perching on the ground. In addition, biologists listened for the identifying calls of the [redacted] The following data was recorded for each individual raptor observed:

- location observed;
- species (if possible);
- whether the raptor observation was an incidental sighting or not;
- count of individuals;
- first and last time observed;
- duration of observation (rounded to the nearest minute);
- age class (if possible);
- sex (if possible);
- behavior (such as perching, foraging, interaction, circling, fly-through, roosting, or other);
- general compass bearing flight direction (South, North, Northeast, etc.);
- flight height (in feet, general range(s) observed);
- additional notes about the observation; and
- digital map of flight paths(s)/roost site(s)/etc., (as applicable).

If a raptor could not be identified to the species level, the bird was described to the greatest extent possible. For example, identified raptors were further described as “buteo” versus “accipiter”, or “large” versus “small.”

[redacted]

[redacted] Any observed [redacted] were documented digitally, overlain on photos of the Project Area, and then attached to the digital data form. [redacted] are shown on Figure 2 and are provided as spatial data in the shapefile package (Attachment B).

2.4.3 Incidental Raptor Observations

Raptor species, when observed outside of a regular survey period, were recorded as incidental observations and appended to the stationary survey data form for the survey being conducted on the evening of the observation. During driving route surveys, raptors observed between driving stops were considered incidental and were appended to the survey data form at the next driving route stop.

2.4.4 Additional Observations

When it did not detract from the detection of target species, observations of all state-listed species, and non-raptor species, such as arctic songbirds and winter resident grassland birds (i.e., snow buntings *(Plectrophenax nivalis)*, [redacted] longspurs *(Calcariu* spp.), pipits (*Anthus rubescens*), and shrikes *(Lanius* sp.) and/or other birds were recorded as "Additional Bird Observations" on the digital data form. Similarly other wildlife observations were recorded as "Additional Wildlife Observations." The time of the observation and a description of the observation were recorded. A full list of avian species documented at the Project Area, including non-target species and those observed incidentally, is included as Appendix E.

2.5 Data Analysis

At the completion of the WGRS, the following summaries were generated in map, table, or shapefile form as appropriate to address the objectives and goals of this study:

- overall survey effort and any related disruptions and/or distractions;
- weather conditions per survey;
- general habitat types and viewshed analysis within 1,000-meter radius of stationary points;
- raptor observations, including date, location, and behaviors;
- raptor species richness (i.e., number of species) and overall avian species list;
- raptor species diversity, using the Shannon Diversity Index (i.e., based on the number of individuals per species, accounting for both the richness and evenness at each survey point);
- raptor frequency (i.e., number of visits a raptor/species was observed divided by number of visits to that point);
- raptor abundance (i.e., number of observations of a species).
- raptor use patterns and behaviors throughout the Project Area; and
- flight paths/roosts/perch locations of state-listed species observed.

3.0 RESULTS

3.1 Survey Effort

Surveys were conducted from November 18, 2024, through April 10, 2025, (overall study period), for a total of 180 stationary surveys and 160 driving stops, completed over 20 survey periods (Appendix A). The dates, times, and durations of each stationary survey and driving stop, along with any disruptions and/or distractions that occurred during each survey are outlined in Appendix A.

The general habitat within the 1,000-meter radius of each survey point is included in Appendix B and photographs of the habitat from each cardinal direction from each of the survey points are included in Attachment A. Weather conditions for all survey periods are included in Appendix C.

3.2 Raptor Observations

Over the course of the study period, a total of 185 observations of raptors (including incidental observations), representing 11 raptor species, and several unidentified raptors, were observed during and incidental to the stationary surveys and driving surveys (Table 1). The identified raptor species observed included American kestrel (*Falco sparverius*), barred owl (*Strix varia*), [redacted] great horned owl (*Bubo virginianus*), merlin (*Falco columbarius*), [redacted], red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*Buteo lagopus*), [redacted] and turkey vulture (*Cathartes aura*) (Table 1).

Out of the total of 185 raptor observations, 97 observations occurred during regular stationary surveys, 41 observations occurred incidentally to stationary surveys (i.e., 138 observations for stationary surveys), 40 observations occurred during driving stops, and 7 observations occurred incidentally to driving stops (i.e., 47 observations for driving surveys) (Table 1). The highest percentage of observations as a species were of turkey vultures (approximately 35% of total raptor observations), followed by red-tailed hawks (approximately 19% of total raptor observations) and [redacted] (Table 1). Raptors were observed during every survey period (100% raptor frequency per survey period) (Table 1). Red-tailed hawks had the highest frequency of observations per survey period (14 out of the 20 survey periods, 70%), followed by [redacted] and rough-legged hawks (10 out of the 20 survey periods, 50%).

Out of the 185 total raptor observations, [redacted] Table 1). Observations of state-listed raptor species are further described in Section 3.2.3 A table of all raptor species observed, including dates and points where they were observed is included as Appendix D.

Non-raptor avian species included both those documented during scheduled surveys and incidentally while surveyors were present within the Project Area. A list of all avian species observed is provided as Appendix E. There was [redacted] and that observation is included in Section 3.2.3 below.

Table 1. Overall Raptor Observations by Species

Species*	New York State Status	Number of Observations: During Stationary Surveys	*Incidental to Stationary Surveys*	During Driving Stops	*Incidental to Driving Surveys*	Total	% of Total Observations	Frequency Per Survey Period
American Kestrel	-	1	*1*	2	*0*	**4**	2%	15%
Barred Owl	-	3	*0*	0	*0*	**3**	2%	10%
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Great Horned Owl	-	14	*0*	0	*0*	**14**	8%	35%
Merlin	-	4	*0*	1	*0*	**5**	3%	15%
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Red-tailed Hawk	-	15	*2*	14	*4*	**35**	19%	70%
Rough-legged Hawk	-	6	*3*	5	*1*	**15**	8%	50%
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Turkey Vulture	-	24	*25*	15	*0*	**64**	35%	25%
Unidentified Raptor	-	1	*0*	1	*0*	**2**	1%	10%
Total:		**97**	***41***	**40**	***7***	**185**	**100%**	**100%** (20 out of 20 survey periods had raptor observations)

*Listed species (threatened, endangered, and special concern) observations are **bolded**

3.2.1 Stationary Evening Surveys Observations

A total of 138 observations of 11 raptor species and 1 unidentified raptor were recorded at stationary surveys (Table 2 and Table 3). Ninety-seven of these observations were recorded during the regular duration of the stationary surveys, while 41 were recorded incidentally to the stationary surveys, for a total of 138 observations (Table 3).

All 9 survey locations were visited 20 times, for a total of 180 visits (Table 2 and Table 3). Raptors were observed from all 9 of the stationary survey locations, however, raptors were observed during 34% of the visits (i.e., 62 visits out of 180 visits total had raptors observed) (Table 2 and Table 3). The overall species diversity for stationary surveys was 1.88 using the Shannon Diversity Index, calculating the number of individuals per species and taking into account richness and evenness (Table 2 and Table 3).

Out of the stationary survey locations, S8 had the highest raptor frequency (60%) and S3 had the highest number of raptor observations (i.e., raptor abundance), with 34 observations (Table 2 and Table 3). Additionally, S3 and S9 tied for stationary survey points with the highest species richness, each with seven species, but S9 had a higher species diversity (H = 1.73) (Table 2 and Table 3).

Out of the stationary survey locations, S5 had lowest raptor frequency (10%), the lowest number of raptor observations (2 observations), the lowest species richness (1 species), and the lowest species diversity (H = 0) (Table 2 and Table 3).

Table 2. Stationary Survey Raptor Summaries

Stationary Survey Location	Number of Survey Periods (Visits)	Number of Survey Periods (Visits) that Raptors were Observed	Raptor Frequency Per Location	Total Raptor Observations (Abundance)	Number of Species Observed	Species Diversity (H)
S1	20	8	40%	11	5	1.29
S2	20	6	30%	16	5	1.04
S3	20	8	40%	34	7	1.19
S4	20	4	20%	6	4	1.24
S5	20	2	10%	2	1	0.00
S6	20	6	30%	7	4	1.48
S7	20	5	25%	15	6	1.30
S8	20	12	60%	26	6	1.63
S9	20	11	55%	21	7	1.73
Total Overall:	**180**	**62**	**34%**	**138**	**11**	**1.88**

Species richness = Number of species
Species diversity = Shannon diversity index $H = -\Sigma (pi * \ln(pi))$
Abundance = number of individuals (i.e., observations) of a species
Frequency = number of visits a species was observed divided by the number of visits to that location

Table 3. Raptor Observations by Stationary Survey Location

Stationary Survey Location	Species*	Date(s) Observed	Number of Survey Periods (Visits) Observed	Behavior(s) Observed	Number of Observations During Surveys	*Number of Incidental Observations*	Total Observations	Percent Total of Observations (Per Survey Location)	Frequency (Per Survey Location)
S1	Merlin	4/1/2025	1	Fly-through	1	*0*	1	9%	5%
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Red-tailed Hawk	11/25/2024	1	Foraging; Perching	1	*0*	1	9%	5%
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Turkey Vulture	4/1/2025	1	Circling; Fly-through	0	*1*	1	9%	5%
	5 species (H = 1.29)	Raptors were observed during 8 of 20 visits		**Total for S1:**	8 observations	*3 incidental observations*	11 total observations	100%	40%
S2	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Red-tailed Hawk	12/3/2024	1	Fly-through	1	*0*	1	6%	5%
	Rough-legged Hawk	12/24/2024; 3/12/2025	2	Fly-through; Perching	1	*1*	2	13%	10%
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	5 species (H = 1.04)	Raptors were observed during 6 of 20 visits		**Total for S2:**	11 observations	*5 incidental observations*	16 total observations	100%	30%
S3	Barred Owl	3/13/2025	1	Calling	2	*0*	2	6%	5%
	Great Horned Owl	12/24/2024	1	Calling	1	*0*	1	3%	5%
	Merlin	4/9/2025	1	Fly-through; Perching	3	*0*	3	9%	5%
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Red-tailed Hawk	12/4/2024	1	Fly-through; Circling	1	*1*	2	6%	5%

Stationary Survey Location	Species*	Date(s) Observed	Number of Survey Periods (Visits) Observed	Behavior(s) Observed	Number of Observations During Surveys	*Number of Incidental Observations*	Total Observations	Percent Total of Observations (Per Survey Location)	Frequency (Per Survey Location)
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Turkey Vulture	4/3/2025	1	Fly-through; Circling	4	*19*	23	68%	5%
	7 species (H=1.19)	Raptors were observed during 8 of 20 visits		**Total for S3:**	14 observations	*20 incidental observations*	34 total observations	100%	40%
S4	Great Horned Owl	2/10/2025	1	Contact calls	3	*0*	3	50%	5%
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Red-tailed Hawk	1/22/2025	1	Fly-through	1	*0*	1	17%	5%
	Rough-legged Hawk	11/25/2024	1	Fly-through	1	*0*	1	17%	5%
	4 species (H=1.24)	Raptors were observed during 4 of 20 visits		**Total for S4:**	5 observations	*1 incidental observation*	6 total observations	100%	20%
S5	Rough-legged Hawk	12/16/2024; 2/11/2025	2	Fly-through; Perching	1	*1*	2	100%	10%
	1 species (H=0.00)	Raptors were observed during 2 of 20 visits		**Total for S5:**	1 observation	*1 incidental observation*	2 total observations	100%	10%
S6	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Red-tailed Hawk	11/25/2024	1	Fly-through	1	*0*	1	14%	5%
	Rough-legged Hawk	3/19/2025	1	Fly-through	1	*0*	1	14%	5%
	Turkey Vulture	3/27/2025; 4/9/2025	2	Fly-through	2	*1*	3	43%	10%
	Unidentified Raptor	12/6/2024	1	Fly-through	1	*0*	1	14%	5%
	4 species *(not including the unidentified raptor)* (H = 1.48)	Raptors were observed during 6 of 20 visits		**Total for S6:**	6 observations	*1 incidental observation*	7 total observations	100%	30%
S7	American Kestrel	3/17/2025	1	Fly-through, Foraging, Perching	0	*1*	1	7%	5%
	Great Horned Owl	12/2/2024	1	Calling	1	*0*	1	7%	5%
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Stationary Survey Location	Species*	Date(s) Observed	Number of Survey Periods (Visits) Observed	Behavior(s) Observed	Number of Observations During Surveys	*Number of Incidental Observations*	Total Observations	Percent Total of Observations (Per Survey Location)	Frequency (Per Survey Location)
	Red-tailed Hawk	1/20/2025	1	Fly-through; Perching	1	*0*	1	7%	5%
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Turkey Vulture	4/3/2025	1	Circling; Fly-through	9	*0*	9	60%	5%
	6 species (H = 1.30)	Raptors were observed during 5 of 20 visits		**Total for S7:**	13 observations	*2 incidental observations*	15 total observations	100%	25%
S8	American Kestrel	4/10/2025	1	Fly-through	1	*0*	1	4%	5%
	Great Horned Owl	11/19/2024; 2/4/2025	2	Calling; Foraging	4	*0*	4	15%	10%
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Red-tailed Hawk	12/3/2024; 12/10/2024; 12/26/2024; 1/8/2025; 1/14/2025; 3/12/2025	6	Fly-through; Perching	7	*0*	7	27%	30%
	Rough-legged Hawk	1/28/2025; 3/18/2025	2	Foraging; Fly-through	1	*1*	2	8%	10%
	Turkey Vulture	3/18/2025	1	Fly-through	7	*0*	7	27%	5%
	6 species (H = 1.63)	Raptors were observed during 12 of 20 visits		**Total for S8:**	25 observations	*1 incidental observation*	26 total observations	100%	60%
S9	Barred Owl	3/19/2025	1	Calling	1	*0*	1	5%	5%
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Great Horned Owl	1/15/2025; 2/5/2025; 3/7/2025	3	Calling; Contact calls; Vocalizing	5	*0*	5	24%	15%
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Stationary Survey Location	Species*	Date(s) Observed	Number of Survey Periods (Visits) Observed	Behavior(s) Observed	Number of Observations During Surveys	*Number of Incidental Observations*	Total Observations	Percent Total of Observations (Per Survey Location)	Frequency (Per Survey Location)
	Red-tailed Hawk	11/27/2024; 12/30/2024; 3/19/2025	3	Fly-through; Circling; Perching	2	*1*	3	14%	15%
	Rough-legged Hawk	12/4/2024	1	Fly-through	1	*0*	1	5%	5%
	Turkey Vulture	3/7/2025; 4/1/2025	2	Circling; Fly-through; Perching	2	*4*	6	29%	10%
	7 species (H = 1.73)	Raptors were observed during 11 of 20 visits		**Total for S9:**	14 observations	*7 incidental observations*	21 total observations	100%	55%
Total Overall Species:	**11 species** (not including the unidentified raptors) H= 1.88	Raptors were observed 62 out of 180 visits		**Total Overall :**	**97 observations**	***41 incidental observations***	**138 total observations**		**34%**

*Listed species are **bolded**
Species richness = Number of species
Species diversity = Shannon diversity index H = - Σ (pi * ln(pi))
Abundance = number of individuals (i.e., observations) of a species
Frequency = number of visits a species was observed divided by the number of visits to that location

3.2.2 Daytime Driving Routes Observations

A total of 47 observations of 7 raptor species and 1 unidentified raptor were recorded at driving surveys (Table 4 and Table 5). Forty of these observations were recorded during the regular duration of driving stops, while 7 were recorded incidentally to the driving stops, for a total of 47 observations (Table 5).

All 8 driving stops were visited 20 times, for a total of 160 visits (Table 4 and Table 5). Raptors were observed from all 8 of the driving stop locations, however, raptors were observed during 21% of the visits (i.e., 34 visits out of 160 visits total had raptors observed) (Table 4 and Table 5). The overall species diversity for driving surveys was 1.55 using the Shannon Diversity Index, calculating the number of individuals per species and taking into account richness and evenness (Table 4 and Table 5).

Out of the driving stops, D7 had the highest raptor frequency (45%) and D8 had the highest number of raptor observations (i.e., raptor abundance), with 14 observations (Table 4 and Table 5). Additionally, D3, D5, and D7 were tied for the highest species richness, with each point having four species observed, however, D3 had a higher species diversity (H = 1.33) (Table 4 and Table 5).

Out of the driving stops, D1 and D6 had lowest raptor frequency (each with 5%) the lowest number of raptor observations (each with one raptor observation), the lowest species richness (each with one species), and the lowest species diversity (H = 0.00) (Table 4 and Table 5).

Table 4. Driving Stop Raptor Summaries

Driving Stop Location	Number of Survey Periods (Visits)	Number of Survey Periods (Visits) that Raptors were Observed	Raptor Frequency Per Location	Total Raptor Observations (Abundance)	Number of Species Observed	Species Diversity (H)
D1	20	1	5%	1	1	0.00
D2	20	4	20%	5	2	0.95
D3	20	5	25%	5	4	1.33
D4	20	3	15%	3	3	1.1
D5	20	4	20%	8	4	1.07
D6	20	1	5%	1	1	0.00
D7	20	9	45%	10	4	1.22
D8	20	7	35%	14	3	0.99
Total Overall:	**160**	**34**	**21%**	**47**	**7**	**1.55**

Species richness = Number of species
Species diversity = Shannon diversity index H = - Σ (pi * ln(pi))
Abundance = number of individuals (i.e., observations) of a species
Frequency = number of visits a species was observed divided by the number of visits to that location

Table 5. Raptor Observations by Driving Stop Location

Driving Stop Location	Species*	Date(s) Observed	Number of Survey Periods (Visits) Observed	Behavior(s) Observed	Number of Observations During Surveys	*Number of Incidental Observations*	Total Observations	Percent Total of Observations (Per Survey Location)	Frequency (Per Driving Stop Location)
D1	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	1 species (H = 0.00)	Raptors were observed during 1 of 20 visits		**Total for D1:**	1 observation	*0 incidental observations*	1 total observation	100%	5%
D2	American Kestrel	4/9/2025	1	Actively eating; Perching	1	*0*	1	20%	5%
	Red-tailed Hawk	11/19/2024; 1/14/2025	2	Circling; Perching; Fly-through	3	*0*	3	60%	10%
	Unidentified Buteo	3/12/2025	1	Perching	1	*0*	1	20%	5%
	2 species *(not including the unidentified raptor)* (H = 0.95)	Raptors were observed during 4 of 20 visits		**Total for D2:**	5 observations	*0 incidental observations*	5 total observations	100%	20%
D3	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Red-tailed Hawk	11/19/2024; 2/25/2025	2	Circling; Perching	2	*0*	2	40%	10%
	Rough-legged Hawk	3/12/2025	1	Perching	1	*0*	1	20%	5%
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	4 species (H = 1.33)	Raptors were observed during 5 of 20 visits		**Total for D3:**	3 observations	*2 incidental observations*	5 total observations	100%	25%
D4	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Red-tailed Hawk	2/19/2025	1	Fly-through; Perching	0	*1*	1	33.3%	5%
	Turkey Vulture	4/9/2025	1	Fly-through	1	*0*	1	33.3%	5%
	3 species (H = 1.10)	Raptors were observed during 3 of 20 visits		**Total for D4:**	2 observations	*1 incidental observation*	3 total observations	100%	15%
D5	Merlin	1/14/2025	1	Fly-through; Perching	1	*0*	1	12.5%	5%
	Red-tailed Hawk	12/24/2024	1	Fly-through; Perching	1	*0*	1	12.5%	5%
	Rough-legged Hawk	11/26/2024	1	Foraging	1	*0*	1	12.5%	5%
	Turkey Vulture	4/9/2025	1	Fly-through	5	*0*	5	62.5%	5%
	4 species (H = 1.07)	Raptors were observed during 4 of 20 visits		**Total for D5:**	8 observations	*0 incidental observations*	8 total observations	100%	20%
D6	Red-tailed Hawk	12/24/2024	1	Perching	0	*1*	1	100%	5%
	1 species (H = 0.00)	Raptors were observed during 1 of 20 visits		**Total for D6:**	0 observations	*1 incidental observation*	1 total observations	100%	5%

Driving Stop Location	Species*	Date(s) Observed	Number of Survey Periods (Visits) Observed	Behavior(s) Observed	Number of Observations During Surveys	*Number of Incidental Observations*	Total Observations	Percent Total of Observations (Per Survey Location)	Frequency (Per Driving Stop Location)
D7	American Kestrel	4/2/2025	1	Fly-through; Perching	1	*0*	1	10%	5%
	Red-tailed Hawk	12/3/2024; 12/10/2024; 2/11/2025; 2/19/2025; 3/12/2025	5	Fly-through; Perching	3	*2*	5	50%	25%
	Rough-legged Hawk	12/24/2024; 1/7/2025	2	Fly-through; Perching	2	*0*	2	20%	10%
	Turkey Vulture	4/9/2025	2	Fly-through	2	*0*	2	20%	10%
	4 species (H = 1.22)	Raptors were observed during 9 of 20 visits		**Total for D7:**	8 observations	*2 incidental observations*	10 total observations	100%	45%
D8	Red-tailed Hawk	12/3/2024; 1/14/2025; 1/22/2025; 1/28/2025; 2/25/2025	5	Fly-through; Perching; Foraging	5	*0*	5	36%	25%
	Rough-legged Hawk	3/26/2025	1	Fly-through; Perching; Foraging	1	*1*	2	14%	5%
	Turkey Vulture	3/26/2025; 4/9/2025	2	Circling; Fly-through	7	*0*	7	50%	10%
	3 species (H = 0.99)	Raptors were observed during 7 of 20 visits		**Total for D8:**	13 observations	*1 incidental observation*	14 total observations	100%	35%
Total Overall Species:	**7 species** (not including the unidentified raptors) H= 1.55	Raptors were observed during 34 of 160 visits		**Total Overall:**	**40 observations**	***7 incidental observations***	**47 total observations**		**21%**

*Listed species are **bolded**
Species richness = Number of species
Species diversity = Shannon diversity index H = - Σ (pi * ln(pi))
Abundance = number of individuals (i.e., observations) of a species
Frequency = number of visits a species was observed divided by the number of visits to that location

3.2.3 State-Listed Species Observations

A total of [redacted] were recorded during the study period (Table 6). There were [redacted] during the WGRS stationary and driving surveys and there were [redacted] recorded (Table 6). There was [redacted].

During surveys, there were [redacted] (Table 6). There were also [redacted] (Table 6). [redacted] was also recorded during the surveys (Table 6).

[redacted] There were no "probable" or "confirmed" breeding behaviors observed for the state-listed species during the WGRS per Breeding Bird Atlas codes (Table 6) (New York Breeding Bird Atlas, n.d.). [redacted]

Table 6 summarizes observations of state-listed species. Flight paths, roosts, and perch locations, if applicable, are shown on Figure 2 and are included with additional information in the Attachment B shapefiles.

Table 6. State-Listed Species Observations

Species	New York State Listing Status	Date(s) Observed	Number of Observations[1]	Number of Incidental Observations[2]	Total Observations	Location(s) Observed From	Behavior(s) Observed	Highest Breeding Bird Atlas Code
[redacted]								
[redacted]								
[redacted]								

Species	New York State Listing Status	Date(s) Observed	Number of Observations[1]	Number of Incidental Observations[2]	Total Observations	Location(s) Observed From	Behavior(s) Observed	Highest Breeding Bird Atlas Code
		Total:						

[1]Includes only observations recorded during all regular (driving and stationary) surveys.
[2] Includes only observations recorded incidentally to regular surveys.

3.2.3.1 Target Species

3.2.3.1.1

A total of were recorded during the WGRS, including that occurred during regular surveys (stationary and driving stops) (Table 6). (Table 1). (Table 6). (Tables 3, 5, and 6). (Table 5). (Table 3).

Of the (Tables 3, 5, and 6 and Appendix D). Additionally, (Appendix D). are shown on Figure 2 and are included in the Attachment B shapefiles.

There were no observed or suspected observed during the WGRS, however, observations of During late winter surveys (March and April), there were

[redacted] (New York Breeding Bird Atlas, n.d.). However, [redacted] (New York Breeding Bird Atlas, n.d.). [redacted] (New York Breeding Bird Atlas, n.d.). There were no "confirmed" or "probable" breeding behaviors of [redacted] observed (Table 6).

3.2.3.1.2 [redacted]

A total of [redacted] were recorded during the WGRS, including [redacted] (Table 6). [redacted] (Table 1). [redacted] (Table 6). [redacted] (Tables, 3, 5, and 6, and Appendix D). [redacted] (Tables 3 and 6, Appendix D).

The [redacted] (Appendix D). [redacted] (Appendix D).

[redacted] (Appendix D).

[redacted] are shown on Figure 2 and are included in the Attachment B shapefiles.

There were no observed or suspected [redacted] observed during the WGRS. However, [redacted] The remainder of the Project Area did not have observations of [redacted]. During late winter surveys (March and April), there were [redacted] and therefore there were no "possible," "confirmed," or "probable" breeding behaviors of [redacted] (Table 6) (New York Breeding Bird Atlas, n.d.).

3.2.3.2 Other Listed Species

3.2.3.2.1 [redacted]

[redacted] (Table 1). There was a [redacted] (Appendix D). [redacted] (Appendix D). [redacted] are shown on Figure 2 and are included in the

Attachment B shapefiles. There were no observed “possible,” “probable,” or “confirmed” breeding behaviors observed for the [redacted] during the WGRS (Table 6) (New York Breeding Bird Atlas, n.d.).

3.2.3.2.2 [redacted]

There was [redacted] (Appendix D). The estimated location of the [redacted] is shown on Figure 2 and is included in Attachment B shapefiles. As the [redacted] (Table 6) (New York Breeding Bird Atlas, n.d.).

3.2.3.2.3 [redacted]

[redacted] (Table 1). [redacted] (Table 3). [redacted] (Table 6). [redacted] (Appendix D). [redacted] (Appendix D). [redacted] ppendix D). [redacted] Appendix D). Flight paths for [redacted] are shown on Figure 2 and are included in the Attachment B shapefiles. There were no observed “possible,” “probable,” or “confirmed” breeding behaviors observed for the [redacted] during the WGRS (Table 6) (New York Breeding Bird Atlas, n.d.).

4.0 CONCLUSIONS

TRC performed WGRS during the winter of 2024-2025 to document the presence and use of the Project Area by the [redacted] Survey methodology followed the NYSDEC *Protocol*, the Project-specific Study Plan, along with comments from ORES. There were 9 stationary survey locations, and 8 driving survey stops throughout the Project Area, that were each visited 20 times (i.e., 20 survey periods), approximately weekly, from November 18, 2024, through April 10, 2025, for a total of 180 stationary evening surveys, and 160 daytime driving stops.

A total of 185 raptor observations representing 11 species, and several unidentified raptors were recorded during the WGRS. The raptors observed included American kestrel (4 observations), barred owl (3 observations), [redacted] great horned owl (14 observations), merlin (5 observations), [redacted] red-tailed hawk (35 observations), rough-legged hawk (15 observations), [redacted] turkey vulture (64 observations, and unidentified raptors (2 observations). Raptors were observed from all 9 of the stationary survey locations and all 8 of the driving stops, and raptors were observed during all 20 of the 20 survey periods. However, the frequency of raptor observations was 34% per stationary survey (raptors were observed 62 out of 180 stationary surveys) and 21% per driving stop (raptors were observed 34 out of 160 driving stops).

Out of the 185 total raptor observations, [redacted] The [redacted]

There were no observed or suspected [redacted] However, there were multiple observations of [redacted] There were no observations in the eastern open habitat of the Project Area that S5 and S6 overlooked, or the western open habitat that S7 overlooked, and therefore those areas should not be considered occupied wintering habitat for the species. [redacted] Therefore, the rest of the Project Area should not be considered [redacted].

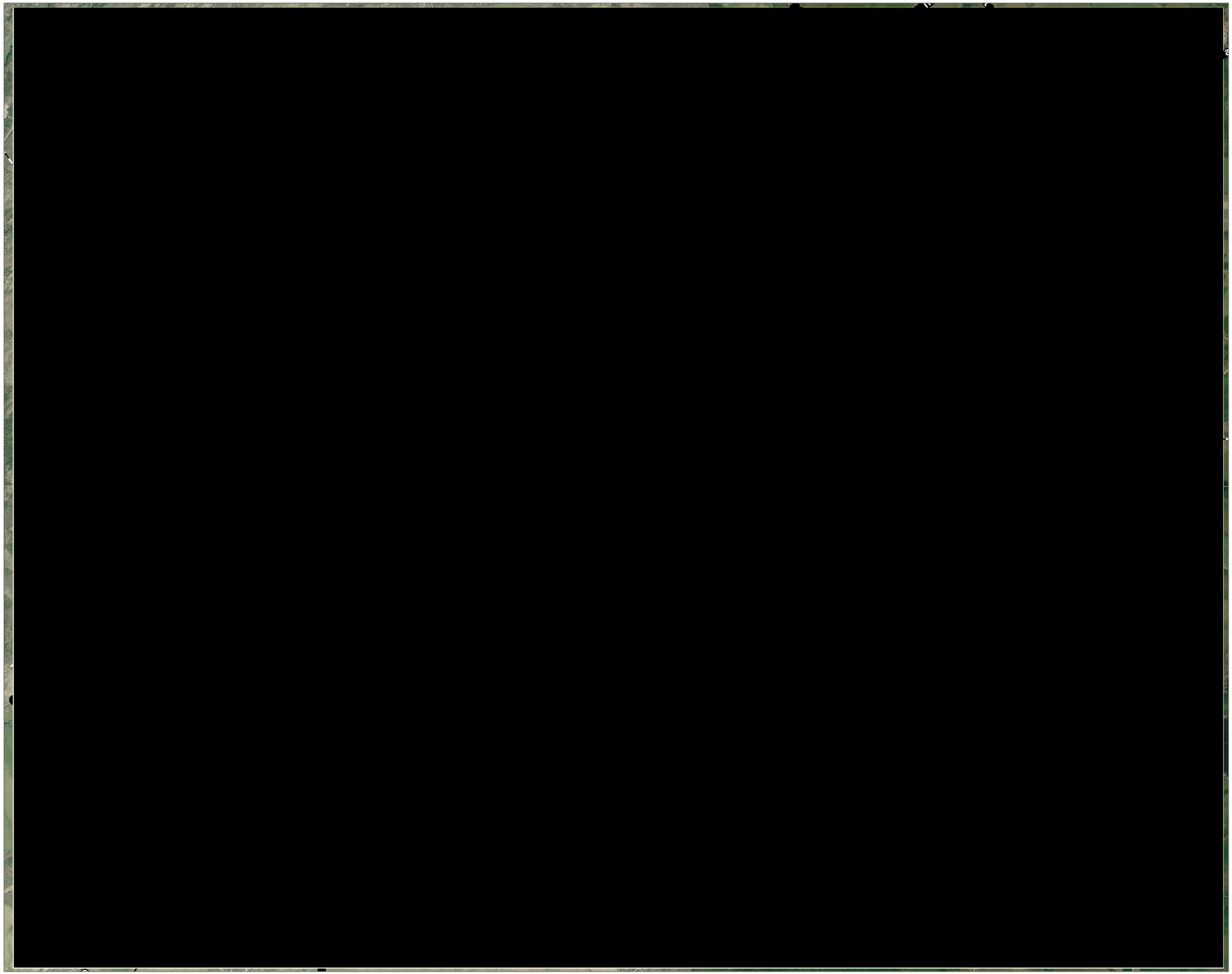
It is not anticipated that any further WGRS will be needed for the Article VIII Application. Additional conversations with ORES are recommended to determine the presence and extent of wintering occupied habitat for listed species and to adequately assess the potential impacts from the Project to state-listed species if any are likely to occur.

5.0 REFERENCES

New York Breeding Bird Atlas. n.d. Breeding Codes. Available from: https://ebird.org/atlasny/about/breeding-codes

New York State Department of Environmental Conservation (NYSDEC). 2021. New York State Department of Environmental Conservation Survey Protocol for State-listed Wintering Grassland Raptor Species August 2021.

FIGURES



- PROJECT AREA
- HABITAT <25 AC
- CITY & TOWN BOUNDARY
- STATIONARY SURVEY LOCATIONS
- DRIVING SURVEY LOCATIONS
- DRIVING ROUTES

NOTES:

BASE MAP: ESRI AERIAL IMAGERY
DATA SOURCES: TRC, ENEL GREEN POWER NORTH AMERICA INC.,

[redacted]

N

1:24,000
1" = 2,000'

0 2,000 4,000 FEET

PROJECT:
BEACON HARBOR SOLAR
WINTERING GRASSLAND RAPTOR SURVEY
CLAYTON AND BROWNVILLE, JEFFERSON COUNTY, NY

TITLE:
WINTERING GRASSLAND RAPTOR SURVEY LOCATIONS

DRAWN BY:	H. DAVIS	PROJ. NO.:	592979
CHECKED BY:	V. DEBRITA		
APPROVED BY:	L. DOWNING-SCHMIDT		**FIGURE 1**
DATE:	APRIL 2025		

TRC
3 CORPORATE DRIVE
SUITE 202
CLIFTON PARK, NY 12065
PHONE: 518.348.1190

FILE: 592979_BeaconHarbor_RaptorSurvey.aprx

Coordinate System: NAD 1983 StatePlane New York Central FIPS 3102 Feet. Map Rotation: 0
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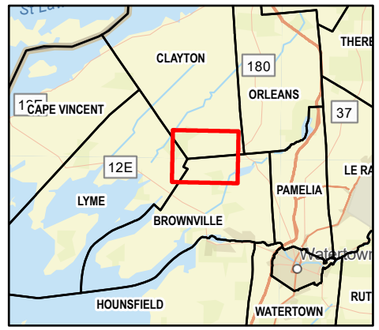
[redacted]

PROJECT AREA
HABITAT <25 AC
CITY & TOWN BOUNDARY
DRIVING ROUTES
DRIVING SURVEY LOCATIONS
STATIONARY SURVEY LOCATIONS

[redacted]

NOTES:

BASE MAP: ESRI AERIAL IMAGERY
DATA SOURCES: TRC, ENEL GREEN POWER NORTH AMERICA INC.,



1:24,000
1" = 2,000'

0 2,000 4,000 FEET

PROJECT:
BEACON HARBOR SOLAR
WINTERING GRASSLAND RAPTOR SURVEY
CLAYTON AND BROWNVILLE, JEFFERSON COUNTY, NY

TITLE:
STATE-LISTED SPECIES OBSERVATIONS

DRAWN BY:	H. DAVIS	PROJ. NO.:	592979
CHECKED BY:	V. DEBRITA		
APPROVED BY:	L. DOWNING-SCHMIDT		
DATE:	APRIL 2025		

FIGURE 2

TRC
3 CORPORATE DRIVE
SUITE 202
CLIFTON PARK, NY 12065
PHONE: 518.348.1190

FILE: 592979_BeaconHarbor_RaptorSurvey.aprx

Coordinate System: NAD 1983 StatePlane New York Central FIPS 3102 Feet. Map Rotation: 0
Saved By: HDAVIS on 4/2/2025, 11:46:50 AM. File Path: T:\1-PROJECTS\Enel_Green_Power\592979_Beacon_Harbor\2-APRX\592979_BeaconHarbor_RaptorSurvey.aprx. Layout Name: Fig2_BeaconHarborSolar_WRS

APPENDICES

Appendix A. Survey Effort Table

Survey Date	Survey Location[1]	Survey Period (Visit)	Survey Start Time	Survey End Time	Durations of Survey (Minutes)	Sunset	Were Raptors Observed?	Disturbances[2]/Other Survey Comments
2024-11-18	S1	1	15:34	17:05	91	16:34	yes	None
2024-11-18	S4	1	15:34	17:08	94	16:34	no	Two passes by low flying military helicopter
2024-11-18	S6	1	15:30	17:15	105	16:34	yes	A helicopter flew through from 4:34 to 4:36.
2024-11-19	D1	1	14:02	14:07	5	16:33	no	None
2024-11-19	D2	1	14:08	14:13	5	16:33	yes	None
2024-11-19	D3	1	14:18	14:23	5	16:33	yes	None
2024-11-19	D4	1	14:26	14:31	5	16:33	no	None
2024-11-19	D5	1	14:32	14:37	5	16:33	no	None
2024-11-19	D6	1	14:42	14:47	5	16:34	no	None
2024-11-19	D7	1	14:49	14:54	5	16:34	no	None
2024-11-19	D8	1	14:55	15:00	5	16:34	no	None
2024-11-19	S2	1	15:33	17:05	92	16:33	yes	None
2024-11-19	S7	1	15:30	17:20	110	16:34	no	
2024-11-19	S8	1	15:34	17:12	98	16:34	yes	
2024-11-20	S3	1	15:33	17:05	92	16:33	yes	None
2024-11-20	S5	1	15:33	17:06	93	16:33	no	
2024-11-20	S9	1	15:30	17:10	100	16:33	yes	
2024-11-25	S1	2	15:29	16:59	90	16:29	yes	Occasional passing vehicles
2024-11-25	S3	2	15:20	17:20	120	16:29	no	
2024-11-25	S4	2	15:29	17:00	91	16:25	yes	None
2024-11-25	S6	2	15:29	17:03	94	16:29	yes	
2024-11-26	D1	2	14:57	15:02	5	16:29	no	None
2024-11-26	D2	2	14:51	14:56	5	16:29	no	
2024-11-26	D3	2	14:42	14:47	5	16:29	no	None
2024-11-26	D4	2	14:34	14:39	5	16:29	no	None; Rough-legged hawk from D5 was also observed from D4 - see D5 observation for details
2024-11-26	D5	2	14:28	14:33	5	16:29	yes	None
2024-11-26	D6	2	14:16	14:21	5	16:29	no	None
2024-11-26	D7	2	14:10	14:15	5	16:29	no	None
2024-11-26	D8	2	14:04	14:09	5	16:29	no	None
2024-11-26	S2	2	15:29	16:59	90	16:29	yes	
2024-11-26	S5	2	15:29	16:59	90	16:29	no	
2024-11-26	S7	2	15:29	17:02	93	16:29	yes	

Survey Date	Survey Location[1]	Survey Period (Visit)	Survey Start Time	Survey End Time	Durations of Survey (Minutes)	Sunset	Were Raptors Observed?	Disturbances[2]/Other Survey Comments
2024-11-27	S8	2	15:28	16:58	90	16:28	yes	Machinery humming from residence to the west from start of survey to 3:51 - not terribly loud
2024-11-27	S9	2	15:27	17:05	98	16:28	yes	
2024-12-02	S1	3	15:26	17:00	94	16:26	yes	None
2024-12-02	S4	3	15:15	17:15	120	16:26	no	
2024-12-02	S7	3	15:26	17:04	98	16:26	yes	
2024-12-03	D1	3	14:07	14:12	5	16:26	no	None
2024-12-03	D2	3	14:13	14:18	5	16:26	no	None
2024-12-03	D3	3	14:21	14:26	5	16:26	no	
2024-12-03	D4	3	14:27	14:32	5	16:26	no	None
2024-12-03	D5	3	14:33	14:38	5	16:26	no	None
2024-12-03	D6	3	14:44	14:49	5	16:26	no	None
2024-12-03	D7	3	14:51	14:56	5	16:26	yes	
2024-12-03	D8	3	14:55	15:00	5	16:26	yes	None
2024-12-03	S2	3	15:26	16:58	92	16:26	yes	None
2024-12-03	S5	3	15:20	17:10	110	16:26	no	
2024-12-03	S8	3	15:26	17:02	96	16:26	yes	
2024-12-04	S3	3	15:26	16:56	90	16:26	yes	None
2024-12-04	S9	3	15:26	16:56	90	16:26	yes	
2024-12-06	S6	3	15:25	16:55	90	16:25	yes	
2024-12-09	S1	4	15:25	16:55	90	16:25	no	
2024-12-09	S4	4	15:25	16:55	90	16:25	no	None
2024-12-09	S7	4	15:15	17:15	120	16:26	no	
2024-12-10	D1	4	14:52	14:57	5	16:25	no	None
2024-12-10	D2	4	14:46	14:51	5	16:25	no	None
2024-12-10	D3	4	14:38	14:43	5	16:25	no	None
2024-12-10	D4	4	14:30	14:35	5	16:25	yes	None
2024-12-10	D5	4	14:24	14:29	5	16:25	no	None
2024-12-10	D6	4	14:14	14:19	5	16:26	no	None
2024-12-10	D7	4	14:08	14:13	5	16:26	yes	None
2024-12-10	D8	4	14:01	14:06	5	16:26	no	None
2024-12-10	S2	4	15:25	16:55	90	16:25	no	
2024-12-10	S5	4	15:25	16:55	90	16:25	no	None
2024-12-10	S8	4	15:25	17:05	100	16:26	yes	
2024-12-11	S3	4	15:26	16:56	90	16:26	no	

Survey Date	Survey Location[1]	Survey Period (Visit)	Survey Start Time	Survey End Time	Durations of Survey (Minutes)	Sunset	Were Raptors Observed?	Disturbances[2]/Other Survey Comments
2024-12-11	S6	4	15:25	16:55	90	16:25	no	None
2024-12-11	S9	4	15:25	17:10	105	16:26	no	
2024-12-16	S1	5	15:20	17:10	110	16:27	no	
2024-12-16	S3	5	15:27	17:02	95	16:27	no	None
2024-12-16	S5	5	15:27	17:01	94	16:27	yes	
2024-12-16	S7	5	15:27	16:57	90	16:27	no	None
2024-12-17	D1	5	13:58	14:03	5	16:27	no	None
2024-12-17	D2	5	14:04	14:09	5	16:27	no	None
2024-12-17	D3	5	14:12	14:17	5	16:27	no	None
2024-12-17	D4	5	14:18	14:23	5	16:27	no	None
2024-12-17	D5	5	14:24	14:29	5	16:27	no	None
2024-12-17	D6	5	14:34	14:39	5	16:27	no	None
2024-12-17	D7	5	14:42	14:47	5	16:27	no	None
2024-12-17	D8	5	14:48	14:53	5	16:27	no	None
2024-12-17	S2	5	15:20	17:05	105	16:27	no	
2024-12-17	S4	5	15:27	16:57	90	16:27	no	None
2024-12-17	S6	5	15:27	16:58	91	16:27	no	
2024-12-17	S8	5	15:27	16:57	90	16:27	no	None
2024-12-18	S9	5	15:27	16:57	90	16:27	no	None
2024-12-23	S1	6	15:30	17:04	94	16:30	yes	None
2024-12-23	S4	6	15:30	17:20	110	16:30	no	
2024-12-24	D1	6	14:58	15:03	5	16:30	yes	None
2024-12-24	D2	6	14:52	14:57	5	16:30	no	None
2024-12-24	D3	6	14:37	14:42	5	16:30	yes	None
2024-12-24	D4	6	14:30	14:35	5	16:30	no	None
2024-12-24	D5	6	14:23	14:28	5	16:30	yes	None
2024-12-24	D6	6	14:10	14:15	5	16:30	yes	None
2024-12-24	D7	6	14:04	14:09	5	16:31	yes	None
2024-12-24	D8	6	13:58	14:03	5	16:31	no	None
2024-12-24	S2	6	15:30	17:00	90	16:30	yes	None
2024-12-24	S3	6	15:20	17:07	107	16:30	yes	
2024-12-24	S7	6	15:31	17:01	90	16:31	no	
2024-12-26	S5	6	15:32	17:02	90	16:32	no	
2024-12-26	S8	6	15:32	17:06	94	16:32	yes	

Survey Date	Survey Location[1]	Survey Period (Visit)	Survey Start Time	Survey End Time	Durations of Survey (Minutes)	Sunset	Were Raptors Observed?	Disturbances[2]/Other Survey Comments
2024-12-27	S6	6	15:32	17:02	90	16:32	no	Individual on four-wheeler near tree line and in field to the immediate east from 1540-1555, approached me on four wheeler at 1552 to see who I was (a teen and a young child); four wheeler activity again but in eastern-most field from 1614-1620
2024-12-30	S9	6	15:35	17:07	92	16:35	yes	None
2025-01-06	S1	7	15:41	17:12	91	16:41	yes	None
2025-01-06	S4	7	15:35	17:15	100	16:42	no	
2025-01-06	S7	7	15:42	17:12	90	16:42	no	
2025-01-07	D1	7	14:10	14:15	5	16:43	no	None
2025-01-07	D2	7	14:16	14:21	5	16:43	no	None
2025-01-07	D3	7	14:23	14:28	5	16:43	no	None
2025-01-07	D4	7	14:29	14:34	5	16:43	no	None
2025-01-07	D5	7	14:34	14:39	5	16:43	no	None
2025-01-07	D6	7	14:44	14:49	5	16:43	no	None
2025-01-07	D7	7	14:51	14:56	5	16:43	yes	None
2025-01-07	D8	7	15:01	15:06	5	16:43	no	None
2025-01-07	S2	7	15:42	17:12	90	16:42	no	None
2025-01-07	S5	7	15:35	17:15	100	16:43	no	
2025-01-07	S9	7	15:43	17:13	90	16:43	no	
2025-01-08	S3	7	15:44	17:14	90	16:44	no	None
2025-01-08	S6	7	15:35	17:15	100	16:44	no	
2025-01-08	S8	7	15:44	17:14	90	16:44	yes	
2025-01-13	S1	8	15:40	17:25	105	16:49	no	
2025-01-13	S4	8	15:49	17:19	90	16:49	no	
2025-01-13	S7	8	15:49	17:22	93	16:49	no	None
2025-01-14	D1	8	15:15	15:20	5	16:51	no	None
2025-01-14	D2	8	15:09	15:14	5	16:51	yes	None
2025-01-14	D3	8	14:59	15:04	5	16:51	no	None
2025-01-14	D4	8	14:53	14:58	5	16:51	no	None
2025-01-14	D5	8	14:47	14:52	5	16:51	yes	None
2025-01-14	D6	8	14:35	14:40	5	16:51	no	None
2025-01-14	D7	8	14:29	14:34	5	16:51	no	None
2025-01-14	D8	8	14:23	14:28	5	16:51	yes	None
2025-01-14	S2	8	15:40	17:25	105	16:51	no	
2025-01-14	S5	8	15:51	17:21	90	16:51	no	

Survey Date	Survey Location[1]	Survey Period (Visit)	Survey Start Time	Survey End Time	Durations of Survey (Minutes)	Sunset	Were Raptors Observed?	Disturbances[2]/Other Survey Comments
2025-01-14	S8	8	15:51	17:21	90	16:51	yes	None
2025-01-15	S3	8	15:40	17:30	110	16:52	no	
2025-01-15	S6	8	15:52	17:22	90	16:52	no	
2025-01-15	S9	8	15:52	17:22	90	16:52	yes	None
2025-01-20	S5	9	15:58	17:28	90	16:58	no	None
2025-01-20	S7	9	15:55	17:35	100	16:58	yes	
2025-01-21	S8	9	15:50	17:30	100	16:59	no	
2025-01-22	D1	9	14:39	14:44	5	17:01	no	None
2025-01-22	D2	9	14:45	14:50	5	17:01	no	None
2025-01-22	D3	9	14:53	14:58	5	17:01	no	None
2025-01-22	D4	9	14:59	15:04	5	17:01	no	None
2025-01-22	D5	9	15:05	15:10	5	17:01	no	None
2025-01-22	D6	9	15:16	15:21	5	17:01	no	None
2025-01-22	D7	9	15:22	15:27	5	17:01	no	None
2025-01-22	D8	9	15:28	15:33	5	17:01	yes	None
2025-01-22	S1	9	16:01	17:31	90	17:01	yes	
2025-01-22	S4	9	16:01	17:31	90	17:01	yes	None
2025-01-22	S9	9	15:45	17:35	110	17:01	no	
2025-01-23	S2	9	16:02	17:32	90	17:02	no	
2025-01-23	S6	9	16:02	17:33	91	17:02	no	None
2025-01-24	S3	9	16:03	17:33	90	17:03	no	
2025-01-27	S1	10	16:08	17:38	90	17:08	no	None
2025-01-27	S4	10	16:00	17:40	100	17:08	no	
2025-01-27	S7	10	16:08	17:38	90	17:08	no	
2025-01-28	D1	10	15:49	15:54	5	17:09	no	None
2025-01-28	D2	10	15:43	15:48	5	17:09	no	None
2025-01-28	D3	10	15:37	15:42	5	17:09	no	None
2025-01-28	D4	10	15:31	15:36	5	17:09	no	None
2025-01-28	D5	10	15:25	15:30	5	17:09	no	None
2025-01-28	D6	10	15:17	15:22	5	17:09	no	None
2025-01-28	D7	10	15:11	15:16	5	17:09	no	None
2025-01-28	D8	10	15:05	15:10	5	17:09	yes	None
2025-01-28	S2	10	16:09	17:39	90	17:09	no	None
2025-01-28	S5	10	16:00	17:45	105	17:09	no	
2025-01-28	S8	10	16:09	17:39	90	17:09	yes	

Survey Date	Survey Location[1]	Survey Period (Visit)	Survey Start Time	Survey End Time	Durations of Survey (Minutes)	Sunset	Were Raptors Observed?	Disturbances[2]/Other Survey Comments
2025-01-29	S3	10	16:10	17:40	90	17:10	no	None
2025-01-29	S6	10	16:00	17:45	105	17:10	no	
2025-01-29	S9	10	16:10	17:40	90	17:10	no	
2025-02-03	S1	11	16:17	18:00	103	17:17	no	
2025-02-03	S4	11	16:17	17:47	90	17:17	no	
2025-02-03	S7	11	16:17	17:47	90	17:17	no	None
2025-02-04	D1	11	14:57	15:02	5	17:19	no	None
2025-02-04	D2	11	15:02	15:07	5	17:19	no	None
2025-02-04	D3	11	15:09	15:14	5	17:19	no	None
2025-02-04	D4	11	15:15	15:20	5	17:19	no	None
2025-02-04	D5	11	15:21	15:26	5	17:19	no	None
2025-02-04	D6	11	15:31	15:36	5	17:19	no	None
2025-02-04	D7	11	15:38	15:43	5	17:19	no	None
2025-02-04	D8	11	15:44	15:49	5	17:19	no	None
2025-02-04	S2	11	16:19	18:00	101	17:19	no	Several snowmobiles drove through the field in the last 15 minutes of the survey.
2025-02-04	S5	11	16:19	17:53	94	17:19	no	
2025-02-04	S8	11	16:19	17:49	90	17:19	yes	None
2025-02-05	S3	11	16:20	18:00	100	17:20	yes	
2025-02-05	S6	11	16:20	17:50	90	17:20	no	
2025-02-05	S9	11	16:20	17:50	90	17:20	yes	None
2025-02-10	S1	12	16:27	17:57	90	17:27	no	
2025-02-10	S4	12	16:27	17:57	90	17:27	yes	
2025-02-10	S7	12	16:27	18:10	103	17:27	no	
2025-02-11	D1	12	15:47	15:52	5	17:28	no	None
2025-02-11	D2	12	15:41	15:46	5	17:28	no	None
2025-02-11	D3	12	15:33	15:38	5	17:28	no	None
2025-02-11	D4	12	15:27	15:32	5	17:28	no	None
2025-02-11	D5	12	15:21	15:26	5	17:28	no	None
2025-02-11	D6	12	15:12	15:17	5	17:28	no	None
2025-02-11	D7	12	15:06	15:11	5	17:28	yes	None
2025-02-11	D8	12	14:59	15:04	5	17:28	no	None
2025-02-11	S2	12	16:28	17:58	90	17:28	no	
2025-02-11	S5	12	16:28	17:58	90	17:28	yes	None
2025-02-11	S8	12	16:28	18:10	102	17:28	no	

Survey Date	Survey Location[1]	Survey Period (Visit)	Survey Start Time	Survey End Time	Durations of Survey (Minutes)	Sunset	Were Raptors Observed?	Disturbances[2]/Other Survey Comments
2025-02-12	S3	12	16:30	18:00	90	17:30	no	
2025-02-12	S6	12	16:30	18:00	90	17:30	no	None
2025-02-12	S9	12	16:30	18:15	105	17:30	no	
2025-02-18	S1	13	16:38	18:08	90	17:38	no	None
2025-02-18	S5	13	16:38	18:20	102	17:38	no	
2025-02-18	S9	13	16:38	18:08	90	17:38	no	
2025-02-19	D1	13	15:14	15:19	5	17:39	no	None
2025-02-19	D2	13	15:20	15:25	5	17:39	no	None
2025-02-19	D3	13	15:28	15:33	5	17:39	no	None
2025-02-19	D4	13	15:35	15:40	5	17:39	yes	None
2025-02-19	D5	13	15:41	15:46	5	17:39	no	None
2025-02-19	D6	13	15:49	15:54	5	17:39	no	None
2025-02-19	D7	13	15:55	16:00	5	17:39	yes	None
2025-02-19	D8	13	16:01	16:06	5	17:39	no	None
2025-02-19	S2	13	16:39	18:09	90	17:39	no	None
2025-02-19	S8	13	16:39	18:09	90	17:39	no	
2025-02-20	S3	13	16:41	18:11	90	17:41	no	None
2025-02-20	S7	13	16:41	18:11	90	17:41	no	
2025-02-21	S4	13	16:42	18:12	90	17:42	no	
2025-02-21	S6	13	16:42	18:12	90	17:42	no	None
2025-02-24	S1	14	16:46	18:25	99	17:46	no	
2025-02-24	S4	14	16:46	18:16	90	17:46	no	
2025-02-24	S7	14	16:46	18:16	90	17:46	no	None
2025-02-25	D1	14	16:02	16:07	5	17:47	no	None
2025-02-25	D2	14	15:56	16:01	5	17:47	no	None
2025-02-25	D3	14	15:48	15:53	5	17:47	yes	None
2025-02-25	D4	14	15:42	15:47	5	17:47	no	None
2025-02-25	D5	14	15:36	15:41	5	17:47	no	None
2025-02-25	D6	14	15:26	15:31	5	17:47	no	None
2025-02-25	D7	14	15:20	15:25	5	17:47	no	None
2025-02-25	D8	14	15:14	15:19	5	17:47	yes	None
2025-02-25	S2	14	16:47	18:30	103	17:47	no	
2025-02-25	S5	14	16:47	18:17	90	17:47	no	
2025-02-25	S8	14	16:47	18:17	90	17:47	no	None
2025-02-26	S3	14	16:49	18:35	106	17:49	no	

Survey Date	Survey Location[1]	Survey Period (Visit)	Survey Start Time	Survey End Time	Durations of Survey (Minutes)	Sunset	Were Raptors Observed?	Disturbances[2]/Other Survey Comments
2025-02-26	S9	14	16:49	18:19	90	17:49	no	None
2025-02-28	S6	14	16:51	18:21	90	17:51	no	
2025-03-03	S1	15	16:55	18:25	90	17:55	no	
2025-03-03	S7	15	16:55	18:40	105	17:55	no	
2025-03-04	D1	15	15:23	15:28	5	17:56	no	None
2025-03-04	D2	15	15:29	15:34	5	17:56	no	None
2025-03-04	D3	15	15:36	15:41	5	17:56	no	None
2025-03-04	D4	15	15:42	15:47	5	17:56	no	None
2025-03-04	D5	15	15:48	15:53	5	17:56	no	None
2025-03-04	D6	15	15:55	16:00	5	17:56	no	None
2025-03-04	D7	15	16:01	16:06	5	17:56	no	None
2025-03-04	D8	15	16:07	16:12	5	17:56	no	None
2025-03-04	S2	15	16:56	18:26	90	17:56	no	None
2025-03-04	S5	15	16:56	18:26	90	17:56	no	None
2025-03-04	S8	15	16:57	18:45	108	17:57	no	
2025-03-06	S4	15	16:59	18:29	90	17:59	no	None
2025-03-07	S3	15	17:00	18:30	90	18:00	no	
2025-03-07	S6	15	17:00	18:30	90	18:00	no	None
2025-03-07	S9	15	16:57	18:33	96	18:00	yes	
2025-03-10	S4	16	18:04	19:45	101	19:04	no	
2025-03-10	S9	16	18:04	19:34	90	19:04	yes	
2025-03-11	S1	16	18:05	19:35	90	19:05	yes	None
2025-03-11	S5	16	18:05	19:45	100	19:05	no	
2025-03-12	D1	16	17:19	17:24	5	19:07	no	None
2025-03-12	D2	16	17:10	17:15	5	19:07	yes	None
2025-03-12	D3	16	17:02	17:07	5	19:07	yes	None
2025-03-12	D4	16	16:55	17:00	5	19:07	no	None
2025-03-12	D5	16	16:49	16:54	5	19:07	no	None
2025-03-12	D6	16	16:39	16:44	5	19:07	no	None
2025-03-12	D7	16	16:33	16:38	5	19:07	yes	None
2025-03-12	D8	16	16:27	16:32	5	19:07	no	None
2025-03-12	S2	16	18:07	19:37	90	19:07	yes	None
2025-03-12	S6	16	18:07	19:45	98	19:07	no	
2025-03-12	S8	16	18:07	19:37	90	19:07	yes	
2025-03-13	S3	16	18:08	19:38	90	19:08	yes	None

Survey Date	Survey Location[1]	Survey Period (Visit)	Survey Start Time	Survey End Time	Durations of Survey (Minutes)	Sunset	Were Raptors Observed?	Disturbances[2]/Other Survey Comments
2025-03-13	S7	16	18:08	19:38	90	19:08	no	
2025-03-17	S1	17	18:13	19:55	102	19:13	no	
2025-03-17	S4	17	18:13	19:43	90	19:13	no	
2025-03-17	S7	17	18:13	19:43	90	19:13	yes	None
2025-03-18	D1	17	16:34	16:39	5	19:14	no	None
2025-03-18	D2	17	16:40	16:45	5	19:14	no	None
2025-03-18	D3	17	16:47	16:52	5	19:14	no	None
2025-03-18	D4	17	16:53	16:58	5	19:14	no	None
2025-03-18	D5	17	16:58	17:03	5	19:14	no	None
2025-03-18	D6	17	17:06	17:11	5	19:14	no	None
2025-03-18	D7	17	17:12	17:17	5	19:14	no	None
2025-03-18	D8	17	17:18	17:23	5	19:14	no	None
2025-03-18	S2	17	18:14	19:55	101	19:14	yes	
2025-03-18	S5	17	18:14	19:44	90	19:14	no	
2025-03-18	S8	17	18:14	19:44	90	19:14	yes	None
2025-03-19	S3	17	18:15	19:55	100	19:15	no	
2025-03-19	S6	17	18:15	19:45	90	19:15	yes	
2025-03-19	S9	17	18:15	19:45	90	19:15	yes	None
2025-03-24	S3	18	18:22	19:52	90	19:22	yes	
2025-03-24	S4	18	18:22	19:52	90	19:22	yes	None
2025-03-24	S7	18	18:22	20:00	98	19:22	no	
2025-03-25	S2	18	18:23	19:53	90	19:23	no	
2025-03-25	S8	18	18:23	20:05	102	19:23	no	
2025-03-26	D1	18	17:40	17:45	5	19:24	no	None
2025-03-26	D2	18	17:35	17:40	5	19:24	no	None
2025-03-26	D3	18	17:26	17:31	5	19:24	no	None
2025-03-26	D4	18	17:20	17:25	5	19:24	no	None
2025-03-26	D5	18	17:14	17:19	5	19:24	no	None
2025-03-26	D6	18	17:04	17:09	5	19:24	no	None
2025-03-26	D7	18	16:58	17:03	5	19:24	no	None
2025-03-26	D8	18	16:45	16:50	5	19:24	yes	None
2025-03-26	S1	18	18:24	19:54	90	19:24	no	
2025-03-26	S5	18	18:24	19:54	90	19:24	no	None
2025-03-26	S9	18	18:24	20:10	106	19:24	no	
2025-03-27	S6	18	18:25	19:55	90	19:25	yes	None

Survey Date	Survey Location[1]	Survey Period (Visit)	Survey Start Time	Survey End Time	Durations of Survey (Minutes)	Sunset	Were Raptors Observed?	Disturbances[2]/Other Survey Comments
2025-04-01	S1	19	18:31	20:01	90	19:31	yes	None
2025-04-01	S4	19	18:31	20:15	104	19:31	no	
2025-04-01	S9	19	18:31	20:01	90	19:31	yes	
2025-04-02	D1	19	17:00	17:05	5	19:33	no	None
2025-04-02	D2	19	17:06	17:11	5	19:33	no	None
2025-04-02	D3	19	17:17	17:22	5	19:33	yes	None
2025-04-02	D4	19	17:23	17:28	5	19:33	no	None
2025-04-02	D5	19	17:29	17:34	5	19:33	no	None
2025-04-02	D6	19	17:37	17:42	5	19:33	no	None
2025-04-02	D7	19	17:44	17:49	5	19:33	yes	None
2025-04-02	D8	19	17:51	17:56	5	19:33	no	None
2025-04-02	S2	19	18:33	20:03	90	19:33	no	
2025-04-02	S5	19	18:33	20:16	103	19:33	no	
2025-04-02	S8	19	18:33	20:03	90	19:33	no	
2025-04-03	S3	19	18:34	20:04	90	19:34	yes	None
2025-04-03	S7	19	18:34	20:04	90	19:34	yes	
2025-04-05	S6	19	18:36	20:08	92	19:36	no	
2025-04-07	S1	20	18:39	20:09	90	19:39	no	
2025-04-07	S9	20	18:39	20:09	90	19:39	yes	None
2025-04-08	S4	20	18:40	20:10	90	19:40	no	
2025-04-08	S7	20	18:40	20:10	90	19:40	no	None
2025-04-09	D1	20	17:48	17:53	5	19:41	no	None
2025-04-09	D2	20	17:40	17:45	5	19:41	yes	None
2025-04-09	D3	20	17:32	17:37	5	19:41	no	None
2025-04-09	D4	20	17:27	17:32	5	19:41	yes	None
2025-04-09	D5	20	17:21	17:26	5	19:41	yes	None
2025-04-09	D6	20	17:12	17:17	5	19:41	no	None
2025-04-09	D7	20	17:06	17:11	5	19:41	yes	None
2025-04-09	D8	20	17:00	17:05	5	19:41	yes	None
2025-04-09	S2	20	18:41	20:11	90	19:41	no	None
2025-04-09	S3	20	18:41	20:17	96	19:41	yes	
2025-04-09	S6	20	18:41	20:11	90	19:41	yes	
2025-04-10	S5	20	18:42	20:12	90	19:42	no	
2025-04-10	S8	20	18:42	20:12	90	19:42	yes	None

[1]S= stationary survey location; D = driving stop location [2]None if left blank

Appendix B. Habitat Summary Table

Survey Location[1]	General Habitat Types Within 1,000-Meter Radius of Point
D1	Coniferous Forest, Corn Stubble, Deciduous Forest, Hayfield, Mixed Forest, Shrubland, Wetland
D2	Coniferous Forest, Corn Stubble, Deciduous Forest, Hayfield, Hedgerow, Shrubland, Wetland
D3	Coniferous Forest, Corn Stubble, Deciduous Forest, Hayfield, Shrubland, Wetland
D4	Coniferous Forest, Corn Stubble, Deciduous Forest, Hayfield, Hedgerow, Shrubland, Wetland
D5	Coniferous Forest, Corn Stubble, Deciduous Forest, Hayfield, Shrubland, Soybean stubble, Wetland
D6	Coniferous Forest, Deciduous Forest, Hayfield, Hedgerow, Shrubland, Wetland
D7	Coniferous Forest, Corn Stubble, Deciduous Forest, Fallow Field, Hayfield, Hedgerow, Mixed Forest, Shrubland, Wetland
D8	Coniferous Forest, Deciduous Forest, Fallow Field, Hayfield, Hedgerow, Mixed Forest, Wetland
S1	Coniferous Forest, Corn Stubble, Deciduous Forest, Hayfield, Shrubland, Wetland
S2	Coniferous Forest, Deciduous Forest, Hayfield, Hedgerow, Mixed Forest, Shrubland, Wetland
S3	Coniferous Forest, Deciduous Forest, Hayfield, Hedgerow, Mixed Forest, Shrubland, Wetland
S4	Corn Stubble, Hayfield, Hedgerow, Mixed Forest, Previous corn field, now soybeans, Shrubland, Wetland
S5	Hayfield, Hedgerow, Mixed Forest, Shrubland, Wetland
S6	Coniferous Forest, Deciduous Forest, Fallow Field, Hedgerow, Shrubland
S7	Deciduous Forest, Fallow Field, Hedgerow, Shrubland, Wetland
S8	Fallow Field, Hayfield, Hedgerow, Mixed Forest, Shrubland, Wetland
S9	Coniferous Forest, Fallow Field, Hedgerow, Mixed Forest, Shrubland

[1]S= stationary survey location; D = driving stop location

Appendix C. Weather Conditions Table

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2024-11-18	S1	1	13	260	51	77	30	85	10	0 - None	None	0	
2024-11-18	S4	1	7	340	48	62	29.8	30	10	0 - None	None	0	
2024-11-18	S6	1	13	260	52	80	30	80	10	0 - None	None	0	Slight breeze with heavy cloud coverage.
2024-11-19	D1	1	10	50	48	71	30	5	10	0 - None	None	0	
2024-11-19	D2	1											
2024-11-19	D3	1											
2024-11-19	D4	1											
2024-11-19	D5	1											
2024-11-19	D6	1											
2024-11-19	D7	1											
2024-11-19	D8	1											
2024-11-19	S2	1	10	40	47	72	30	15	10	0 - None	None	0	
2024-11-19	S7	1	10	40	47	72	30	50	10	0 - None	None	0	Slight breeze with partly cloudy skies
2024-11-19	S8	1	7	340	50	62	29.8	40	10	0 - None	None	0	
2024-11-20	S3	1	8	10	53	64	29.7	95	10	0 - None	None	0	
2024-11-20	S5	1	8	10	53	62	29.8	80	10	0 - None	None	0	
2024-11-20	S9	1	8	10	52	65	29.7	95	10	0 - None	None	0	Slight breeze with heavy cloud coverage.
2024-11-25	S1	2	0	0	42	51	30.1	40	10	0 - None	None	0	
2024-11-25	S3	2	0	0	42	53	30.1	50	10	0 - None	None	0	
2024-11-25	S4	2	0	0	42	55	30.1	10	10	0 - None	None	0	
2024-11-25	S6	2	0	0	42	55	30.1	5	10	0 - None	None	0	
2024-11-26	D1	2											
2024-11-26	D2	2											
2024-11-26	D3	2											
2024-11-26	D4	2											
2024-11-26	D5	2											
2024-11-26	D6	2											
2024-11-26	D7	2											
2024-11-26	D8	2	18	250	46	82	29.9	95	10	0 - None	None	0	

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2024-11-26	S2	2	18	250	45	82	29.9	60	10	0 - None	None	0	Wind was not consistently above 12 mph; no bird observations after weather change; at 16:36 drizzle started
2024-11-26	S5	2	18	250	45	80	29.9	100	10	3 - Rain	None	0	Rain on and off for a total of 5-10 minutes
2024-11-26	S7	2	18	250	46	80	29.9	50	10	2 - Drizzle	None	0	
2024-11-27	S8	2	15	240	41	66	30	55	10	0 - None	None	0	
2024-11-27	S9	2	8	240	40	68	30	30	10	0 - None	None	0	Wind significant decreased around sunset (to 1 mph)
2024-12-02	S1	3	7	250	29	79	30.2	95	10	0 - None	Powder	24	
2024-12-02	S4	3	3	230	29	78	30.2	90	10	0 - None	Powder	24	Mostly cloudy skies with small breeze throughout the survey.
2024-12-02	S7	3	7	250	29	79	30.2	85	10	0 - None	Powder	24	
2024-12-03	D1	3	12	320	27	85	30.3	35	10	0 - None	Powder	30	
2024-12-03	D2	3											
2024-12-03	D3	3											
2024-12-03	D4	3											
2024-12-03	D5	3											
2024-12-03	D6	3											
2024-12-03	D7	3											
2024-12-03	D8	3											
2024-12-03	S2	3	3	270	27	74	30.3	100	10	0 - None	Powder	30	
2024-12-03	S5	3	3	270	27	75	30.3	90	10	0 - None	Powder	24	Overcast with a slight breeze throughout the duration of the survey.
2024-12-03	S8	3	3	270	28	74	30.3	80	10	0 - None	Powder	24	
2024-12-04	S3	3	9	170	30	87	29.9	100	5	5 - Snow	Powder	36	
2024-12-04	S9	3	13	170	30	83	29.8	100	5	5 - Snow	Powder	24	

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2024-12-06	S6	3	13	270	23	70	30.2	100	10	0 - None	Powder	5	Light snow started at 16:31, wind decreased to 5 mph
2024-12-09	S1	4	13	50	33	93	29.9	100	10	2 - Drizzle	Crust	18	
2024-12-09	S4	4	13	50	33	92	29.9	100	6	3 - Rain	Slush	8	
2024-12-09	S7	4	13	50	33	93	29.9	100	6	2 - Drizzle	Crust	20	Cloudy with a constant light drizzle throughout the survey period.
2024-12-10	D1	4											
2024-12-10	D2	4											
2024-12-10	D3	4											
2024-12-10	D4	4											
2024-12-10	D5	4											
2024-12-10	D6	4											
2024-12-10	D7	4											
2024-12-10	D8	4	9	150	47	79	30	20	10	0 - None	Granular	12	
2024-12-10	S2	4	5	250	40	77	29.8	70	10	0 - None	Powder	5	
2024-12-10	S5	4	6	140	46	85	30	100	10	0 - None	Granular	12	
2024-12-10	S8	4	6	140	46	85	30	100	10	0 - None	Crust	18	Cloudy with a small breeze throughout the duration of the survey.
2024-12-11	S3	4	6	240	39	93	29.6	100	10	2 - Drizzle	Crust, Granular	4	
2024-12-11	S6	4	0	0	39	97	29.6	100	3	3 - Rain	Slush	8	
2024-12-11	S9	4	6	250	39	97	29.6	100	3	2 - Drizzle	Crust, Slush	6	Complete overcast with a consistent drizzle throughout the survey.
2024-12-16	S1	5	7	160	44	78	30.2	100	10	0 - None	Ice layer, Slush	2	Slight breeze throughout survey.
2024-12-16	S3	5	7	160	44	79	30.2	100	10	0 - None	Slush	2	Calm wind, very overcast
2024-12-16	S5	5	7	160	44	78	30.2	100	10	0 - None	Ice layer, Slush	2	

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2024-12-16	S7	5	7	160	44	78	30.2	100	10	0 - None	Ice layer	2	
2024-12-17	D1	5	14	240	44	79	30.1	100	10	2 - Drizzle	Slush	4	
2024-12-17	D2	5											
2024-12-17	D3	5											
2024-12-17	D4	5											
2024-12-17	D5	5											
2024-12-17	D6	5											
2024-12-17	D7	5											
2024-12-17	D8	5											
2024-12-17	S2	5	15	250	42	87	30.1	100	10	0 - None	None	0	Cloudy with a constantly breeze throughout the duration of the survey.
2024-12-17	S4	5	12	240	42	82	30.1	100	10	0 - None	Slush	0.5	Breezy, overcast
2024-12-17	S6	5	12	240	42	82	30.2	100	10	0 - None	None	0	
2024-12-17	S8	5	15	250	42	88	30.1	100	10	0 - None	None	0	Patches of snow variable
2024-12-18	S9	5	8	200	35	96	30.1	100	3	Sleet	None	0	Patches of snow Near the tree lines
2024-12-23	S1	6	6	160	23	63	30.5	100	10	0 - None	Powder	2	
2024-12-23	S4	6	6	160	24	62	30.5	100	10	0 - None	Powder	0.5	
2024-12-24	D1	6	13	10	29	85	30.03	100	10	0 - None	Powder	6	
2024-12-24	D2	6											
2024-12-24	D3	6											
2024-12-24	D4	6											
2024-12-24	D5	6											
2024-12-24	D6	6											
2024-12-24	D7	6											
2024-12-24	D8	6	9	20	27	86	30.4	100	10	0 - None	Powder	4	
2024-12-24	S2	6	10	10	25	85	30.4	100	10	0 - None	Powder	6	
2024-12-24	S3	6	8	20	24	87	30.4	100	10	0 - None	Powder	6	
2024-12-24	S7	6	10	10	26	85	30.4	100	10	0 - None	Powder	4	
2024-12-26	S5	6	7	50	27	76	30.6	100	10	0 - None	Powder	2	
2024-12-26	S8	6	7	50	27	76	30.6	70	10	0 - None	Powder	3	
2024-12-27	S6	6	9	40	30	72	30.4	100	10	0 - None	Powder	3	

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2024-12-30	S9	6	14	220	39	93	29.6	100	4	3 - Rain	None	0	Lots of standing water due to recent melt
2025-01-06	S1	7	13	30	12	71	30	100	10	0 - None	Powder	1	
2025-01-06	S4	7	13	30	12	71	30	95	10	0 - None	Powder	1	Overcast with a slight breeze throughout the survey.
2025-01-06	S7	7	13	30	12	70	30	80	10	0 - None	Powder	0.25	
2025-01-07	D1	7	12	280	24	63	30	60	10	0 - None	Powder	1	
2025-01-07	D2	7											
2025-01-07	D3	7											
2025-01-07	D4	7											
2025-01-07	D5	7											
2025-01-07	D6	7											
2025-01-07	D7	7											
2025-01-07	D8	7											
2025-01-07	S2	7	16	290	24	63	30.1	65	10	0 - None	Powder	1	Patches of snow throughout
2025-01-07	S5	7	16	290	25	63	30.1	85	10	0 - None	Powder	1	Overcast with a slight breeze throughout the survey.
2025-01-07	S9	7	16	290	25	62	30.1	60	10	0 - None	Powder	0.25	
2025-01-08	S3	7	12	280	17	64	30	85	10	0 - None	Ice layer, Powder	0	Patches of snow
2025-01-08	S6	7	12	280	17	63	30	75	10	0 - None	Powder	0.5	Overcast with a slight breeze through the survey.
2025-01-08	S8	7	12	280	17	63	30	50	10	0 - None	Powder	0.25	
2025-01-13	S1	8	20	260	31	87	29.9	85	10	0 - None	Powder	2	Overcast with a strong breeze throughout the survey.
2025-01-13	S4	8	17	260	31	80	29.9	95	10	0 - None	Powder	2	

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2025-01-13	S7	8	20	260	31	88	29.9	75	10	5 - Snow	Powder	1	Lightly snowing on and off. Consistent breeze in the canopy
2025-01-14	D1	8											
2025-01-14	D2	8											
2025-01-14	D3	8											
2025-01-14	D4	8											
2025-01-14	D5	8											
2025-01-14	D6	8											
2025-01-14	D7	8											
2025-01-14	D8	8	14	270	25	63	30	5	10	0 - None	Powder	4	
2025-01-14	S2	8	15	260	24	63	30	75	10	0 - None	Powder	2	Overcast with a slight breeze throughout the survey.
2025-01-14	S5	8	15	260	25	63	30	40	10	0 - None	Powder	1	
2025-01-14	S8	8	15	260	25	63	30	25	10	0 - None	Powder	3	
2025-01-15	S3	8	12	260	25	67	30.2	100	10	0 - None	Powder	2	Overcast with a slight breeze throughout the survey.
2025-01-15	S6	8	12	260	25	67	30.2	80	10	0 - None	Powder	1	
2025-01-15	S9	8	12	260	25	67	30.2	95	10	0 - None	Powder	2	
2025-01-20	S5	9	5	230	12	60	30.4	45	10	0 - None	Powder	6	
2025-01-20	S7	9	5	230	12	60	30.4	50	10	0 - None	Crust, Ice layer	3	Partly cloudy with a slight breeze throughout the survey.
2025-01-21	S8	9	12	280	12	63	30.4	100	10	0 - None	Crust, Ice layer	5	Overcast with a slight breeze throughout the survey.
2025-01-22	D1	9	9	170	11	78	30.5	30	10	0 - None	Powder	3	
2025-01-22	D2	9											
2025-01-22	D3	9											
2025-01-22	D4	9											

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2025-01-22	D5	9											
2025-01-22	D6	9											
2025-01-22	D7	9											
2025-01-22	D8	9											
2025-01-22	S1	9	6	180	12	73	30.5	20	10	0 - None	Powder	3	
2025-01-22	S4	9	6	180	12	73	30.5	20	10	0 - None	Powder	3	
2025-01-22	S9	9	6	180	12	68	30.5	100	10	0 - None	Granular, Powder	4	Overcast with a small breeze throughout the survey.
2025-01-23	S2	9	9	200	24	71	30.1	100	10	5 - Snow	Powder	3	
2025-01-23	S6	9	9	200	24	69	30.1	100	4	5 - Snow	Crust, Powder	6	Light snow, still great visibility
2025-01-24	S3	9	3	270	19	64	30.3	50	10	0 - None	Powder	3	
2025-01-27	S1	10	15	210	34	53	29.6	95	10	0 - None	Powder	12	
2025-01-27	S4	10	15	220	34	52	29.6	85	10	0 - None	Crust, Powder	4	Overcast with strong gusts of wind continued throughout the survey.
2025-01-27	S7	10	15	210	35	52	29.6	60	10	0 - None	Powder	3	
2025-01-28	D1	10											
2025-01-28	D2	10											
2025-01-28	D3	10											
2025-01-28	D4	10											
2025-01-28	D5	10											
2025-01-28	D6	10											
2025-01-28	D7	10											
2025-01-28	D8	10	9	250	16	67	29.8	10	10	0 - None	Powder	15	
2025-01-28	S2	10	8	240	16	64	29.8	80	10	0 - None	Crust, Powder	12	
2025-01-28	S5	10	8	240	16	69	29.8	90	10	0 - None	Powder	6	Overcast with a slight breeze throughout the survey.
2025-01-28	S8	10	8	240	16	69	29.8	85	10	0 - None	Powder	5	

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2025-01-29	S3	10	15	279	26	67	29.7	95	10	0 - None	Crust, Powder	18	
2025-01-29	S6	10	15	279	25	70	29.7	85	10	0 - None	Crust	6	Overcast with a slight breeze throughout the survey.
2025-01-29	S9	10	15	279	26	69	29.7	80	10	0 - None	Powder	8	
2025-02-03	S1	11	3	210	35	91	29.9	100	6	2 - Drizzle	Crust	6	Visibility is lower due to the drizzle, but I can still see the whole view shed for S1. The drizzle changed into snow flurries at 16:51.
2025-02-03	S4	11	7	190	36	88	29.9	95	6	3 - Rain	Crust	4	Light drizzle turned into light snow as temperatures dropped in the last half hour
2025-02-03	S7	11	3	210	36	93	29.9	100	6	3 - Rain	Slush	12	Light rain
2025-02-04	D1	11	10	280	24	80	30.3	45	10	0 - None	Powder	18	
2025-02-04	D2	11											
2025-02-04	D3	11											
2025-02-04	D4	11											
2025-02-04	D5	11											
2025-02-04	D6	11											
2025-02-04	D7	11											
2025-02-04	D8	11											
2025-02-04	S2	11	6	330	21	79	30.4	50	10	0 - None	Powder	10	
2025-02-04	S5	11	9	332	23	89	30.4	40	10	0 - None	Powder	8	
2025-02-04	S8	11	9	333	23	88	30.4	40	10	0 - None	Powder	18	
2025-02-05	S3	11	7	300	14	62	30.5	25	10	0 - None	Crust, Powder	8	
2025-02-05	S6	11	7	300	15	71	30.5	5	10	0 - None	Powder	7	
2025-02-05	S9	11	3	270	16	70	30.5	10	10	0 - None	Ice layer, Powder	20	

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2025-02-10	S1	12	8	240	24	59	30.4	65	10	0 - None	Powder	9	
2025-02-10	S4	12	3	210	23	65	30.4	100	10	0 - None	Crust, Powder	26	
2025-02-10	S7	12	8	240	25	58	30.4	75	10	0 - None	Granular, Powder	10	
2025-02-11	D1	12											
2025-02-11	D2	12											
2025-02-11	D3	12											
2025-02-11	D4	12											
2025-02-11	D5	12											
2025-02-11	D6	12											
2025-02-11	D7	12											
2025-02-11	D8	12	13	240	29	73	30.4	100	10	0 - None	Crust, Powder	28	
2025-02-11	S2	12	10	240	29	73	30.4	100	9	5 - Snow	Powder	8	Light snow fall, visibility unaffected
2025-02-11	S5	12	10	240	29	73	30.4	100	8	0 - None	Crust, Powder	28	Light snow started at 17:30, wind speed dropped to 6 mph.
2025-02-11	S8	12	10	240	29	72	30.4	100	9	5 - Snow	Granular, Powder	10	Light snowfall, visibility unaffected.
2025-02-12	S3	12	17	40	19	60	30.4	80	10	0 - None	Powder	14	
2025-02-12	S6	12	17	40	19	59	30.4	100	10	0 - None	Crust	28	
2025-02-12	S9	12	17	40	19	60	30.4	80	10	0 - None	Crust	24	Snow drifts have formed on the edge of the fields causing for a buildup of snow around the hedge row near S9.
2025-02-18	S1	13	15	270	17	66	30.2	75	10	0 - None	Ice layer, Powder	25	
2025-02-18	S5	13	15	270	17	66	30.3	80	10	0 - None	Powder	10	
2025-02-18	S9	13	15	270	17	66	30.3	60	10	0 - None	Ice layer, Powder	22	8” of powder, thin layer of ice, then about 14” of more powder

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2025-02-19	D1	13	12	270	14	63	30.4	5	10	0 - None	Ice layer, Powder	25	
2025-02-19	D2	13											
2025-02-19	D3	13											
2025-02-19	D4	13											
2025-02-19	D5	13											
2025-02-19	D6	13											
2025-02-19	D7	13											
2025-02-19	D8	13											
2025-02-19	S2	13	8	250	13	64	30.4	5	10	0 - None	Crust, Powder	25	
2025-02-19	S8	13	0	0	9	66	30.4	2	10	0 - None	Ice layer, Powder	14	About 4” of powder, then a thin layer of ice, then 10” of powder underneath
2025-02-20	S3	13	6	250	17	71	30.1	95	10	0 - None	Crust, Powder	25	
2025-02-20	S7	13	6	250	18	72	30.1	90	10	0 - None	Ice layer, Powder	20	5” of powder, thin ice layer, then 15” of powder.
2025-02-21	S4	13	9	240	17	64	30.4	2	10	0 - None	Ice layer, Powder	14	4” of powder, a thin layer of ice, then 10” of powder
2025-02-21	S6	13	12	230	17	63	30.4	5	10	0 - None	Ice layer, Powder	25	
2025-02-24	S1	14	14	180	44	46	29.7	90	10	0 - None	Crust	14	
2025-02-24	S4	14	14	180	44	49	29.7	85	10	0 - None	Powder	14	
2025-02-24	S7	14	14	180	45	46	29.7	100	10	0 - None	Crust, Slush	25	
2025-02-25	D1	14											
2025-02-25	D2	14											
2025-02-25	D3	14											
2025-02-25	D4	14											
2025-02-25	D5	14											
2025-02-25	D6	14											
2025-02-25	D7	14											

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2025-02-25	D8	14	10	220	39	93	29.8	100	7	3 - Rain	Crust, Slush	20	Some light rain but can still see the entire field
2025-02-25	S2	14	5	280	37	93	29.8	100	7	2 - Drizzle	Crust, Slush	12	
2025-02-25	S5	14	8	220	38	93	29.8	100	8	2 - Drizzle	Granular	8	
2025-02-25	S8	14	8	220	38	93	29.8	100	7	1 - Haze or Fog	Partially melted, “Packy”	20	Some fog coming in. I can still see the fields.
2025-02-26	S3	14	3	250	36	60	30.1	40	10	0 - None	Granular, Slush	20	
2025-02-26	S9	14	3	250	36	55	30.1	40	10	0 - None	Slush	20	
2025-02-28	S6	14	5	140	30	62	29.7	95	10	0 - None	Crust, Granular	6	
2025-03-03	S1	15	7	0	28	61	30.3	95	10	0 - None	Crust, Granular	3	
2025-03-03	S7	15	10	220	28	62	30.3	100	10	0 - None	Ice layer	20	Snow drifts are present which has led to a buildup of snow around the survey point.
2025-03-04	D1	15	7	180	44	48	30	100	10	0 - None	Slush	15	
2025-03-04	D2	15											
2025-03-04	D3	15											
2025-03-04	D4	15											
2025-03-04	D5	15											
2025-03-04	D6	15											
2025-03-04	D7	15											
2025-03-04	D8	15											
2025-03-04	S2	15	7	180	43	50	30	80	10	0 - None	Crust, Granular	6	
2025-03-04	S5	15	7	180	44	47	30	100	10	0 - None	Slush	16	
2025-03-04	S8	15	8	160	44	46	30	90	10	0 - None	Ice layer, Slush	6	
2025-03-06	S4	15	15	230	28	87	29.5	100	6	5 - Snow	Ice layer, Powder	10	

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2025-03-07	S3	15	18	260	33	53	29.7	50	10	0 - None	Crust, Granular	3	
2025-03-07	S6	15	14	260	33	53	29.7	60	10	0 - None	Crust	6	
2025-03-07	S9	15	18	260	33	53	29.7	45	10	0 - None	Crust, Granular, Ice layer	2	
2025-03-10	S4	16	0	0	46	42	29.9	75	10	0 - None	Slush	3	
2025-03-10	S9	16	0	0	46	42	29.9	55	10	0 - None	Granular, None, Slush	0	Mixed snow conditions, field areas of longer sun duration are melted and waterlogged. Snow drifted and shaded areas have granular and slushy snow.
2025-03-11	S1	16	14	250	48	55	29.8	55	10	0 - None	None	0	Some large patches of slushy snow, but primarily grass
2025-03-11	S5	16	14	250	46	55	29.9	25	10	0 - None	Slush	3	
2025-03-12	D1	16											
2025-03-12	D2	16											
2025-03-12	D3	16											
2025-03-12	D4	16											
2025-03-12	D5	16											
2025-03-12	D6	16											
2025-03-12	D7	16											
2025-03-12	D8	16	8	30	32	43	30.2	100	10	0 - None	None	0	Some patches of snow
2025-03-12	S2	16	12	60	32	46	30.2	100	10	0 - None	None	0	Patches of snow
2025-03-12	S6	16	12	60	31	46	30.2	100	10	0 - None	Slush	1	
2025-03-12	S8	16	10	40	32	45	30.2	90	10	0 - None	Granular, Ice layer, None	0	Most of the snow is melted other than around denser vegetation, what

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
													remains is granular or ice.
2025-03-13	S3	16	4	87	46	55	30.1	100	10	0 - None	None	0	Patches of snow covering about 10 percent of the field
2025-03-13	S7	16	4	85	46	77	30.1	60	10	0 - None	Granular, Slush	6	Most snow is gone, what remains is either slush or granular in old snow drifts
2025-03-17	S1	17	5	300	35	62	30.2	25	10	0 - None	None	0	
2025-03-17	S4	17	5	318	35	69	30.1	5	10	0 - None	None	0	
2025-03-17	S7	17	5	309	34	70	30.1	5	10	0 - None	None	0	Patches of snow covering less than 10 percent of the field
2025-03-18	D1	17	9	190	57	24	30	5	10	0 - None	None	0	
2025-03-18	D2	17											
2025-03-18	D3	17											
2025-03-18	D4	17											
2025-03-18	D5	17											
2025-03-18	D6	17											
2025-03-18	D7	17											
2025-03-18	D8	17											
2025-03-18	S2	17	6	170	57	28	30	25	10	0 - None	None	0	
2025-03-18	S5	17	6	170	57	28	30	20	10	0 - None	None	0	
2025-03-18	S8	17	6	180	57	26	30	5	10	0 - None	None	0	No visible patches of snow from S8. Some still in shaded areas
2025-03-19	S3	17	7	190	71	22	29.8	75	10	0 - None	None	0	
2025-03-19	S6	17	7	190	72	21	29.8	85	10	0 - None	None	0	
2025-03-19	S9	17	7	190	71	22	29.8	75	10	0 - None	None	0	
2025-03-24	S3	18	10	230	45	66	29.7	95	10	0 - None	None	0	
2025-03-24	S4	18	14	230	45	67	29.7	100	10	0 - None	None	0	Patches of snow are gone

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2025-03-24	S7	18	14	230	41	79	29.7	80	10	0 - None	None	0	
2025-03-25	S2	18	15	240	40	83	29.9	45	10	0 - None	None	0	
2025-03-25	S8	18	15	240	38	88	30	90	10	0 - None	None	0	
2025-03-26	D1	18											
2025-03-26	D2	18											
2025-03-26	D3	18											
2025-03-26	D4	18											
2025-03-26	D5	18											
2025-03-26	D6	18											
2025-03-26	D7	18											
2025-03-26	D8	18	14	247	37	64	30.1	95	10	0 - None	None	0	At 17:16 on the driving route it started snowing lightly.
2025-03-26	S1	18	15	260	36	63	30.1	98	10	5 - Snow	None	0	
2025-03-26	S5	18	12	254	36	63	30.1	100	10	0 - None	None	0	
2025-03-26	S9	18	15	260	35	70	30.1	100	10	5 - Snow	None	0	Snow stopped and wind speed dropped to 13 mph at 19:27
2025-03-27	S6	18	13	221	41	55	30.2	90	10	0 - None	None	0	
2025-04-01	S1	19	12	320	37	37	30.4	10	10	0 - None	None	0	
2025-04-01	S4	19	12	320	36	37	30.4	0	10	0 - None	None	0	
2025-04-01	S9	19	12	320	38	38	30.4	0	10	0 - None	None	0	
2025-04-02	D1	19	6	140	37	67	30.3	100	5	5 - Snow	None	0	Actively snowing. No accumulation yet.
2025-04-02	D2	19											
2025-04-02	D3	19											
2025-04-02	D4	19											
2025-04-02	D5	19											
2025-04-02	D6	19											
2025-04-02	D7	19											
2025-04-02	D8	19											
2025-04-02	S2	19	11	115	34	91	30.3	100	5	2 - Drizzle	None	0	
2025-04-02	S5	19	11	115	34	91	30.3	100	5	2 - Drizzle	None	0	
2025-04-02	S8	19	12	110	34	87	30.3	100	5	2 - Drizzle	None	0	
2025-04-03	S3	19	14	230	61	44	29.9	15	10	0 - None	None	0	

Survey Date	Survey Location[1,2]	Survey Period (Visit)	Wind Speed (mph)	Wind Direction (degrees)	Temperature (F)	Relative Humidity	Barometric Pressure (inHG)	Cloud Cover (%)	Visibility (miles)	Precipitation	Snow Condition	Snow Depth (inches)	Weather Comments/Updates
2025-04-03	S7	19	14	230	63	42	29.9	15	10	0 - None	None	0	
2025-04-05	S6	19	14	210	50	90	29.9	80	7	0 - None	None	0	
2025-04-07	S1	20	7	250	46	40	29.7	35	10	0 - None	None	0	
2025-04-07	S9	20	5	260	44	42	29.7	100	10	0 - None	None	0	
2025-04-08	S4	20	12	270	28	77	30	80	10	0 - None	Powder	0.5	Fresh snow.
2025-04-08	S7	20	12	270	28	74	30	100	10	0 - None	Powder	2	Fresh snowfall, winds are calm.
2025-04-09	D1	20											
2025-04-09	D2	20											
2025-04-09	D3	20											
2025-04-09	D4	20											
2025-04-09	D5	20											
2025-04-09	D6	20											
2025-04-09	D7	20											
2025-04-09	D8	20	12	250	36	51	30.3	45	10	0 - None	None	0	
2025-04-09	S2	20	12	90	38	88	30.3	95	10	0 - None	None	0	
2025-04-09	S3	20	12	230	36	47	30.3	40	10	0 - None	None	0	
2025-04-09	S6	20	12	230	36	48	30.3	30	10	0 - None	None	0	
2025-04-10	S5	20	12	90	38	89	30.3	100	9	5 - Snow	None	0	Mix of rain that turned to snow around 7pm
2025-04-10	S8	20	12	90	38	89	30.3	100	4	3 - Rain	None	0	Light rain

[1]S= stationary survey location; D = driving stop location
[2]Driving stop weather was only filled out during the first stop and if weather changed significantly throughout the driving survey

Appendix D. Raptor Observations Table

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024-11-19	D2	1	Red-tailed Hawk	1	no	1	14:10	14:14	4	Unknown	Unknown	Circling	North	100 to 200	One RTHA seen circling over the field near S3 to the west of the road. It circled high in the air for about one minute before moving out of sight to the North.
2024-11-19	D3	1	Red-tailed Hawk	1	no	1	14:21	14:24	3	Adult	Unknown	Circling	East	100 to 200	One RTHA seen circling high over the field to the north. It eventually made its way to the east out of sight still circling.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024-11-19	S8	1	Great Horned Owl	2	no	2	16:57	16:58	1	Unknown	Unknown	Calling	NA	NA	Two owls calling in NE and NW field corners
2024-11-19	S8	1	Great Horned Owl	3	no	1	17:06	17:10	4	Adult	Unknown	Foraging	Southeast, Southwest	1 to 25	Hunting prey in field, bird observed staring down at the field scanning, lost sight when it dove into the grass.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024-11-25	S1	2	Red-tailed Hawk	1	no	1	16:11	16:18	7	Adult	Unknown	Foraging, Perching	North	1 to 25	Observed perching 4:11 (see photo southernmost yellow dot), flapped to middle yellow dot at 4:12, flapped to top yellow dot at 4:15, left perch at 4:17 flapping/gliding low over field to the north, lost sight as it flew lower to the ground at 4:18
2024-11-25	S4	2	Rough-legged Hawk	1	no	1	15:45	15:46	1	Adult	Unknown	Fly-through	North, Northwest	100 to 200	One adult light morph RLHA seen flying over S4 from the southeast to the northwest. Flew in a direct path and out of sight to the North beyond the tree line.
2024-11-25	S6	2	Red-tailed Hawk	1	no	1	16:39	16:40	1	Adult	Unknown	Fly-through	Southwest	50 to 100	Flew in from northeast, exited southwest behind tree line

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024-11-26	D5	2	Rough-legged Hawk	1	no	1	14:28	14:37	9	Adult	Unknown	Foraging	North	50 to 100	One Rough legged hawk (dark-morph) seen soaring on the winds about 50 feet off the ground making its way slowly over the field (kiting). It eventually turned to the north and made its way beyond the tree line to the north during our survey of D4.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024-11-27	S9	2	Red-tailed Hawk	2	no	1	16:19	16:21	2	Unknown	Unknown	Fly-through	East	100 to 200	Red tailed hawk flew through over forested area. Saw red tail flash.

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024-12-02	S7	3	Great Horned Owl	1	no	1	17:01	17:02	1	Unknown	Unknown	Calling	NA	NA	Calling to the southeast from the forest
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024-12-03	S2	3	Red-tailed Hawk	1	no	1	15:55	15:57	2	Adult	Unknown	Fly-through	Northwest, Southeast	100 to 200	One RTHA seen flying high above the field to the west. Flew all of the way across southwest before turning around and headed back to the northeast. I lost sight of it beyond the tree line
2024-12-03	D8	3	Red-tailed Hawk	1	no	1	14:59	15:00	1	Adult	Unknown	Fly-through, Perching	South	50 to 100	Possibly the same bird as the D7 observation. Flew in from the north and perched in a tree for the duration of D8
2024-12-03	D7	3	Red-tailed Hawk	1	no	1	14:51	14:56	5	Adult	Unknown	Fly-through, Perching	North	50 to 100	One RTHA seen flying high above the field to the west in a northerly direction. It perched in a tree to the north of the field and remained perched there for the duration of D7
2024-12-03	S8	3	Red-tailed Hawk	1	no	1	15:36	15:37	1	Adult	Unknown	Fly-through, Perching	West	25 to 50	Flew out of perch in tree and out of field
2024-12-03	S8	3	Red-tailed Hawk	2	no	1	16:27	16:35	8	Adult	Unknown	Fly-through, Perching	Southwest	25 to 50	Flew in from northeast and perched on tree, exited view to the southwest.
2024-12-04	S3	3	Red-tailed Hawk	1	yes	1	15:20	15:21	1	Unknown	Unknown	Fly-through	North	50 to 100	One RTHA seen flying over the barn to the north of S3 before the beginning of surveying. It quickly made its way to the north and out of sight.
2024-12-04	S3	3	Red-tailed Hawk	2	no	1	15:31	15:33	2	Adult	Unknown	Circling, Fly-through	North	50 to 100	One RTHA seen circling high overhead. Came from behind S3, over

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
															the field and out of sight to the north still circling.
2024-12-04	S9	3	Rough-legged Hawk	1	no	1	15:32	15:33	1	Adult	Unknown	Fly-through	Northeast	50 to 100	Flew in from southwest and exited northeast, glanced at field and continued on
2024-12-06	S6	3	Unidentified	1	no	1	15:36	15:37	1	Unknown	Unknown	Fly-through	North	50 to 100	White mottled underside of wings, dark back. Wings were flattened M shape. Only saw for a few seconds before it flew out of sight.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024-12-10	D7	4	Red-tailed Hawk	1	yes	1	14:13	14:14	1	Adult	Unknown	Fly-through	South	50 to 100	One RTHA seen flying over head in a southerly direction. It continued to the south as we drove north.
2024-12-10	S8	4	Red-tailed Hawk	1	no	1	15:28	15:32	4	Adult	Unknown	Fly-through, Perching	Northeast	50 to 100	The individual was first heard and then spotted perched in a tree in the southeastern tree line. Individual had a white chest with black speckling. The individual proceeded to leave its perch and fly northeast where it perched in the eastern tree line and then was lost. While flying the individual could be seen flapping its wings very little and the distinct red tail was observed. Once the individual was lost I could hear several red tail calls from the eastern tree line.
2024-12-16	S5	5	Rough-legged Hawk	1	no	1	16:14	16:15	1	Unknown	Unknown	Fly-through	East	50 to 100	Single one just flying by overhead. No hunting or landing behavior observed.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024-12-24	S2	6	Rough-legged Hawk	1	no	1	15:57	15:58	1	Adult	Unknown	Fly-through	East	100 to 200	One rough legged hawk seen flying over the project area. continued to the east in a straight line until out of sight.

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024-12-24	S3	6	Great Horned Owl	1	no	1	16:32	17:07	35	Unknown	Unknown	Calling	NA	NA	heard calling from the woods to the east, could not tell how far away
2024-12-24	D7	6	Rough-legged Hawk	1	no	1	14:04	14:09	5	Adult	Unknown	Fly-through, Perching	South	50 to 100	One RLHA seen perched in a tree to the east, it flushed to the south when we stopped and perched in another tree further south. It stayed in that perch for the duration of the survey.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024-12-24	D6	6	Red-tailed Hawk	1	yes	1	14:19	14:20	1	Adult	Unknown	Perching	NA	NA	One RTHA seen perched in a tree on the side of the road as we drove by.
2024-12-24	D5	6	Red-tailed Hawk	1	no	1	14:25	14:26	1	Adult	Unknown	Fly-through, Perching	North	50 to 100	One adult RTHA seen perched on a telephone pole and flushed to the north when we parked. It flew out of sight behind us
2024-12-26	S8	6	Red-tailed Hawk	1	no	1	15:38	15:46	8	Adult	Unknown	Fly-through, Perching	Northeast	25 to 50	Flew into survey field, perched, then continued on out of survey field 8 minutes after
2024-12-30	S9	6	Red-tailed Hawk	1	no	1	15:35	15:37	2	Adult	Unknown	Circling	West	100 to 200	One red tailed, seen circling over the field to the southeast. It completed 4 to 5 circles before eventually disappearing behind the trees to the southwest. screamed twice.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2025-01-07	D7	7	Rough-legged Hawk	1	no	1	14:54	14:56	2	Unknown	Unknown	Fly-through, Perching	East	25 to 50	One rough legged hawk seen flying over the field to the east. It landed and perched in a tree to the east and

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
															stayed there for the duration of our driving stop.
2025-01-08	S8	7	Red-tailed Hawk	1	no	1	15:50	15:54	4	Adult	Unknown	Fly-through, Perching	Northwest	25 to 50	Perched in hedgerow, flew off shortly after spotting
2025-01-14	D8	8	Red-tailed Hawk	1	no	1	14:27	14:28	1	Adult	Unknown	Foraging, Perching	East, West	1 to 25	One red tailed seen on the ground next to the road picking at some sort of roadkill. It flew when we drove by but perched a few feet away to return to the carcass
2025-01-14	D5	8	Merlin	1	no	1	14:48	14:49	1	Adult	Unknown	Fly-through, Perching	West	25 to 50	One Merlin seen flying onto a telephone pole in transit to D5. It stayed perched there as we drove by.
2025-01-14	D2	8	Red-tailed Hawk	1	no	1	15:09	15:14	5	Unknown	Unknown	Perching	NA	NA	1 RTHA seen perched in a tree to the north of D2 across the intersection. It remained perched for the duration of the survey
2025-01-14	D2	8	Red-tailed Hawk	2	no	1	15:10	15:11	1	Adult	Unknown	Fly-through	South	25 to 50	One adult RTHA seen flying in a direct path overhead to the south. It kept going until out of sight past the tree line to the south.
2025-01-14	S8	8	Red-tailed Hawk	1	no	1	16:49	16:50	1	Unknown	Unknown	Fly-through	South	50 to 100	One red tailed hawk seen flying south to the west of S8. It flew in a straight path until out of sight beyond the barn.
2025-01-15	S9	8	Great Horned Owl	1	no	1	17:11	17:19	8	Unknown	Unknown	Calling	NA	NA	Great horned owl heard calling to the north. It was heard three or four times towards the end of the survey. Located somewhere in the red circle.
2025-01-20	S7	9	Red-tailed Hawk	1	no	1	16:45	16:46	1	Adult	Unknown	Fly-through, Perching	South	50 to 100	The individual was spotted perched in a tree in the southern tree line. Individual had a white chest with black speckling. The individual proceeded to leave its perch and fly south off the project site. While flying away I was able to observe the distinct red tail feathers.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
2025-01-22	S4	9	Red-tailed Hawk	1	no	1	16:24	16:25	1	Unknown	Unknown	Fly-through	South	50 to 100	One RTHA seen flying high over the project to the west heading south in a straight path until out of sight over the tree line.
2025-01-22	D8	9	Red-tailed Hawk	1	no	1	15:29	15:34	5	Adult	Unknown	Perching	NA	NA	One RTHA seen perched in a tree east of the road near S8 as we were driving by. It stayed perched for the entire duration of our survey at D8. Likely the same bird that we see in the area often.
2025-01-28	D8	10	Red-tailed Hawk	1	no	1	15:05	15:10	5	Adult	Unknown	Perching	NA	NA	One red tailed seen perching in a tree in the field to the east. Stayed for the duration of the survey
2025-01-28	S8	10	Rough-legged Hawk	1	no	1	16:17	16:19	2	Adult	Unknown	Foraging	Southeast	25 to 50	Crossed over head, seen looking down scanning the field for potential prey
2025-02-04	S8	11	Great Horned Owl	1	no	1	17:33	17:36	3	Unknown	Unknown	Calling	NA	NA	One great horned heard calling to the east. Heard 3 times.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2025-02-05	S9	11	Great Horned Owl	1	no	1	16:27	16:34	7	Unknown	Unknown	Calling	NA	NA	One GHOW heard calling in the woods to the east beyond the tree line. Heard calling 3-4 times
2025-02-05	S9	11	Great Horned Owl	2	no	2	17:09	17:50	41	Unknown	Unknown	Contact calls	NA	NA	2 GHOW heard calling back and forth to the East of S9. One is likely the individual from earlier. Both individuals heard fairly consistently through the remainder of the survey
2025-02-10	S4	12	Great Horned Owl	1	no	1	17:39	17:40	1	Unknown	Unknown	Contact call	NA	NA	One GHOW heard from the woods to the northwest. Heard 4-5 times.
2025-02-10	S4	12	Great Horned Owl	2	no	2	17:41	17:57	16	Unknown	Unknown	Contact calls	NA	NA	2 distinct GHOW contact calls heard to the east of S4. Heard consistently through the rest of the survey

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
2025-02-11	S5	12	Rough-legged Hawk	1	yes	1	16:08	16:10	2	Adult	Female	Perching	NA	NA	One RLHA seen perched on a power line north of D7 as I was driving from the end of the driving survey to S5. I watched it as it stayed perched for 2 minutes before I continued on to S5
2025-02-11	D7	12	Red-tailed Hawk	1	yes	1	15:05	15:06	1	Adult	Unknown	Fly-through, Perching	East	25 to 50	One RTHA seen perched in a tree by the road in transit to D7. It flushed as we drove by and landed it a tree in the woods to the east.
2025-02-19	D7	13	Red-tailed Hawk	1	no	1	15:57	16:00	3	Adult	Unknown	Perching	NA	NA	One RTHA seen perched in a tree to the west of D7. It was located behind us, so we did not see it immediately, but once observed it remained perched for the duration of the survey.
2025-02-19	D4	13	Red-tailed Hawk	1	yes	1	15:34	15:35	1	Unknown	Unknown	Fly-through, Perching	South	25 to 50	One RTHA seen perched in a tree on the west side of the road in route to D4 from D3. It flushed to the south and out of sight as we drove by.
2025-02-25	D8	14	Red-tailed Hawk	1	no	1	15:14	15:19	5	Adult	Unknown	Perching	NA	NA	One adult RTHA seen perched in a tree to the Southwest of D8. It stayed perched for the entire duration of the survey.
2025-02-25	D3	14	Red-tailed Hawk	1	no	1	15:50	15:55	5	Unknown	Unknown	Perching	NA	NA	One RTHA seen perched in a tree to the northwest of D3 (Blue X). It stayed perched for the entirety of the surveys
2025-03-07	S9	15	Turkey Vulture	1	yes	4	16:45	16:48	3	Adult	Unknown	Circling, Fly-through, Perching	East	25 to 50, 50 to 100	Four turkey vultures observed circling and battling the wind as I was walking toward S9. Two of the vultures briefly perched in trees before flying out of sight to the east.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2025-03-07	S9	15	Great Horned Owl	3	no	1	18:12	18:25	13	Unknown	Unknown	Vocalizing	NA	NA	Great horned owl could be heard vocalizing in the white pine forest to the southwest of S9.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2025-03-12	S2	16	Rough-legged Hawk	2	yes	1	17:46	17:48	2	Adult	Unknown	Perching	NA	NA	One rough legged hawk seen perched on a tree branch on the drive to S2 (blue x). It stayed perched while two [redacted] flew by (red arrows). It stayed perched until I left.
2025-03-12	D7	16	Red-tailed Hawk	1	no	1	16:33	16:38	5	Unknown	Unknown	Perching	NA	NA	One RTHA seen perched on a power line to the northwest of D7. It stayed for the duration of the survey.
2025-03-12	D3	16	Rough-legged Hawk	1	no	1	17:02	17:07	5	Unknown	Unknown	Perching	NA	NA	One RLHA seen perched in a tree to the northwest of D3. It stayed perched for the duration of the survey.
2025-03-12	D2	16	Unidentified Buteo	1	no	1	17:10	17:15	5	Unknown	Unknown	Perching	NA	NA	Unidentified buteo seen perched in a tree to the east of D2. It was too far away and facing away with its head tucked to get a positive ID. Likely a RTHA or RLHA. Stayed in the same position the entire survey.
2025-03-12	S8	16	Red-tailed Hawk	1	no	1	18:38	18:52	14	Adult	Unknown	Fly-through, Perching	North, Northeast	50 to 100	Flew in at tree height from the south, perched at the top of a large maple and flew away at tree height to the northeast.
2025-03-13	S3	16	Barred Owl	1	no	1	18:47	18:48	1	Unknown	Unknown	Calling	NA	NA	One barred owl heard calling two times to the northwest of S3. Two partial contact calls in quick succession.
2025-03-13	S3	16	Barred Owl	2	no	1	19:03	19:04	1	Unknown	Unknown	Calling	NA	NA	One barred owl heard calling from the west of S3. It was heard only once near sunset

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
2025-03-17	S7	17	American Kestrel	1	yes	1	17:38	17:40	2	Adult	Male	Fly-through, Foraging, Perching	Northwest	1 to 25	One male AMKE was seen perched on a power line next to the road (1st red X) when I parked (the blue circle is where I was). It flew from its perch down appearing to be chasing something before again perching on a shrub (further west red x). It stayed on the shrub for a moment before flying off to the northwest and out of sight.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2025-03-18	S8	17	Rough-legged Hawk	1	yes	1	18:11	18:12	1	Unknown	Unknown	Fly-through	Northeast	50 to 100	One RLHA seen flying northeast high overhead S8. It flew in a straight path until out of sight over the tree line.
2025-03-18	S8	17	Turkey Vulture	2	no	7	19:17	19:18	1	Unknown	Unknown	Fly-through	Southwest	50 to 100	7 TUVU flew over S8 from the northeast to the southwest. They flew in a straight path until out of sight. All 7 followed the same flight path as in the map
2025-03-19	S6	17	Rough-legged Hawk	1	no	1	18:33	18:57	24	Adult	Unknown	Fly-through	Northeast	50 to 100	Flew in over the tree line to the south and flew over the survey field continuing northeast

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
2025-03-19	S9	17	Red-tailed Hawk	1	yes	1	17:57	17:59	2	Adult	Unknown	Fly-through, Perching	East	25 to 50	One RTHA seen flying overhead on my walk into S9. It flew over the field between S3 and S9, perched in a tree for about 2 minutes before flying off to the east.
2025-03-19	S9	17	Barred Owl	2	no	1	18:24	18:25	1	Adult	Unknown	Calling	NA	NA	One Barred Owl heard “monkey” calling. Possibly a male based on the call. Heard fairly consistently for 2 minutes.
[redacted]															
[redacted]															
2025-03-26	D8	18	Turkey Vulture	1	no	6	16:47	16:50	3	Unknown	Unknown	Circling, Fly-through	Northeast	100 to 200	A group of TUVU’s circling slowly high overhead moving to the northeast. They eventually moved out of sight over the trees
2025-03-26	D8	18	Rough-legged Hawk	2	no	1	16:49	16:52	3	Unknown	Unknown	Fly-through, Perching	South	25 to 50	One RLHA seen perched on the east side of the field in a tree. It stayed perched for 2 minutes before flying off to the south.
2025-03-26	D8	18	Rough-legged Hawk	3	yes	1	16:54	16:57	3	Unknown	Unknown	Foraging	South	25 to 50	One RLHA seen hunting the field to the east of D8. It was “kiting” for a few minutes until it moved out of sight behind a tree.
2025-03-27	S6	18	Turkey Vulture	1	yes	1	18:20	18:21	1	Adult	Unknown	Fly-through	West	50 to 100	One TUVU seen flying slowly west just to the north of S6 until out of sight to the west.
2025-04-01	S1	19	Merlin	3	no	1	19:07	19:08	1	Unknown	Unknown	Fly-through	East	25 to 50	One MERL seen flying in a direct path to the east. I lost sight of it beyond the shrubs.

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2025-04-01	S1	19	Turkey Vulture	2	yes	1	18:13	18:16	3	Unknown	Unknown	Circling, Fly-through	South	100 to 200	Prior to start of survey. One TUVU seen circling slowly high overhead to the south of S1. Stayed in view for 2 minutes until out of sight to the south
2025-04-01	S9	19	Turkey Vulture	1	no	2	18:37	18:39	2	Adult	Unknown	Fly-through	Southwest	100 to 200	Pair of vultures flying over the fields, no circling observed
2025-04-02	D7	19	American Kestrel	1	no	1	17:44	17:49	5	Adult	Male	Fly-through, Perching	North	25 to 50	One male kestrel seen perched on a power line as we drove up to D7. the kestrel flushed, flew behind us and then up the road and landed on a tree branch. It stayed perched there for the entirety of the survey
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2025-04-03	S3	19	Turkey Vulture	1	yes	1	18:19	18:21	2	Unknown	Unknown	Circling, Fly-through	North	100 to 200	One TUVU circling on its way through the site. It circled 6 times until it could no longer be seen off to the north. Prior to start of survey.
2025-04-03	S3	19	Turkey Vulture	2	yes	18	18:26	18:31	5	Adult, Unknown	Unknown	Circling, Fly-through	North	50 to 100	A large kettle of TUVU's flew over all circling. 5 of these individuals flew over further west (orange). They slowly all made their way through over the course of 5 minutes. Prior to start of survey.
2025-04-03	S3	19	Turkey Vulture	3	no	4	18:56	18:57	1	Adult	Unknown	Fly-through	South	25 to 50	4 TUVU's flew over the field going south in a straight path until out of sight to the south
2025-04-03	S7	19	Turkey Vulture	1	no	4	18:46	18:51	5	Adult	Unknown	Circling	Northwest, West	100 to 200, 50 to 100	Group of 4 circling the fields, ascending and descending between 50 and 200 feet.
2025-04-03	S7	19	Turkey Vulture	2	no	5	18:59	19:02	3	Adult	Unknown	Fly-through	Southwest, West	100 to 200	Group of 5 flying through survey area

Date	Survey Location[1]	Survey Period (Visit)	Species*	Observation Number	Incidental Observation?	Count of Individuals	Time First Observed	Time Last Observed	Duration of Observation (minutes)	Age	Sex	Behavior	General Flight Direction	General Flight Height (feet)	Observation Notes
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2025-04-09	S3	20	Merlin	1	no	2	18:41	19:06	25	Adult	Female, Male	Fly-through, Perching	East, Northeast, South	25 to 50	Merlins observed flying east over S3 and then perching on a utility pole by a large red outbuilding. Lost sight of the raptors after they left the perch and flew south behind tree cover.
2025-04-09	S3	20	Merlin	2	no	1	19:31	19:32	1	Unknown	Unknown	Fly-through	East	25 to 50	Merlin briefly observed overhead as it entered forested area to the east of S3. I was not able to age or sex the raptor in time, before losing sight of it.
2025-04-09	S6	20	Turkey Vulture	1	no	2	19:19	19:20	1	Adult	Unknown	Fly-through	Southwest	100 to 200	2 vultures that came in from the NE, well above the tree line. Exited SW. No circling observed
2025-04-09	D8	20	Turkey Vulture	1	no	1	17:03	17:05	2	Unknown	Unknown	Fly-through	North	100 to 200	One TUVU seen flying north far beyond the field to the east over the trees. It made its way across until out of sight.
2025-04-09	D7	20	Turkey Vulture	1	no	2	17:07	17:10	3	Adult, Unknown	Unknown	Fly-through	South	25 to 50	2 TUVU's seen slowly making their way south to the west of the road. They meandered slowly until out of sight to the south.
2025-04-09	D5	20	Turkey Vulture	1	no	5	17:21	17:24	3	Adult, Unknown	Unknown	Fly-through	North	100 to 200	5 TUVU's seen flying high and slow over the field to the west in a northerly direction. They continued until out of sight behind us.
2025-04-09	D4	20	Turkey Vulture	1	no	1	17:28	17:29	1	Adult	Unknown	Fly-through	North	50 to 100	One TUVU seen flying over in a straight path. Did not stop.
2025-04-09	D2	20	American Kestrel	1	no	1	17:43	17:45	2	Adult	Female	Actively eating, Perching	NA	NA	One AMKE seen perched on a tree eating a catch. It stayed in the tree the whole time.
2025-04-10	S8	20	American Kestrel	1	no	1	18:45	18:47	2	Adult	Male	Fly-through	South	25 to 50	One male AMKE flying down the road to the south. Lost it out sight behind the trees near the road.

[1]S= stationary survey location; D = driving stop location
*Listed species observations are **bolded**

Appendix E. Avian Species List

Common Name	*Scientific Name*	New York State Listing Status
American Crow	*Corvus brachyrhynchos*	-
American Kestrel	*Falco sparverius*	-
American Robin	*Turdus migratorius*	-
American Tree Sparrow	*Spizelloides arborea*	-
American Woodcock	*Scolopax minor*	-
Barred Owl	*Strix varia*	-
Black-capped Chickadee	*Poecile atricapillus*	-
Blue Jay	*Cyanocitta cristata*	-
Canada Goose	*Branta canadensis*	-
[redacted]	[redacted]	[redacted]
Common Grackle	*Quiscalus quiscula*	-
Common Raven	*Corvus corax*	-
Dark-eyed Junco	*Junco hyemalis*	-
Downy Woodpecker	*Dryobates pubescens*	-
Eastern Bluebird	*Sialia sialis*	-
Eastern Meadowlark	*Sturnella magna*	-
Eastern Phoebe	*Sayornis phoebe*	-
Eastern Towhee	*Pipilo erythrophthalmus*	-
European Starling	*Sturnus vulgaris*	-
Great Blue Heron	*Ardea herodias*	-
Great Horned Owl	*Bubo virginianus*	-
Hairy Woodpecker	*Dryobates villosus*	-
[redacted]	[redacted]	[redacted]
Killdeer	*Charadrius vociferus*	-
Mallard	*Anas platyrhynchos*	-
Merlin	*Falco columbarius*	-
Mourning Dove	*Zenaida macroura*	-
Northern Cardinal	*Cardinalis cardinalis*	-
Northern Flicker	*Colaptes auratus*	-
[redacted]	[redacted]	[redacted]
Northern Pintail	*Anas acuta*	-
Northern Shrike	*Lanius borealis*	-
Pileated Woodpecker	*Dryocopus pileatus*	-
Red-bellied Woodpecker	*Melanerpes carolinus*	-
Red-tailed Hawk	*Buteo jamaicensis*	-
Red-winged Blackbird	*Agelaius phoeniceus*	-
Ring-billed Gull	*Larus delawarensis*	-
Rock Pigeon	*Columba livia*	-
Rough-legged Hawk	*Buteo lagopus*	-
Rusty Blackbird	*Euphagus carolinus*	-

Common Name	*Scientific Name*	New York State Listing Status
Sandhill Crane	*Antigone canadensis*	-
[redacted]	[redacted]	[redacted]
Snow Bunting	*Plectrophenax nivalis*	-
Snow Goose	*Anser caerulescens*	-
Song Sparrow	*Melospiza melodia*	-
Tundra Swan	*Cygnus columbianus*	-
Turkey Vulture	*Cathartes aura*	-
Unidentified Raptor	-	-
White-breasted Nuthatch	*Sitta carolinensis*	-
White-throated Sparrow	*Zonotrichia albicollis*	-
Wild Turkey	*Meleagris gallopavo*	-
Wilson's Snipe	*Gallinago delicata*	-
Wood Duck	*Aix sponsa*	-

ATTACHMENTS

Attachment A. Survey Data Sheets *(provided as zipped file)*
Attachment B. Shapefile Package *(provided as zipped file)*