

APPENDIX J

Biological Resources: *Humboldt Wind Energy Project Bird Use Count Report, Humboldt County, California, October 2017–October 2018*



Humboldt Wind Energy Project

Bird Use Count Report

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HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

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Acronyms and Abbreviations

ac	acre
BUC	bird use count
CDFW	California Department of Fish and Wildlife
ECPG	Eagle Conservation Plan Guidance
EUC	eagle use count
ft	feet/foot
gen-tie	generation transmission line
m	meter
MBTA	Migratory Bird Treaty Act
mi	mile
RSZ	rotor-swept zone
SBUC	small bird use count
USFWS	U.S. Fish and Wildlife Service

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Note:

Often, agency suggestions and guidelines are provided in US units of measure (e.g., acres [ac] feet [ft], or miles [mi]), and in other instances, agency guidance is provided in metric (aka SI, or System International) units (e.g., meters [m] or kilometers [km]). To convert an otherwise readily recognized agency standard (e.g., 10 mi or 1 km) to the other system may result in confusion. Accordingly, measures are provided in either system, using the original agency suggestion unchanged, and provide conversion to the other standard only when it makes sense to do so.

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Executive Summary

Humboldt Wind, LLC, plans to permit, build, and operate a wind energy project in Humboldt County, California. As one part of the studies to support review of the project pursuant to the California Environmental Quality Act, Stantec Consulting Services Inc. conducted avian use surveys, including bird use counts (BUC) and small bird use counts (SBUC) in 2017 and 2018.

The objectives of avian use count surveys were to collect baseline data, including species composition, frequency of occurrence, spatial and temporal use, and behaviors. Another objective was to assess collision risk based on species use of the project area and observed fatality rates at operational wind projects in the region. Stantec conducted BUC surveys from October 24, 2017, to October 25, 2018, and SBUC surveys from April 3, 2018 to October 26, 2018.

Bird Use Count Survey

The BUC survey targeted large birds (e.g., raptors, vultures, corvids, waterfowl) but also documented all small birds observed. BUCs were conducted at 13 plots. Surveys were initiated at the 9 plots on Monument Ridge on October 24, 2017, and the 4 plots on Bear River on May 17, 2018. Counts were conducted weekly at all accessible plots within the current project layout for 30 minutes per plot during daylight periods within a survey radius of 800 meters (m).

Survey effort included 506 counts during 51 survey events (1 survey event = 1 weekly round of counts at all accessible plots within the current project layout), for a total of 253.0 hours of observation. There were 15,290 bird observations, consisting of 13 bird types (i.e., passerines, waterfowl, etc.) and 110 species. The most abundant bird types were passerines (83.18% of observations), followed by upland game birds (3.47% of observations), and hummingbirds/swifts (3.02% of observations).

Bird use averaged 30.22 observations/plot/30-minute observation period (observation period). Use was greatest during summer (40.39 observations/plot/observation period), followed by fall (28.13 observations/plot/observation period). Birds were detected within the all 13 plots, and use was greatest at plot 12 (63.76 observations/observation period).

Of the birds documented during BUCs, 49.18% (7,520 observations) were flying, and 29.72% of these (2,235 observations) were flying within the rotor-swept zone (RSZ) of 50–200 m above ground level for at least a portion of their flight. Twenty-one species (not including unidentified species) were flying 100.00% of the time they were observed, and 22 species were not flying.

Small Bird Use Count Survey

The purpose of the SBUC survey was to supplement the BUC survey (which also documented small birds) by sampling additional plots within representative habitats throughout the project area during the spring, summer, and fall seasons. SBUCs were conducted at 23 plots. SBUCs were initiated on Monument Ridge on April 3, 2018 and on Bear River Ridge on May 17, 2018. Counts were conducted weekly between sunrise and 10:00 AM at all accessible plots within the current project layout for 10 minutes, during which small birds detected within a 100-m radius and large birds detected within an 800-m radius were recorded.

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Survey effort included 519 counts during 29 survey events, for a total of 86.5 observation hours. There were 5,577 bird observations, consisting of 8 bird types and 92 species. The most abundant bird types were passerines (91.50% of observations), followed by doves/pigeons (2.53% of observations), and upland game birds (1.94% of observations).

Bird use during the SBUCs was 10.75 observations/plot/10-minute observation period (observation period). Use was greatest during fall (12.34 observations/plot/observation period), followed by summer (11.61 observations/plot/observation period). Birds were detected at all 23 SBUC plots, and use was greatest at plot 22 (18.30 observations/observation period).

Of the birds documented during SBUCs, biologists observed 58.97% (3,289 observations) flying, and 20.71% of these (681 observations) were flying within the RSZ for at least a portion of their flight. Nineteen out of 92 species (not including unidentified species) were observed flying 100.00% of the time they were observed.

1.0 INTRODUCTION

Humboldt Wind, LLC (Humboldt Wind) is planning to construct and operate the Humboldt Wind Energy Project (project) in south-central Humboldt County, California (Figure 1). The project would consist of up to 60 wind turbines and associated facilities including meteorological towers, electrical collection system, access roads, construction staging areas, a substation, an operations and maintenance facility, up to a 25-mile (mi) generation transmission line (gen-tie) and its point of interconnection at the existing Pacific Gas & Electric Bridgeville Substation. The project would have a nameplate generating capacity of up to 155 megawatts. Proposed turbine locations are situated on two prominent ridgelines, Bear River Ridge and Monument Ridge, 4.7 mi south and southwest of Scotia, in Humboldt County, California (Figure 1).

The project area encompasses areas of potential activity and includes a 1,000-foot-(ft-) wide corridor centered on proposed turbine locations; a 200-ft-wide corridor centered on project roads, the electrical collection line, and the gen-tie; and a 500-ft-wide buffer around proposed staging and temporary impact areas and project substations, encompassing 2,241 acres (ac) (Figure 2). The project area is divided into the following segments for description purposes:

- Bear River Ridge
- Western Monument Ridge
- Eastern Monument Ridge
- Monument Ridge – Highway 101
- Highway 101 – Shively Ridge
- Shively Ridge
- Bridgeville

Stantec Consulting Services Inc. (Stantec) prepared a Draft Biological Resources Work Plan (Draft Work Plan) detailing biological resource surveys designed to support project planning (Stantec 2018). Avian use studies include ground-based bird use counts (BUC), eagle use counts (EUC), and small bird use counts (SBUC). The studies described in the Draft Work Plan are intended to provide information applicable to Tiers 2 and 3 of the U.S. Fish and Wildlife Service's (USFWS) *Land-Based Wind Energy Guidelines* (USFWS 2012), the California Department of Fish and Wildlife (CDFW) consultation process, the Humboldt County-administered California Environmental Quality Act review, the *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development* (California Guidelines) (California Energy Commission and California Department of Fish and Game 2007), the USFWS's Eagle Conservation Plan Guidance (ECPG) (USFWS 2013), and the USFWS December 2016 Final Rule 81 FR 91494 (Eagle Rule) (USFWS 2016). This report summarizes the BUC and SBUC surveys.

The objectives of the BUC and SBUC surveys were to collect baseline data, including species composition, frequency of occurrence, spatial and temporal use, and behaviors within the study area, which includes an 800-meter (m) radius area for BUCs and a 100-m radius area for SBUCs centered on the plot locations (referred to as 'plots' hereafter) (Figure 3). Another objective was to assess collision risk based on species use of the project area and observed fatality rates at operational wind projects in the region.

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2.0 ENVIRONMENTAL SETTING

Humboldt County is within the Klamath/North Coast bioregion and features a rocky coastline, montane forests, and small and sparsely populated settlements. Cool, moist climate is typical on the coast but becomes progressively drier, warmer, and more variable but remaining mild inland. Humboldt County features several biological communities; the most abundant is coniferous forest comprising Douglas fir, redwood, and pine forests, followed by oak woodlands, and grasslands. Less abundant habitats include coastal beach dune vegetation, northern coastal scrub, chaparral, salt marsh, riparian, and freshwater marsh. Humboldt Bay, located about 16 mi north of the project, is the second largest estuary in California. As such, the Bay and coast of Humboldt County coast have high biodiversity and support many species of resident and migratory wildlife with high seasonal and year-round abundance. Six rivers run through the county, providing habitats for fish and wildlife as well as important water resources.

Humboldt County spans two geologic provinces. The Coast Ranges Province in the county's center and southwest comprises mainly the Franciscan Complex, with schists, sand, and other alluvial deposits associated with the coast. The Klamath Mountains Province in the northeast features older sedimentary rock including sandstone, chert, slate, and schist.

The average July temperature in Humboldt County is typically in the 60s (Fahrenheit). While rain can occur throughout the year, about 90% of the annual rain results from Pacific Ocean storms and falls between October and April. Seasonal totals average more than 40 inches in the driest areas and exceed 100 inches in the wettest zones. Moisture and moderate temperature combined create high average relative humidity.

The project is on privately owned and managed lands in rural, unincorporated south-central Humboldt County, 10 mi southeast of Ferndale, 20 mi south of Eureka, and 22 mi north of Garberville, California. Most of the project would be located on two prominent ridgelines that are located south and east of the town of Scotia. Monument Ridge is located south and west of Highway 101 and the Eel River, and Shively ridge is located north and east of Highway 101 and the Eel River.

The project area consists primarily of managed timberlands that are dominated by redwood and Douglas-fir forests, with annual grassland, hardwood, and chaparral inclusions. In addition to timber production, some areas of the project site are managed for cattle grazing. The topography is diverse and steep in places, and elevation ranges from nearly sea level in river bottoms to just over 3,000 ft.

The general plan designation for the majority of this area is Timber, with a smaller amount of Agricultural Grazing. About 100 ac of the project area has a designation of Residential Agriculture. Most of the area is zoned Timber Production Zone (TPZ) and Agriculture Exclusive with a combining zone specifying a minimum building site of 160 ac (AE-B-5(160)).

3.0 BIRD USE COUNT SURVEY

3.1 METHODS

3.1.1 Field Methods

Survey methods were consistent with the California Guidelines (California Energy Commission and California Department of Fish and Game 2007), ECPG (USFWS 2013), and Draft Work Plan. Plots consisted of an 800-m radius centered on BUC plot locations and plots were selected to achieve views out to a distance of at least 800 m in all cardinal directions (however, in order to sample throughout the project areas, plots also included forested locations where the view was more limited in one or more directions). Consistent with the ECPG, the number of plots surveyed covered at least 30% of the project footprint. Weekly 30-minute BUCs were conducted (1 survey event = 1 weekly round of counts at all accessible plots within the current project layout) at the same 13 plots as the EUC survey. Starting plots were alternated between visits by north to south or south to north to stratify effort among plots across variable daytime periods.

The following data were recorded at the beginning of each survey:

1. Plot number
2. Date
3. Start time
4. Temperature
5. Wind speed and direction
6. Visibility
7. Cloud cover
8. Precipitation

For each bird observed, biologists recorded an observation reference number, the start time of observation, species, number of individuals, direction and distance from observer, flight height category (by 50-m increment), mode of detection (audial and/or visual), behavior, flight direction (if applicable), and habitat (for non-flying birds).

3.1.2 Composition, Relative Abundance, Use, and Frequency of Occurrence by Season

Seasonal periods were defined as follows:

- Fall 9/1–11/30
- Winter 12/1–2/28
- Spring 3/1–6/1
- Summer 6/2–8/31

Species composition (i.e., species and bird types observed, by season), relative abundance (i.e., number of observations of species or bird type divided by total observations, by season), use (i.e., number of observations divided by number of counts, by season), and frequency of occurrence (i.e., the percent of counts during which a species was observed, by season) were calculated for all birds observed within plots (and separately for birds observed while traveling between plots). Observations that could not be identified to species (e.g., unidentified

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hummingbird, Order Trochilidae, or unidentified warbler, Order Parulidae) were excluded from the total species count. Possible subspecies identified during surveys were classified according to species groups (e.g., Audubon's warbler subspecies (*S. coronata auduboni*) was classified as yellow-rumped warbler (*S. coronata*), Oregon junco subspecies (*J. hyemalis oreganus*) was classified as dark-eyed junco (*J. hyemalis*), and red-shafted flicker subspecies (*C. auratus cafer*) was classified as northern flicker (*C. auratus*).

3.1.3 Use and Frequency of Occurrence by Plot

Bird use (i.e., number of observations divided by number of counts) and frequency of occurrence (i.e., the percent of counts during which a species was observed) were calculated per plot for all birds observed.

3.1.4 Flight Height, Habitat, and Behavior

Stantec summarized the following:

- The percent of birds observed flying and the percent of birds observed flying in the rotor-swept zone (RSZ) (50–200 m above ground level);
- For those birds that were not flying (occupying a habitat), the percent of observations by habitat; and
- The percent of observations by behavior.

Because the turbine models for the project are still under consideration, we conservatively used 200 m as the maximum blade swept height for the purposes of the flight height analyses.

3.1.5 Special Status Species

The number of special-status bird species observed was calculated. Criteria used for special-status species is listed below.

- Species that are listed, formally proposed, or designated as candidates for listing as threatened or endangered under the federal Endangered Species Act;
- Species that are listed or designated as candidates for listing as rare, threatened or endangered under California Endangered Species Act (CDFW 2018a); or
- Wildlife species designated as Fully Protected or Species of Special Concern by CDFW (CDFW 2008; CDFW 2018b).

3.2 RESULTS

3.2.1 Weather Results

Weather was suitable for bird detection during counts (i.e., light winds, minimal periods of restricted visibility, and minimal to no precipitation) (Appendix A Table 1). Brief periods of precipitation (rain or snow) occurred on 11 out of 97 survey-days but did not restrict visibility within the plots. Heavy fog periodically reduced visibility on 34 out of 97 survey-days (Appendix A Table 1).

3.2.2 Survey Effort

There were 506 30-minute BUCs during 51 survey events, for a total of 253.0 hours of observation (Table 1). Thirteen plots were sampled in the project area: 11, 12, 13, 14, 15, 16, 17, 18, 19, 28, 29, 30, and 31 (Figure 3). Between 39

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and 51 survey events were conducted at plots 11–19. Twenty-three survey events were conducted at plots 28–31 after land access was granted. Due to project layout changes, plots 15, 16, 18, and 19 were dropped in early March and added in mid-May. Logging and other activities resulted in occasional gaps in surveys at certain plots, including plot 18 on January 17–18, plot 11 on May 30, and plot 16 on August 1–2 (Table 1).

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Table 1. Summary of survey effort for bird use counts conducted at the Humboldt Wind Energy Project, Humboldt County, California, October 24, 2017–October 25, 2018.

Point No.	Month/Dates																										
	Oct		Nov					Dec			Jan					Feb				Mar				Apr			
	24-26	1-2	8	15	19-20	29	6	13	19-20	3-4	9-10	17-18	24	31	7	14-15	20	26-27	6-8	14	22	28-29	4	10	17	27	
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7	5	5	5	5	5	5	5	
Point No.	Month/Dates (continued)																										
	May					Jun				Jul			Aug				Sept				Oct				Total Visits		
	2	9	15, 17	22-23	30	5-6	13-14	19-20	26-27	4-5	10-12	18-19	1-2	8-9	15, 19	22-23	28, 30	4, 6-7	10, 12	17, 20-21	24-26	1-4	9-10, 12	16-17, 19-20	22-25		
11	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	50
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	51
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	51
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	51
15	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	40
16	0	0	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	39
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	51
18	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	40
19	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	41
28	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
29	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
30	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
31	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
Total	5	5	9	13	12	13	506																				

3.2.3 Composition, Relative Abundance, Use, and Frequency of Occurrence by Season

There were 15,290 bird observations documented during BUCs, consisting of 13 bird types and 111 species (Table 2). The most abundant bird type was passerines, comprising 83.18% of observations. Upland game birds and hummingbirds/swifts were the next most abundant bird types, comprising 3.47% and 3.02% of observations, respectively (Table 2).

Bird use of the project area averaged 30.22 observations/plot/30-minute observation period (observation period). Use was greatest during summer (40.39 observations/plot/observation period), followed by fall (28.13 observations/plot/observation period) (Table 2).

Passerines had the greatest use across the survey period (25.13 observations/plot/observation period), followed by upland game birds (1.05 observations/plot/observation period) (Table 2; Graph 1). Among passerines, thrushes had the greatest use overall (5.79 observation/plot/observation period), with American robin (*Turdus migratorius*) representing the most common species of thrush (4.32 observation/plot/observation period) (Table 2).

Frequency of occurrence for passerines was 100.00% during all four seasons (Table 2). Among passerines observed, corvids, thrushes, and sparrows/larks all had frequencies of 100.00% during each season. For all other bird types observed, frequency of occurrence ranged from 7.69% to 100.00% during the fall, from 0.00% to 88.89% during the winter, from 0.00% to 84.62% during the spring, and from 0.00% to 100.00% during the summer (Table 2).

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Table 2. Composition, relative abundance, use, and frequency by season documented during bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, October 24, 2017–October 25, 2018.

Type/Species	Scientific Name	Fall (158 counts)				Winter (107 counts)				Spring (86 counts)				Summer (155 surveys)				Total (506 surveys)			
		No. Obs.	RA ^{1,2}	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use	
Grebes and Loons		10	0.23	0.06	30.77													10	0.07	0.02	
common loon	<i>Gavia immer</i>	10	0.23	0.06	30.77													10	0.07	0.02	
Waterbirds		24	0.54	0.15	23.08												1	0.02	0.01	7.69	
double-crested cormorant	<i>Phalacrocorax auritus</i>	24	0.54	0.15	23.08												25	0.16	0.05		
great blue heron	<i>Ardea herodias</i>																24	0.16	0.05		
Waterfowl		159	3.58	1.01	23.08												1	0.02	0.01	7.69	
Canada goose	<i>Branta canadensis</i>	100	2.25	0.63	7.69												1	0.01	<0.01		
greater white-fronted goose	<i>Anser albifrons</i>	55	1.24	0.35	15.38												100	0.65	0.20		
mallard	<i>Anas platyrhynchos</i>	4	0.09	0.03	7.69												55	0.36	0.11		
Diurnal Raptors		53	1.19	0.34	100.00	30	1.10	0.28	77.78	23	1.23	0.27	69.23	328	5.24	2.12	76.92	434	2.84	0.86	
Accipiters		9	0.20	0.06	53.85	4	0.15	0.04	44.44	1	0.05	0.01	7.69	16	0.26	0.10	30.77	30	0.20	0.06	
Cooper's hawk	<i>Accipiter cooperii</i>	6	0.14	0.04	46.15					1	0.05	0.01	7.69	16	0.26	0.10	30.77	23	0.15	0.05	
sharp-shinned hawk	<i>Accipiter striatus</i>	3	0.07	0.02	23.08	4	0.15	0.04	44.44					7	0.05	0.01					
Buteos		24	0.54	0.15	69.23	19	0.70	0.18	44.44	20	1.07	0.23	61.54	289	4.62	1.86	69.23	352	2.30	0.70	
ferruginous hawk	<i>Buteo regalis</i>	3	0.07	0.02	23.08	2	0.07	0.02	11.11					5	0.03	0.01					
red-tailed hawk	<i>Buteo jamaicensis</i>	21	0.47	0.13	69.23	17	0.63	0.16	44.44	20	1.07	0.23	61.54	289	4.62	1.86	69.23	347	2.27	0.69	
Eagles³						1	0.04	0.01	11.11	1	0.05	0.01	7.69				2	0.01	<0.01		
bald eagle	<i>Haliaeetus leucocephalus</i>					1	0.04	0.01	11.11	1	0.05	0.01	7.69				2	0.01	<0.01		
Falcons		20	0.45	0.13	53.85	3	0.11	0.03	22.22	-	-	-	-	22	0.35	0.14	30.77	45	0.29	0.09	
American kestrel	<i>Falco sparverius</i>	20	0.45	0.13	53.85	3	0.11	0.03	22.22					21	0.34	0.14	30.77	44	0.29	0.09	
peregrine falcon	<i>Falco peregrinus</i>													1	0.02	0.01	7.69	1	0.01	<0.01	
Osprey										1	0.05	0.01	7.69				1	0.01	<0.01		
osprey	<i>Pandion haliaetus</i>									1	0.05	0.01	7.69				1	0.01	<0.01		
Northern Harrier						3	0.11	0.03	22.22	-	-	-	-	1	0.02	0.01	7.69	4	0.03	0.01	
northern harrier	<i>Circus cyaneus</i>					3	0.11	0.03	22.22					1	0.02	0.01	7.69	4	0.03	0.01	
Vultures		37	0.83	0.23	76.92	8	0.29	0.07	22.22	32	1.71	0.37	76.92	72	1.15	0.46	100.00	149	0.97	0.29	
turkey vulture	<i>Cathartes aura</i>	37	0.83	0.23	76.92	8	0.29	0.07	22.22	32	1.71	0.37	76.92	72	1.15	0.46	100.00	149	0.97	0.29	
Upland Game Birds		117	2.63	0.74	69.23	25	0.92	0.23	88.89	107	5.72	1.24	84.62	281	4.49	1.81	100.00	530	3.47	1.05	
California quail	<i>Callipepla californica</i>	102	2.30	0.65	69.23	23	0.85	0.21	66.67	43	2.30	0.50	84.62	258	4.12	1.66	92.31	426	2.79	0.84	
mountain quail	<i>Oreortyx pictus</i>	15	0.34	0.09	7.69	2	0.07	0.02	22.22	61	3.26	0.71	76.92	21	0.34	0.14	69.23	99	0.65	0.20	
sooty grouse	<i>Dendragapus fuliginosus</i>									2	0.11	0.02	7.69	2	0.03	0.01	15.38	4	0.03	0.01	
wild turkey	<i>Meleagris gallopavo</i>									1	0.05	0.01	7.69				1	0.01	<0.01		
Shorebirds		4	0.09	0.03	7.69					1	0.05	0.01	7.69	1	0.02	0.01	7.69	6	0.04	0.01	
Baird's sandpiper	<i>Calidris bairdii</i>	1	0.02	0.01	7.69												1	0.01	<0.01		
greater yellowlegs	<i>Tringa melanoleuca</i>													1	0.02	0.01	7.69	1	0.01	<0.01	
killdeer	<i>Charadrius vociferus</i>	1	0.02	0.01	7.69												1	0.01	<0.01		
Pacific golden-plover	<i>Pluvialis fulva</i>	2	0.05	0.01	7.69												2	0.01	0.00		
Wilson's snipe	<i>Gallinago delicata</i>									1	0.05	0.01	7.69				1	0.01	<0.01		
Gulls and Terns		3	0.07	0.02	7.69												3	0.02	0.01		
herring gull	<i>Larus argentatus</i>	3	0.07	0.02	7.69												3	0.02	0.01		
Doves/Pigeons		91	2.05	0.58	53.85	159	5.86	1.49	44.44	34	1.82	0.40	61.54	136	2.17	0.88	100.00	420	2.75	0.83	
band-tailed pigeon	<i>Patagioenas fasciata</i>	91	2.05	0.58	53.85	159	5.86	1.49	44.44	33	1.76	0.38	53.85	132	2.11	0.85	100.00	415	2.71	0.82	
mourning dove	<i>Zenaidura macroura</i>									1	0.05	0.01	7.69	4	0.06	0.03	23.08	5	0.03	0.01	
Owls		1	0.02	0.01																	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Type/Species	Scientific Name	Fall (158 counts)				Winter (107 counts)				Spring (86 counts)				Summer (155 surveys)				Total (506 surveys)		
		No. Obs.	RA ^{1,2}	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use
northern pygmy-owl	<i>Glaucidium gnoma</i>					1	0.04	0.01	11.11	4	0.21	0.05	30.77					5	0.03	0.01
Hummingbirds/Swifts		40	0.90	0.25	76.92	9	0.33	0.08	33.33	52	2.78	0.60	69.23	360	5.75	2.32	100.00	461	3.02	0.91
Allen's hummingbird	<i>Selasphorus sasin</i>	7	0.16	0.04	38.46	9	0.33	0.08	33.33	7	0.37	0.08	30.77	21	0.34	0.14	61.54	30	0.20	0.06
Anna's hummingbird	<i>Calypte anna</i>	31	0.70	0.20	46.15					14	0.75	0.16	23.08	3	0.05	0.02	23.08	26	0.17	0.05
Vaux's swift	<i>Chaetura vauxi</i>									7	0.37	0.08	23.08	150	2.40	0.97	69.23	195	1.28	0.39
white-throated swift	<i>Aeronautes saxatalis</i>									15	0.80	0.17	53.85	152	2.43	0.98	38.46	159	1.04	0.31
unidentified hummingbird	<i>Trochilidae (gen, sp)</i>	2	0.05	0.01	7.69					12	0.19	0.08	61.54	29	0.19	0.06				
unidentified swift	<i>Apodidae (gen, sp)</i>									22	0.35	0.14	7.69	22	0.14	0.04				
Woodpeckers		109	2.45	0.69	84.62	40	1.47	0.37	77.78	82	4.38	0.95	76.92	138	2.20	0.89	92.31	369	2.41	0.73
acorn woodpecker	<i>Melanerpes formicivorus</i>	20	0.45	0.13	23.08	10	0.37	0.09	22.22	8	0.43	0.09	30.77	2	0.03	0.01	7.69	40	0.26	0.08
hairy woodpecker	<i>Picoides villosus</i>	18	0.41	0.11	61.54	5	0.18	0.05	44.44	13	0.69	0.15	46.15	20	0.32	0.13	76.92	56	0.37	0.11
northern flicker	<i>Colaptes auratus</i>	64	1.44	0.41	84.62	21	0.77	0.20	55.56	60	3.21	0.70	76.92	104	1.66	0.67	92.31	249	1.63	0.49
pileated woodpecker	<i>Dryocopus pileatus</i>	5	0.11	0.03	23.08	3	0.11	0.03	22.22	1	0.05	0.01	7.69	12	0.19	0.08	38.46	21	0.14	0.04
red-breasted sapsucker	<i>Sphyrapicus ruber</i>	2	0.05	0.01	15.38	1	0.04	0.01	11.11									3	0.02	0.01
Passerines		3,796	85.42	24.03	100.00	2,443	89.98	22.83	100.00	1,536	82.10	17.86	100.00	4,943	78.96	31.89	100.00	12,718	83.18	25.13
Flycatchers		5	0.11	0.03	30.77					19	1.02	0.22	53.85	62	0.99	0.40	92.31	86	0.56	0.17
black phoebe	<i>Sayornis nigricans</i>	3	0.07	0.02	15.38													3	0.02	0.01
olive-sided flycatcher	<i>Contopus cooperi</i>									10	0.53	0.12	53.85	36	0.58	0.23	76.92	46	0.30	0.09
pacific-slope flycatcher	<i>Empidonax difficilis</i>									8	0.43	0.09	23.08	25	0.40	0.16	69.23	33	0.22	0.07
western flycatcher	<i>Empidonax difficilis/occid.</i>	2	0.05	0.01	15.38									1	0.02	0.01	7.69	3	0.02	0.01
western wood-peewee	<i>Contopus sordidulus</i>									1	0.05	0.01	7.69					1	0.01	<0.01
Vireos		43	0.97	0.27	76.92	30	1.10	0.28	66.67	37	1.98	0.43	69.23	48	0.77	0.31	92.31	158	1.03	0.31
Hutton's vireo	<i>Vireo huttoni</i>	43	0.97	0.27	76.92	30	1.10	0.28	66.67	27	1.44	0.31	53.85	41	0.65	0.26	92.31	141	0.92	0.28
warbling vireo	<i>Vireo gilvus</i>									10	0.53	0.12	38.46	7	0.11	0.05	23.08	17	0.11	0.03
Corvids		435	9.79	2.75	100.00	216	7.96	2.02	100.00	240	12.83	2.79	100.00	571	9.12	3.68	100.00	1,462	9.56	2.89
American crow	<i>Corvus brachyrhynchos</i>					1	0.04	0.01	11.11					78	1.25	0.50	7.69	79	0.52	0.16
California scrub-jay	<i>Aphelocoma californica</i>	1	0.02	0.01	7.69									1	0.02	0.01	7.69	2	0.01	0.00
common raven	<i>Corvus corax</i>	124	2.79	0.78	76.92	45	1.66	0.42	100.00	51	2.73	0.59	84.62	217	3.47	1.40	84.62	437	2.86	0.86
Steller's jay	<i>Cyanocitta stelleri</i>	310	6.98	1.96	92.31	170	6.26	1.59	100.00	189	10.10	2.20	84.62	275	4.39	1.77	92.31	944	6.17	1.87
Swallows/Martins		201	4.52	1.27	61.54	2	0.07	0.02	22.22	34	1.82	0.40	61.54	816	13.04	5.26	84.62	1,053	6.89	2.08
barn swallow	<i>Hirundo rustica</i>	10	0.23	0.06	23.08					7	0.37	0.08	23.08	158	2.52	1.02	61.54	175	1.14	0.35
cliff swallow	<i>Petrochelidon pyrrhonota</i>	1	0.02	0.01	7.69					1	0.05	0.01	7.69	80	1.28	0.52	46.15	82	0.54	0.16
purple martin	<i>Progne subis</i>	3	0.07	0.02	15.38					13	0.69	0.15	23.08	80	1.28	0.52	53.85	96	0.63	0.19
tree swallow	<i>Tachycineta bicolor</i>	4	0.09	0.03	7.69	2	0.07	0.02	22.22	4	0.21	0.05	23.08	12	0.19	0.08	38.46	22	0.14	0.04
violet-green swallow	<i>Tachycineta thalassina</i>	183	4.12	1.16	53.85									418	6.68	2.70	69.23	601	3.93	1.19
unidentified swallow	<i>Hirundidae (gen, sp)</i>									9	0.48	0.10	23.08	68	1.09	0.44	30.77	77	0.50	0.15
Chickadees/Creepers/Nuthatches		204	4.59	1.29	92.31	32	1.18	0.30	44.44	55	2.94 </td									

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Type/Species	Scientific Name	Fall (158 counts)				Winter (107 counts)				Spring (86 counts)				Summer (155 surveys)				Total (506 surveys)		
		No. Obs.	RA ^{1,2}	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use
rock wren	<i>Salpinctes obsoletus</i>													1	0.02	0.01	7.69	1	0.01	<0.01
Gnatcatchers/Kinglets		131	2.95	0.83	69.23	114	4.20	1.07	100.00	19	1.02	0.22	53.85	11	0.18	0.07	30.77	275	1.80	0.54
golden-crowned kinglet	<i>Regulus satrapa</i>	73	1.64	0.46	61.54	80	2.95	0.75	77.78	16	0.86	0.19	38.46	11	0.18	0.07	30.77	180	1.18	0.36
ruby-crowned kinglet	<i>Regulus calendula</i>	58	1.31	0.37	61.54	34	1.25	0.32	88.89	3	0.16	0.03	15.38					95	0.62	0.19
Thrushes		1,011	22.75	6.40	100.00	1,293	47.62	12.08	100.00	163	8.71	1.90	100.00	463	7.40	2.99	100.00	2,930	19.16	5.79
American robin	<i>Turdus migratorius</i>	769	17.30	4.87	100.00	1,226	45.16	11.46	100.00	72	3.85	0.84	46.15	118	1.88	0.76	84.62	2,185	14.29	4.32
hermit thrush	<i>Catharus guttatus</i>	22	0.50	0.14	46.15	20	0.74	0.19	88.89	21	1.12	0.24	61.54	149	2.38	0.96	100.00	212	1.39	0.42
Swainson's thrush	<i>Catharus ustulatus</i>	1	0.02	0.01	7.69					8	0.43	0.09	38.46	24	0.38	0.15	76.92	33	0.22	0.07
varied thrush	<i>Ixoreus naevius</i>	107	2.41	0.68	84.62	19	0.70	0.18	88.89	4	0.21	0.05	23.08	18	0.29	0.12	46.15	148	0.97	0.29
western bluebird	<i>Sialia mexicana</i>	112	2.52	0.71	38.46	28	1.03	0.26	44.44	58	3.10	0.67	53.85	154	2.46	0.99	69.23	352	2.30	0.70
Pipits		269	6.05	1.70	38.46	52	1.92	0.49	11.11	83	4.44	0.97	15.38					404	2.64	0.80
American pipit	<i>Anthus rubescens</i>	269	6.05	1.70	38.46	52	1.92	0.49	11.11	83	4.44	0.97	15.38					404	2.64	0.80
Waxwings		33	0.74	0.21	46.15	1	0.04	0.01	11.11	4	0.21	0.05	15.38	4	0.06	0.03	15.38	42	0.27	0.08
cedar waxwing	<i>Bombycilla cedrorum</i>	33	0.74	0.21	46.15	1	0.04	0.01	11.11	4	0.21	0.05	15.38	4	0.06	0.03	15.38	42	0.27	0.08
Warblers		93	2.09	0.59	92.31	2	0.07	0.02	22.22	187	9.99	2.17	92.31	298	4.76	1.92	92.31	580	3.79	1.15
black-throated gray warbler	<i>Setophaga nigrescens</i>	4	0.09	0.03	23.08					5	0.27	0.06	23.08	5	0.08	0.03	30.77	14	0.09	0.03
hermit warbler	<i>Setophaga occidentalis</i>	4	0.09	0.03	23.08					65	3.47	0.76	84.62	119	1.90	0.77	92.31	188	1.23	0.37
Macgillivray's warbler	<i>Geothlypis tolmiei</i>	1	0.02	0.01	7.69									2	0.03	0.01	15.38	3	0.02	0.01
Nashville warbler	<i>Oreothlypis ruficapilla</i>	1	0.02	0.01	7.69									1	0.01	<0.01				
orange-crowned warbler	<i>Oreothlypis celata</i>									17	0.91	0.20	46.15	16	0.26	0.10	23.08	33	0.22	0.07
Townsend's warbler	<i>Setophaga townsendi</i>	10	0.23	0.06	30.77	2	0.07	0.02	22.22	3	0.16	0.03	23.08					15	0.10	0.03
Wilson's warbler	<i>Cardellina pusilla</i>	3	0.07	0.02	15.38					19	1.02	0.22	61.54	98	1.57	0.63	84.62	120	0.78	0.24
yellow warbler	<i>Setophaga petechia</i>					0.00	0.00			1	0.05	0.01	7.69	6	0.10	0.04	38.46	7	0.05	0.01
yellow-rumped warbler	<i>Setophaga coronata</i>	70	1.58	0.44	84.62					75	4.01	0.87	76.92	51	0.81	0.33	76.92	196	1.28	0.39
unidentified warbler	<i>Parulidae (gen, sp)</i>									2	0.11	0.02	7.69	1	0.02	0.01	7.69	3	0.02	0.01
Tanagers/Grosbeaks/Cardinals		4	0.09	0.03	23.08					16	0.86	0.19	61.54	95	1.52	0.61	76.92	115	0.75	0.23
black-headed grosbeak	<i>Pheucticus melanocephalus</i>									3	0.16	0.03	23.08	2	0.03	0.01	7.69	5	0.03	0.01
lazuli bunting	<i>Passerina amoena</i>									5	0.27	0.06	30.77	59	0.94	0.38	69.23	64	0.42	0.13
western tanager	<i>Piranga ludoviciana</i>	4	0.09	0.03	23.08					8	0.43	0.09	38.46	34	0.54	0.22	53.85	46	0.30	0.09
Sparrows/Larks		584	13.14	3.70	100.00	505	18.60	4.72	100.00	397	21.22	4.62	100.00	888	14.19	5.73	100.00	2,374	15.53	4.69
chestnut-collared longspur	<i>Calcarius ornatus</i>	1	0.02	0.01	7.69					4	0.21	0.05	23.08	25	0.40	0.16	46.15	29	0.19	0.06
chipping sparrow	<i>Spizella passerina</i>																	1,029	6.73	2.03
dark-eyed junco	<i>Junco hyemalis</i>	299	6.73	1.89	76.92	407	14.99	3.80	88.89	113	6.04	1.31	53.85	210	3.35	1.35	84.62			
fox sparrow	<i>Passerella iliaca</i>	21	0.47	0.13	53.85	18	0.66	0.17	55.56	3	0.16	0.03	15.38					42	0.27	0.08
golden-crowned sparrow	<i>Zonotrichia atricapilla</i>	21	0.47	0.13	38.46	3	0.11	0.03	22.22									24	0.16	0.05
grasshopper sparrow	<i>Ammodramus savannarum</i>													52	0.83	0.34	23.08	52	0.34	0.10
horned lark	<i>Eremophila alpestris</i>	62	1.40	0.39	30.77	10	0.37	0.09	11.11	5	0.27	0.06	15.38	60	0.96	0.39				

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

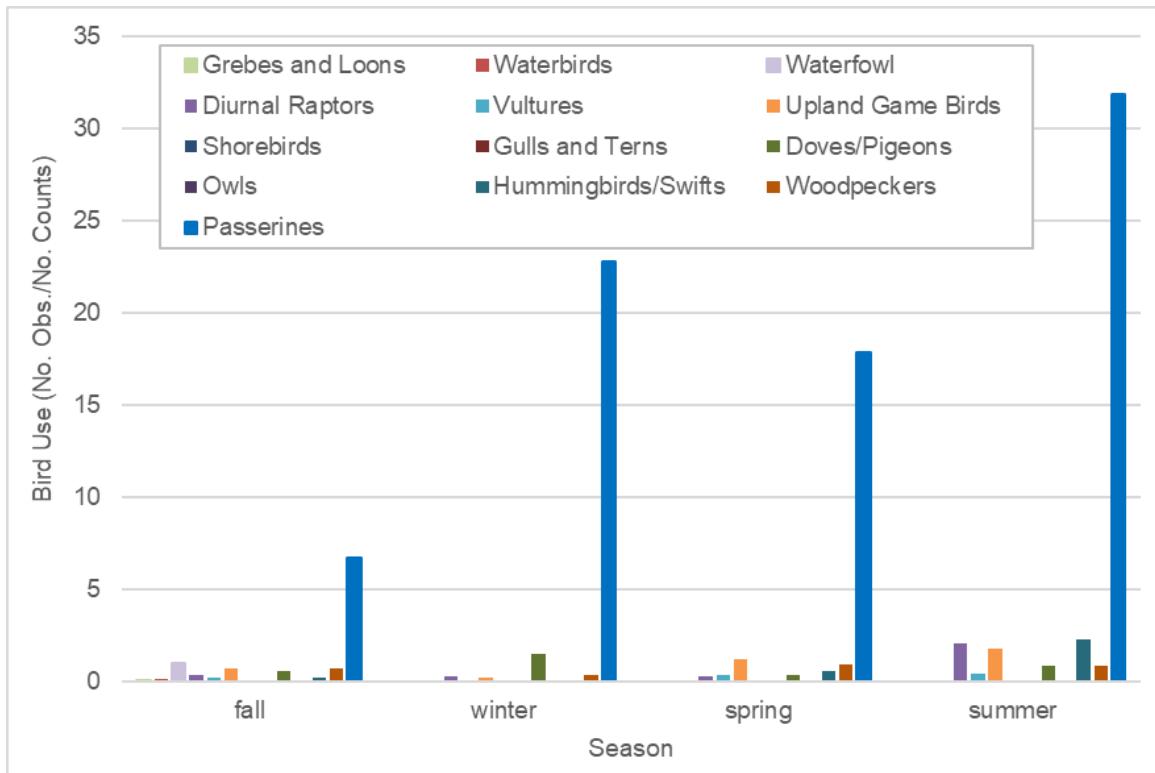
Type/Species	Scientific Name	Fall (158 counts)				Winter (107 counts)				Spring (86 counts)				Summer (155 surveys)				Total (506 surveys)		
		No. Obs.	RA ^{1,2}	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use
red-winged blackbird	<i>Agelaius phoeniceus</i>	11	0.25	0.07	23.08													11	0.07	0.02
western meadowlark	<i>Sturnella neglecta</i>	93	2.09	0.59	53.85	19	0.70	0.18	33.33	78	4.17	0.91	53.85	288	4.60	1.86	46.15	478	3.13	0.94
<u>Finches/Crossbills</u>		<u>366</u>	<u>8.24</u>	<u>2.32</u>	<u>100.00</u>	<u>51</u>	<u>1.88</u>	<u>0.48</u>	<u>66.67</u>	<u>40</u>	<u>2.14</u>	<u>0.47</u>	<u>69.23</u>	<u>82</u>	<u>1.31</u>	<u>0.53</u>	<u>84.62</u>	<u>539</u>	<u>3.53</u>	<u>1.07</u>
American goldfinch	<i>Spinus tristis</i>	30	0.68	0.19	84.62					5	0.27	0.06	23.08	3	0.05	0.02	23.08	38	0.25	0.08
house finch	<i>Haemorhous mexicanus</i>	2	0.05	0.01	7.69									1	0.02	0.01	7.69	3	0.02	0.01
Lawrence's goldfinch	<i>Spinus lawrencei</i>													3	0.05	0.02	7.69	3	0.02	0.01
lesser goldfinch	<i>Spinus psaltria</i>	18	0.41	0.11	61.54									37	0.59	0.24	69.23	55	0.36	0.11
pine siskin	<i>Spinus pinus</i>	230	5.18	1.46	100.00	34	1.25	0.32	55.56	5	0.27	0.06	23.08	2	0.03	0.01	15.38	271	1.77	0.54
purple finch	<i>Haemorhous purpureus</i>	80	1.80	0.51	92.31	10	0.37	0.09	22.22	7	0.37	0.08	30.77	30	0.48	0.19	30.77	127	0.83	0.25
red crossbill	<i>Loxia curvirostra</i>	6	0.14	0.04	15.38	7	0.26	0.07	33.33	23	1.23	0.27	46.15	6	0.10	0.04	15.38	42	0.27	0.08
<u>Unidentified</u>		<u>8</u>	<u>0.18</u>	<u>0.05</u>	<u>7.69</u>	<u>1</u>	<u>0.04</u>	<u>0.01</u>	<u>11.11</u>	-	-	-	-	<u>1</u>	<u>0.02</u>	<u>0.01</u>	<u>7.69</u>	<u>10</u>	<u>0.07</u>	<u>0.02</u>
unidentified passerine bird	<i>Passeriformes (fam, gen, sp)</i>	8	0.18	0.05	7.69	1	0.04	0.01	11.11					1	0.02	0.01	7.69	10	0.07	0.02
Total Observations Within 800-m Plot		4,444	100.00	28.13	100.00	2,715	100.00	25.37	100.00	1,871	100.00	21.76	100.00	6,260	100.00	40.39	100.00	15,290	100.00	30.22

¹ Acronyms: RA = relative abundance; Fr = frequency of occurrence.

² Because RA, use, and Fr values have multiple decimal places and only 2 are shown, the potential for rounding discrepancies exists for calculations.

3 While the only species of eagle observed during the BUC surveys included bald eagle, golden eagle (*Aquila chrysaetos*) were observed during the EUC surveys at the Project.

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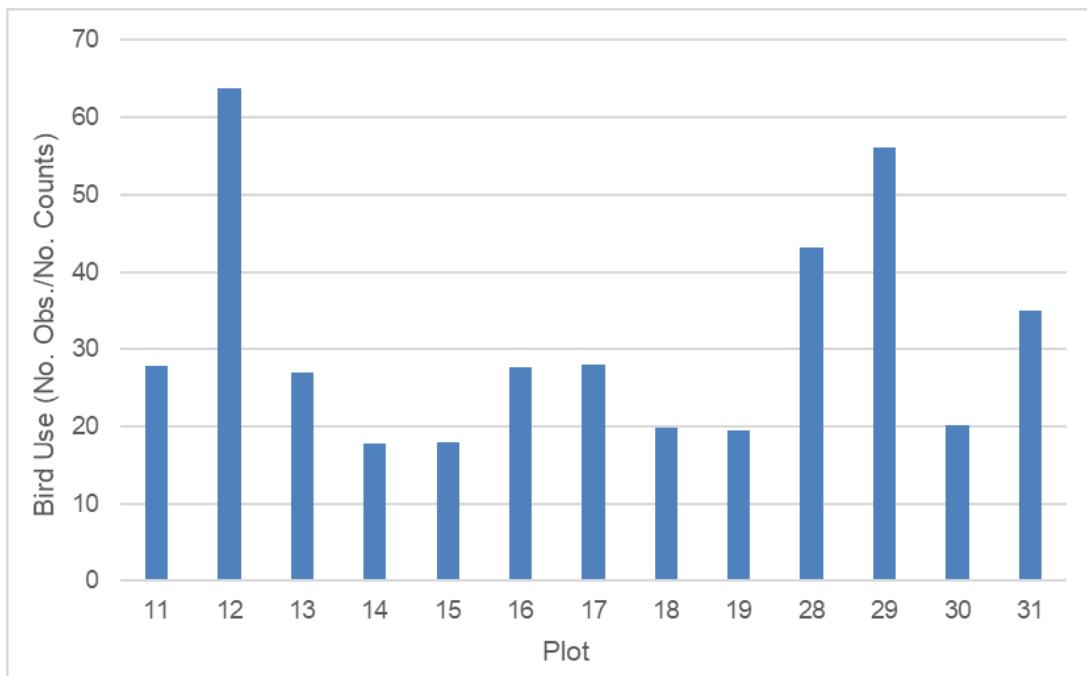
Graph 1. Bird use by type per season documented during bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, October 24, 2017–October 25, 2018.

3.2.4 Use and Frequency of Occurrence by Plot

Birds were detected in all 13 plots. Use was greatest at plot 12 (63.76 observations/observation period), followed by plots 29 (56.04 observations/observation period) and 28 (43.13 observations/observation period). Bird use ranged from 17.76 to 34.96 observations/observation period at all other plots (Graph 3; Figure 4; Appendix A Table 2).

Frequency of occurrence ranged from 92.00% to 100.00% for all bird types combined per plot. Frequency of occurrence ranged from 92.00% to 100.00% for passerines, from 0.00% to 64.71% for woodpeckers, from 4.35% to 52.94% for upland game birds, and from 3.92% to 47.83% for diurnal raptors (Appendix A Table 3).

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Graph 2. Bird use by plot observed during bird use surveys at the Humboldt Wind Energy Project, Humboldt County, California, October 24, 2017–October 25, 2018.

3.2.5 Flight Height

Of all birds documented during BUCs, 49.18% (7,520 observations) were flying and 29.72% (2,235 observations) of those observations were flying within the RSZ for at least a portion of their flight (Table 3). Twenty-one out of 110 species (not including unidentified species) were flying 100.00% of the time they were observed, and 22 species were not flying. Frequency of occurrence within the RSZ was 100.00% for Canada goose (*Branta Canadensis*), great blue heron (*Ardea herodias*), and house finch (*Haemorhous mexicanus*) (Table 3).

Table 3. Percent of observations flying and percent flying within the RSZ for bird species during bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, October 24, 2017–October 25, 2018.

Species	Scientific Name	No. of Total Obs.	% of Total Obs Flying ¹	% of Flying Obs. within RSZ ¹
acorn woodpecker	<i>Melanerpes formicivorus</i>	40	27.50	0.00
Allen's hummingbird	<i>Selasphorus sasin</i>	30	66.67	10.00
American crow	<i>Corvus brachyrhynchos</i>	79	46.84	0.00
American goldfinch	<i>Spinus tristis</i>	38	86.84	27.27
American kestrel	<i>Falco sparverius</i>	44	47.73	0.00
American pipit	<i>Anthus rubescens</i>	404	76.49	0.32
American robin	<i>Turdus migratorius</i>	2185	74.60	22.21
Anna's hummingbird	<i>Calypte anna</i>	26	57.69	0.00
Baird's sandpiper	<i>Calidris bairdii</i>	1	100.00	0.00
bald eagle	<i>Haliaeetus leucocephalus</i>	2	50.00	0.00

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Species	Scientific Name	No. of Total Obs.	% of Total Obs Flying ¹	% of Flying Obs. within RSZ ¹
band-tailed pigeon	<i>Patagioenas fasciata</i>	415	95.18	56.20
barn swallow	<i>Hirundo rustica</i>	175	98.86	10.40
Bewick's wren	<i>Thryomanes bewickii</i>	131	5.34	0.00
black phoebe	<i>Sayornis nigricans</i>	3	0.00	n/a
black-headed grosbeak	<i>Pheucticus melanocephalus</i>	5	60.00	0.00
black-throated gray warbler	<i>Setophaga nigrescens</i>	14	28.57	0.00
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	854	57.61	0.20
brown creeper	<i>Certhia americana</i>	39	7.69	0.00
brown-headed cowbird	<i>Molothrus ater</i>	30	60.00	0.00
burrowing owl	<i>Athene cunicularia</i>	1	100.00	0.00
bushtit	<i>Psaltriparus minimus</i>	114	34.21	0.00
California quail	<i>Callipepla californica</i>	426	16.20	0.00
California scrub-jay	<i>Aphelocoma californica</i>	2	0.00	n/a
Canada goose	<i>Branta canadensis</i>	100	100.00	100.00
cedar waxwing	<i>Bombycilla cedrorum</i>	42	92.86	12.82
chestnut-backed chickadee	<i>Poecile rufescens</i>	228	27.63	0.00
chestnut-collared longspur	<i>Calcarius ornatus</i>	1	100.00	0.00
chipping sparrow	<i>Spizella passerina</i>	29	0.00	n/a
cliff swallow	<i>Petrochelidon pyrrhonota</i>	82	98.78	33.33
common loon	<i>Gavia immer</i>	10	100.00	50.00
common raven	<i>Corvus corax</i>	437	78.95	42.03
Cooper's hawk	<i>Accipiter cooperii</i>	23	100.00	21.74
dark-eyed junco	<i>Junco hyemalis</i>	1029	40.33	0.00
double-crested cormorant	<i>Phalacrocorax auritus</i>	24	100.00	75.00
European starling	<i>Sturnus vulgaris</i>	132	60.61	0.00
ferruginous hawk	<i>Buteo regalis</i>	5	100.00	40.00
fox sparrow	<i>Passerella iliaca</i>	42	0.00	n/a
golden-crowned kinglet	<i>Regulus satrapa</i>	180	16.67	6.67
golden-crowned sparrow	<i>Zonotrichia atricapilla</i>	24	4.17	0.00
grasshopper sparrow	<i>Ammodramus savannarum</i>	52	15.38	0.00
great blue heron	<i>Ardea herodias</i>	1	100.00	100.00
greater white-fronted goose	<i>Anser albifrons</i>	55	100.00	49.09
greater yellowlegs	<i>Tringa melanoleuca</i>	1	100.00	0.00
hairy woodpecker	<i>Picoides villosus</i>	56	19.64	18.18
hermit thrush	<i>Catharus guttatus</i>	212	6.13	0.00
hermit warbler	<i>Setophaga occidentalis</i>	188	14.89	0.00
herring gull	<i>Larus argentatus</i>	3	100.00	0.00
horned lark	<i>Eremophila alpestris</i>	137	26.28	2.78
house finch	<i>Haemorhous mexicanus</i>	3	66.67	100.00
house wren	<i>Troglodytes aedon</i>	1	0.00	n/a
Hutton's vireo	<i>Vireo huttoni</i>	141	7.09	0.00
killdeer	<i>Charadrius vociferus</i>	1	100.00	0.00
lapland longspur	<i>Calcarius lapponicus</i>	10	100.00	0.00
lark sparrow	<i>Chondestes grammacus</i>	3	0.00	n/a
Lawrence's goldfinch	<i>Spinus lawrencei</i>	3	0.00	n/a
lazuli bunting	<i>Passerina amoena</i>	64	18.75	8.33
lesser goldfinch	<i>Spinus psaltria</i>	55	78.18	23.26

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Species	Scientific Name	No. of Total Obs.	% of Total Obs Flying ¹	% of Flying Obs. within RSZ ¹
Macgillivray's warbler	<i>Geothlypis tolmiei</i>	3	0.00	n/a
mallard	<i>Anas platyrhynchos</i>	4	100.00	0.00
mountain quail	<i>Oreortyx pictus</i>	99	0.00	n/a
mourning dove	<i>Zenaida macroura</i>	5	80.00	0.00
Nashville warbler	<i>Oreothlypis ruficapilla</i>	1	0.00	n/a
northern flicker	<i>Colaptes auratus</i>	249	9.24	4.35
northern harrier	<i>Circus cyaneus</i>	4	100.00	0.00
northern pygmy-owl	<i>Glaucidium gnoma</i>	5	0.00	n/a
olive-sided flycatcher	<i>Contopus cooperi</i>	46	0.00	n/a
orange-crowned warbler	<i>Oreothlypis celata</i>	33	3.03	0.00
osprey	<i>Pandion haliaetus</i>	1	100.00	0.00
pacific golden-plover	<i>Pluvialis fulva</i>	2	100.00	0.00
pacific wren	<i>Troglodytes pacificus</i>	69	0.00	n/a
pacific-slope flycatcher	<i>Empidonax difficilis</i>	33	3.03	0.00
peregrine falcon	<i>Falco peregrinus</i>	1	0.00	n/a
pileated woodpecker	<i>Dryocopus pileatus</i>	21	19.05	0.00
pine siskin	<i>Spinus pinus</i>	271	78.23	30.66
purple finch	<i>Haemorhous purpureus</i>	127	61.42	41.03
purple martin	<i>Progne subis</i>	96	92.71	28.09
red crossbill	<i>Loxia curvirostra</i>	42	71.43	56.67
red-breasted nuthatch	<i>Sitta canadensis</i>	277	11.19	6.45
red-breasted sapsucker	<i>Sphyrapicus ruber</i>	3	0.00	n/a
red-tailed hawk	<i>Buteo jamaicensis</i>	347	90.78	90.79
red-winged blackbird	<i>Agelaius phoeniceus</i>	11	100.00	36.36
rock wren	<i>Salpinctes obsoletus</i>	1	0.00	n/a
ruby-crowned kinglet	<i>Regulus calendula</i>	95	14.74	35.71
Savannah sparrow	<i>Passerculus sandwichensis</i>	224	18.30	0.00
sharp-shinned hawk	<i>Accipiter striatus</i>	7	85.71	16.67
song sparrow	<i>Melospiza melodia</i>	426	5.40	0.00
sooty grouse	<i>Dendragapus fuliginosus</i>	4	25.00	0.00
spotted towhee	<i>Pipilo maculatus</i>	10	0.00	n/a
Steller's jay	<i>Cyanocitta stelleri</i>	944	11.02	3.85
Swainson's thrush	<i>Catharus ustulatus</i>	33	0.00	n/a
Townsend's warbler	<i>Setophaga townsendi</i>	15	53.33	37.50
tree swallow	<i>Tachycineta bicolor</i>	22	95.45	19.05
turkey vulture	<i>Cathartes aura</i>	149	99.33	52.70
varied thrush	<i>Ixoreus naevius</i>	148	39.86	32.20
Vaux's swift	<i>Chaetura vauxi</i>	195	100.00	41.03
violet-green swallow	<i>Tachycineta thalassina</i>	601	98.00	70.80
warbling vireo	<i>Vireo gilvus</i>	17	0.00	n/a
western bluebird	<i>Sialia mexicana</i>	352	48.01	19.53
western flycatcher	<i>Empidonax difficilis/occid.</i>	3	0.00	n/a
western meadowlark	<i>Sturnella neglecta</i>	478	29.71	0.00
western tanager	<i>Piranga ludoviciana</i>	46	28.26	15.38
western wood-peewee	<i>Contopus sordidulus</i>	1	0.00	n/a
white-crowned sparrow	<i>Zonotrichia leucophrys</i>	384	13.80	0.00
white-throated swift	<i>Aeronautes saxatalis</i>	159	96.86	53.25

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Species	Scientific Name	No. of Total Obs.	% of Total Obs Flying ¹	% of Flying Obs. within RSZ ¹
wild turkey	<i>Meleagris gallopavo</i>	1	0.00	n/a
Wilson's snipe	<i>Gallinago delicata</i>	1	100.00	0.00
Wilson's warbler	<i>Cardellina pusilla</i>	120	20.83	0.00
wrentit	<i>Chamaea fasciata</i>	325	0.31	0.00
yellow warbler	<i>Setophaga petechia</i>	7	28.57	0.00
yellow-rumped warbler	<i>Setophaga coronata</i>	196	34.18	8.96
unidentified hummingbird	<i>Trochilidae (gen, sp)</i>	29	96.55	0.00
unidentified passerine bird	<i>Passeriformes (fam, gen, sp)</i>	10	90.00	88.89
unidentified sparrow	<i>Emberizidae (gen, sp)</i>	3	100.00	0.00
unidentified swallow	<i>Hirundidae (gen, sp)</i>	77	100.00	92.21
unidentified swift	<i>Apodidae (gen, sp)</i>	22	100.00	100.00
unidentified warbler	<i>Parulidae (gen, sp)</i>	3	66.67	0.00
All Observations Combined		15,290	49.18	29.72

¹ Because % values have multiple decimal places and only 2 are shown, the potential for rounding discrepancies exists for calculations

3.2.6 Habitat (Non-Flying Birds)

The majority of non-flying birds were observed in coniferous forest habitat (75.59%; 5,871 observations), followed by grassland habitat (32.82%; 2,549 observations), and chaparral habitat (1.64%; 127 observations). Other habitats in which birds were observed included barren/outcrop and oak woodland, and birds were also observed at man-made structures in grassland habitats such as powerlines or fence posts (Table 4).

Table 4. Percent of observations by habitat type for all birds combined during bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, October 24, 2017–October 25, 2018.

Habitat	No. Obs. Non-Flying Birds	% of Total Obs. Non-Flying Birds ^{1, 2}
coniferous forest	5,871	75.59
grassland	2,549	32.82
chaparral	127	1.64
man-made structure ³	144	1.85
oak woodland	23	0.30
barren, outcrop	4	0.05
agriculture	0	0.00
riparian	0	0.00
urban	0	0.00
wetland	0	0.00

¹ Many birds were observed occupying more than 1 habitat, thus the total percentage is greater than 100.

² Because % values have multiple decimal places and only 2 are shown, the potential for rounding discrepancies exists for calculations.

³ Including powerlines, fence posts, and other structures in grassland habitats.

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3.2.7 Behaviors

The majority of birds were singing or calling (77.61%; 11,866 observations), followed by flying (49.18%; 7,520 observations), and perched on vegetation (40.09%; 6,129 observations). Other behaviors included aggressive display, foraging, and perched on ground or structure (Table 5).

Table 5. Percent of observations by behavior category for all birds combined during bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, October 24, 2017–October 25, 2018.

Behavior	No. Obs.	% of Total Obs ^{1, 2}
singing, calling	11,866	77.61
flying	7,520	49.18
perched on vegetation	6,129	40.09
foraging	2,845	18.61
perched on ground	1,478	9.67
perched on structure	983	6.43
aggressive display	24	0.16
nest building	0	0.00
migrating	0	0.00

¹ Many birds were observed displaying multiple behaviors, thus the total percentage is greater than 100.

² Because % values have multiple decimal places and only 2 are shown, the potential for rounding discrepancies exists for calculations.

4.0 SMALL BIRD USE COUNT SURVEY

4.1 METHODS

4.1.1 Field Methods

Survey methods were consistent with the California Guidelines and Draft Work Plan. Plots were different than those sampled during the BUCs which were selected based on visibility and habitat, and SBUC plots were selected to sample additional habitats. SBUC plot locations were generally proportional to the abundance of each habitat within the project area. During weekly survey events, 10 to 20 plots were sampled to document all birds observed within a 100-m radius; the number of plots changed across the study period due to updates to the project area or other logistical constraints (e.g., logging operations). Each week, all accessible plots in the project area were sampled for 10 minutes between sunrise and 10:00 AM to capture peak bird activity within the SBUC habitat types (1 survey event = 1 weekly round of counts at all accessible plots). Biologists alternated the starting plots between visits by north to south or south to north to stratify effort among plots across variable daytime periods.

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The following data were recorded at the beginning of each survey:

1. Plot number
2. Date
3. Start time
4. Temperature
5. Wind speed and direction
6. Visibility
7. Cloud cover
8. Precipitation

For each bird observation, biologists recorded an observation reference number, the start time of observation, species, number of individuals, direction and distance from observer, flight height category (0–1 m, 2–10 m, 11–29 m, 30–130 m, 131–200 m, 201 m+), mode of detection (audial and/or visual), behavior, flight direction (if applicable), and habitat (for non-flying birds).

4.1.2 Composition, Relative Abundance, Use, and Frequency of Occurrence by Season

Seasonal periods were defined as follows:

- Spring 4/1–6/1
- Summer 6/2–8/31
- Fall 9/1–10/26

Species composition (i.e., species and bird types observed, by season), relative abundance (i.e., number of observations of species or bird type divided by total observations, by season), use (i.e., number of observations divided by number of counts, by season), and frequency of occurrence (i.e., the percent of counts during which a species was observed, by season) was calculated for all birds observed within plots (and separately for birds outside of 100 m or observed while traveling between plots).

4.1.3 Flight Height, Habitat, and Behavior

Stantec summarized the following:

- The percent of birds observed flying and the percent of birds observed flying in the RSZ;
- For those birds that were not flying, the percent of observations by habitat; and
- The percent of observations by behavior.

4.1.4 Special Status Species

The number of special-status bird species observed was calculated. Criteria used for special-status species is listed below.

- Species that are listed, formally proposed, or designated as candidates for listing as threatened or endangered under the federal Endangered Species Act;
- Species that are listed or designated as candidates for listing as rare, threatened or endangered under California Endangered Species Act (CDFW 2018a); or

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- Wildlife species designated as Fully Protected or Species of Special Concern by CDFW (CDFW 2008; CDFW 2018b).

4.2 RESULTS

4.2.1 Weather Results

Weather was suitable during counts, with minimal precipitation events. Brief periods of light rain occurred on 2 out of 59 survey-days but did not restrict visibility within plots. Moderate to heavy fog periodically reduced visibility during 20 out of 59 survey-days (Appendix B Table 1).

4.2.2 Survey Effort

There were 519 10-minute SBUCs during 29 survey events, for a total of 86.5 hours of observation (Table 6). Twenty-three plots in the project area were sampled: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, and 33 (Figure 5). Twenty-one survey events were conducted at plots 1–7, and due to logging activity, 9 survey events at plots 8 and 9 and 8 survey events at plot 10 were conducted. Plots 21–33 were sampled after land access was granted; 15 survey events were conducted at plots 21–30, and 12 survey events were conducted at plots 31–33 (Table 6).

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Table 6. Summary of survey effort for small bird use counts conducted at the Humboldt Wind Energy Project, Humboldt County, California, April 3–October 26, 2018.

Point No.	Month/Date																										Total Visits		
	Apr				May					Jun				Jul			Aug				Sept				Oct				
	3	11	18	24	1	8–9	16–17	22, 24	31–1 ¹	7	14	21–22	27	3, 5	10, 12	19–20	1–2	8–9	16, 18	21, 23	29–30	4, 7	12–14	18, 20–21	25–27	2–3, 5	10–12	15–17, 19	23–26
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29
8	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
9	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
10	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
21	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
22	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
23	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
24	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
25	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
26	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
27	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
28	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
29	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
30	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
31	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
32	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
33	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
Total	10	10	10	10	10	20	19	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	519		

¹ The last site visit in May continued through June 1.

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

4.2.3 Composition, Relative Abundance, Use, and Frequency of Occurrence by Season

During the SBUCs, 5,577 bird observations were documented, with 8 bird types and 92 species. Passerines were the most abundant bird type documented, comprising 91.50% of observations. Doves/pigeons and upland game birds were the next most abundant bird types, accounting for 2.53% and 1.94% of observations, respectively (Table 7).

Bird use documented during the SBUCs was 10.75 observations/plot/10-minute observation period (observation period). Use was greatest during fall (12.34 observations/plot/observation period), followed by summer (11.61 observations/plot/observation period) (Table 7).

Passerines had the greatest use (9.83 observations/plot/observation period), followed by doves/pigeons (0.27 observation/plot/observation period) and upland game birds (0.21 observation/plot/observation period) (Table 7; Graph 3). Among passerines, sparrows/larks had the greatest use overall (2.33 observations/plot/observation period) with dark-eyed junco (*Junco hyemalis*) representing the most common species of sparrow/lark (0.86 observation/plot/observation period) (Table 7).

Frequency of occurrence for passerines was 100.00% during all three seasons (Table 7). Among passerines observed, sparrows/larks had the highest frequencies during spring and summer (95.00% in spring and 100.00% in summer), followed by thrushes (70.00% in spring and 90.00% in summer), and corvids (65.00% in spring and 90.00% in summer). Sparrows/larks, warblers, and thrushes had the highest frequencies in fall (95%), followed by both corvids and finches/crossbills (90%). For all other bird types observed, frequency of occurrence ranged from 0.00% to 35.00% during the spring, from 0.00% to 70.00% during the summer, and from 0.00% to 50.00% during the fall (Table 7).

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Table 7. Composition, relative abundance, use, and frequency by season documented during small bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, April 3–October 26, 2018.

Type/Species	Scientific Name	Spring (119 surveys)				Summer (240 surveys)				Fall (160 surveys)				Total (519 surveys)		
		No. Obs.	RA ^{1,2}	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use
Diurnal Raptors		3	0.37	0.03	15.00	16	0.57	0.07	40.00	28	1.42	0.18	50.00	47	0.84	0.09
<i>Accipiters</i>		1	0.12	0.01	5.00	1	0.04	<0.01	5.00	3	0.15	0.02	10.00	5	0.09	0.01
Cooper's hawk	<i>Accipiter cooperii</i>	1	0.12	0.01	5.00					1	0.05	0.01	5.00	2	0.04	<0.01
sharp-shinned hawk	<i>Accipiter striatus</i>					1	0.04	<0.01	5.00	2	0.10	0.01	5.00	3	0.05	0.01
<i>Buteos</i>		2	0.24	0.02	10.00	11	0.39	0.05	25.00	5	0.25	0.03	20.00	18	0.32	0.03
red-tailed hawk	<i>Buteo jamaicensis</i>	2	0.24	0.02	10.00	11	0.39	0.05	25.00	5	0.25	0.03	20.00	18	0.32	0.03
<i>Falcons</i>						4	0.14	0.02	20.00	18	0.91	0.11	35.00	22	0.39	0.04
American kestrel	<i>Falco sparverius</i>					4	0.14	0.02	20.00	15	0.76	0.09	35.00	19	0.34	0.04
merlin	<i>Falco columbarius</i>									1	0.05	0.01	5.00	1	0.02	<0.01
peregrine falcon	<i>Falco peregrinus</i>									1	0.05	0.01	5.00	1	0.02	<0.01
prairie falcon	<i>Falco mexicanus</i>									1	0.05	0.01	5.00	1	0.02	<0.01
<i>Harriers</i>										2	0.10	0.01	10.00	2	0.04	<0.01
northern harrier	<i>Circus cyaneus</i>									2	0.10	0.01	10.00	2	0.04	<0.01
Vultures		2	0.24	0.02	10.00	1	0.04	<0.01	5.00					3	0.05	0.01
turkey vulture	<i>Cathartes aura</i>	2	0.24	0.02	10.00	1	0.04	<0.01	5.00					3	0.05	0.01
Upland Game Birds		22	2.69	0.18	30.00	80	2.87	0.33	65.00	6	0.30	0.04	15.00	108	1.94	0.21
California quail	<i>Callipepla californica</i>	10	1.22	0.08	25.00	55	1.97	0.23	60.00	6	0.30	0.04	15.00	71	1.27	0.14
mountain quail	<i>Oreortyx pictus</i>	2	0.24	0.02	5.00	3	0.11	0.01	10.00					5	0.09	0.01
sooty grouse	<i>Dendragapus fuliginosus</i>	9	1.10	0.08	20.00	22	0.79	0.09	10.00					31	0.56	0.06
wild turkey	<i>Meleagris gallopavo</i>	1	0.12	0.01	5.00									1	0.02	<0.01
Doves/Pigeons		35	4.28	0.29	30.00	70	2.51	0.29	70.00	36	1.82	0.23	45.00	141	2.53	0.27
band-tailed pigeon	<i>Patagioenas fasciata</i>	35	4.28	0.29	30.00	69	2.48	0.29	70.00	36	1.82	0.23	45.00	140	2.51	0.27
mourning dove	<i>Zenaida macroura</i>					1	0.04	<0.01	5.00					1	0.02	<0.01
Owls										1	0.05	0.01	5.00	1	0.02	<0.01
northern saw-whet owl	<i>Aegolius acadicus</i>									1	0.05	0.01	5.00	1	0.02	<0.01
Hummingbirds/Swifts		11	1.35	0.09	35.00	70	2.51	0.29	65.00	14	0.71	0.09	10.00	95	1.70	0.18
Allen's hummingbird	<i>Selasphorus sasin</i>	1	0.12	0.01	5.00	3	0.11	0.01	10.00					4	0.07	0.01
Anna's hummingbird	<i>Calypte anna</i>	4	0.49	0.03	10.00	2	0.07	0.01	10.00					6	0.11	0.01
Vaux's swift	<i>Chaetura vauxi</i>					45	1.62	0.19	45.00	14	0.71	0.09	10.00	59	1.06	0.11
white-throated swift	<i>Aeronautes saxatalis</i>					15	0.54	0.06	20.00					15	0.27	0.03
unidentified hummingbird	<i>Trochilidae (gen, sp)</i>	6	0.73	0.05	0.00	5	0.18	0.02	20.00					11	0.20	0.02
Woodpeckers		18	2.20	0.15	35.00	44	1.58	0.18	55.00	17	0.86	0.11	40.00	79	1.42	0.15
acorn woodpecker	<i>Melanerpes formicivorus</i>	1	0.12	0.01	5.00	2	0.07	0.01	10.00					3	0.05	0.01
downy woodpecker	<i>Picoides pubescens</i>									1	0.05	0.01	5.00	1	0.02	<0.01
hairy woodpecker	<i>Picoides villosus</i>	7	0.86	0.06	20.00	9	0.32	0.04	25.00	2	0.10	0.01	10.00	18	0.32	0.03
northern flicker	<i>Colaptes auratus</i>	10	1.22	0.08	25.00	27	0.97	0.11	50.00	12	0.61	0.08	35.00	49	0.88	0.09
pileated woodpecker	<i>Dryocopus pileatus</i>					6	0.22	0.03	10.00	1	0.05	0.01	5.00	7	0.13	0.01
red-breasted sapsucker	<i>Sphyrapicus ruber</i>									1	0.05	0.01	5.00	1	0.02	<0.01
Passerines		726	88.86	6.10	100.00	2,505	89.91	10.44	100.00	1,872	94.83	11.70	100.00	5,103	91.50	9.83
<i>Flycatchers</i>		10	1.22	0.08	35.00	27	0.97	0.11	50.00	4	0.20	0.03	10.00	41	0.74	0.08
black phoebe	<i>Sayornis nigricans</i>									3	0.15	0.02	10.00	3	0.05	0.01
olive-sided flycatcher	<i>Contopus cooperi</i>					8	0.29	0.03	15.00					8	0.14	0.02
pacific-slope flycatcher	<i>Empidonax difficilis</i>	10	1.22	0.08	35.00	18	0.65	0.08	45.00					28	0.50	0.05
Say's phoebe	<i>Sayornis saya</i>									1	0.05	0.01	5.00	1	0.02	<0.01
western wood-peewee	<i>Contopus sordidulus</i>					1	0.04	<0.01	5.00					1	0.02	<0.01

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Type/Species	Scientific Name	Spring (119 surveys)				Summer (240 surveys)				Fall (160 surveys)				Total (519 surveys)		
		No. Obs.	RA ^{1,2}	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use
Vireos		10	1.22	0.08	20.00	11	0.39	0.05	35.00	13	0.66	0.08	45.00	34	0.61	0.07
Hutton's vireo	<i>Vireo huttoni</i>	7	0.86	0.06	15.00	9	0.32	0.04	30.00	13	0.66	0.08	45.00	29	0.52	0.06
warbling vireo	<i>Vireo gilvus</i>	3	0.37	0.03	15.00	2	0.07	0.01	10.00					5	0.09	0.01
Corvids		98	12.00	0.82	65.00	215	7.72	0.90	90.00	124	6.28	0.78	90.00	437	7.84	0.84
California scrub-jay	<i>Aphelocoma californica</i>	2	0.24	0.02	5.00	1	0.04	<0.01	5.00	5	0.25	0.03	10.00	8	0.14	0.02
common raven	<i>Corvus corax</i>	9	1.10	0.08	40.00	52	1.87	0.22	60.00	35	1.77	0.22	45.00	96	1.72	0.18
Steller's jay	<i>Cyanocitta stelleri</i>	87	10.65	0.73	45.00	162	5.81	0.68	60.00	84	4.26	0.53	60.00	333	5.97	0.64
Swallows/Martins		9	1.10	0.08	25.00	211	7.57	0.88	70.00	17	0.86	0.11	10.00	237	4.25	0.46
barn swallow	<i>Hirundo rustica</i>	4	0.49	0.03	10.00	62	2.23	0.26	45.00	4	0.20	0.03	5.00	70	1.26	0.13
cliff swallow	<i>Petrochelidon pyrrhonota</i>					63	2.26	0.26	30.00					63	1.13	0.12
purple martin	<i>Progne subis</i>					9	0.32	0.04	20.00					9	0.16	0.02
tree swallow	<i>Tachycineta bicolor</i>	1	0.12	0.01	5.00	15	0.54	0.06	25.00	5	0.25	0.03	5.00	21	0.38	0.04
violet-green swallow	<i>Tachycineta thalassina</i>	4	0.49	0.03	0.00	61	2.19	0.25	35.00	8	0.41	0.05	10.00	73	1.31	0.14
unidentified swallow	<i>Hirundidae (gen, sp)</i>					1	0.04	<0.01	5.00					1	0.02	<0.01
Chickadees/Creepers/Nuthatches		55	6.73	0.46	55.00	197	7.07	0.82	70.00	164	8.31	1.03	70.00	416	7.46	0.80
brown creeper	<i>Certhia americana</i>	19	2.33	0.16	30.00	8	0.29	0.03	15.00	13	0.66	0.08	30.00	40	0.72	0.08
chestnut-backed chickadee	<i>Poecile rufescens</i>	16	1.96	0.13	35.00	106	3.80	0.44	60.00	55	2.79	0.34	45.00	177	3.17	0.34
red-breasted nuthatch	<i>Sitta canadensis</i>	20	2.45	0.17	40.00	83	2.98	0.35	70.00	96	4.86	0.60	70.00	199	3.57	0.38
Bushtit		2	0.24	0.02	5.00	2	0.07	0.01	5.00	1	0.05	0.01	5.00	5	0.09	0.01
bushtit	<i>Psaltriparus minimus</i>	2	0.24	0.02	5.00	2	0.07	0.01	5.00	1	0.05	0.01	5.00	5	0.09	0.01
Wrentit		6	0.73	0.05	20.00	41	1.47	0.17	30.00	19	0.96	0.12	30.00	66	1.18	0.13
wrentit	<i>Chamaea fasciata</i>	6	0.73	0.05	20.00	41	1.47	0.17	30.00	19	0.96	0.12	30.00	66	1.18	0.13
Wrens		18	2.20	0.15	25.00	34	1.22	0.14	50.00	36	1.82	0.23	50.00	88	1.58	0.17
Bewick's wren	<i>Thryomanes bewickii</i>					11	0.39	0.05	40.00	11	0.56	0.07	30.00	22	0.39	0.04
house wren	<i>Troglodytes aedon</i>					1	0.04	<0.01	5.00	1	0.05	0.01	5.00	2	0.04	<0.01
pacific wren	<i>Troglodytes pacificus</i>	18	2.20	0.15	25.00	22	0.79	0.09	25.00	24	1.22	0.15	40.00	64	1.15	0.12
Gnatcatchers/Kinglets		9	1.10	0.08	25.00	9	0.32	0.04	25.00	29	1.47	0.18	45.00	47	0.84	0.09
golden-crowned kinglet	<i>Regulus satrapa</i>	8	0.98	0.07	25.00	9	0.32	0.04	25.00	15	0.76	0.09	35.00	32	0.57	0.06
ruby-crowned kinglet	<i>Regulus calendula</i>	1	0.12	0.01	5.00					14	0.71	0.09	40.00	15	0.27	0.03
Thrushes		86	10.53	0.72	70.00	237	8.51	0.99	90.00	327	16.57	2.04	95.00	650	11.66	1.25
American robin	<i>Turdus migratorius</i>	52	6.36	0.44	55.00	105	3.77	0.44	85.00	191	9.68	1.19	85.00	348	6.24	0.67
hermit thrush	<i>Catharus guttatus</i>	8	0.98	0.07	25.00	42	1.51	0.18	55.00	16	0.81	0.10	30.00	66	1.18	0.13
Swainson's thrush	<i>Catharus ustulatus</i>	3	0.37	0.03	15.00	8	0.29	0.03	30.00					11	0.20	0.02
varied thrush	<i>Ixoreus naevius</i>	12	1.47	0.10	15.00	10	0.36	0.04	30.00	86	4.36	0.54	60.00	108	1.94	0.21
western bluebird	<i>Sialia mexicana</i>	11	1.35	0.09	15.00	72	2.58	0.30	35.00	34	1.72	0.21	30.00	117	2.10	0.23
Pipits		3	0.37	0.03	5.00					202	10.23	1.26	55.00	205	3.68	0.39
American pipit	<i>Anthus rubescens</i>	3	0.37	0.03	5.00					202	10.23	1.26	55.00	205	3.68	0.39
Waxwings						2	0.07	0.01	5.00	55	2.79	0.34	40.00	57	1.02	0.11
cedar waxwing	<i>Bombycilla cedrorum</i>					2	0.07	0.01	5.00	55	2.79	0.34	40.00	57	1.02	0.11
Warblers		130	15.91	1.09	70.00	157	5.64	0.65	75.00	52	2.63	0.33	95.00	339	6.08	0.65
black-throated gray warbler	<i>Setophaga nigrescens</i>	4	0.49	0.03	15.00	1	0.04	<0.01	5.00	2	0.10	0.01	10.00	7	0.13	0.01
hermit warbler	<i>Setophaga occidentalis</i>	60	7.34	0.50	55.00	59	2.12	0.25	65.00	1	0.05	0.01	5.00	120	2.15	0.23
MacGillivray's warbler	<i>Geothlypis tolmiei</i> </td															

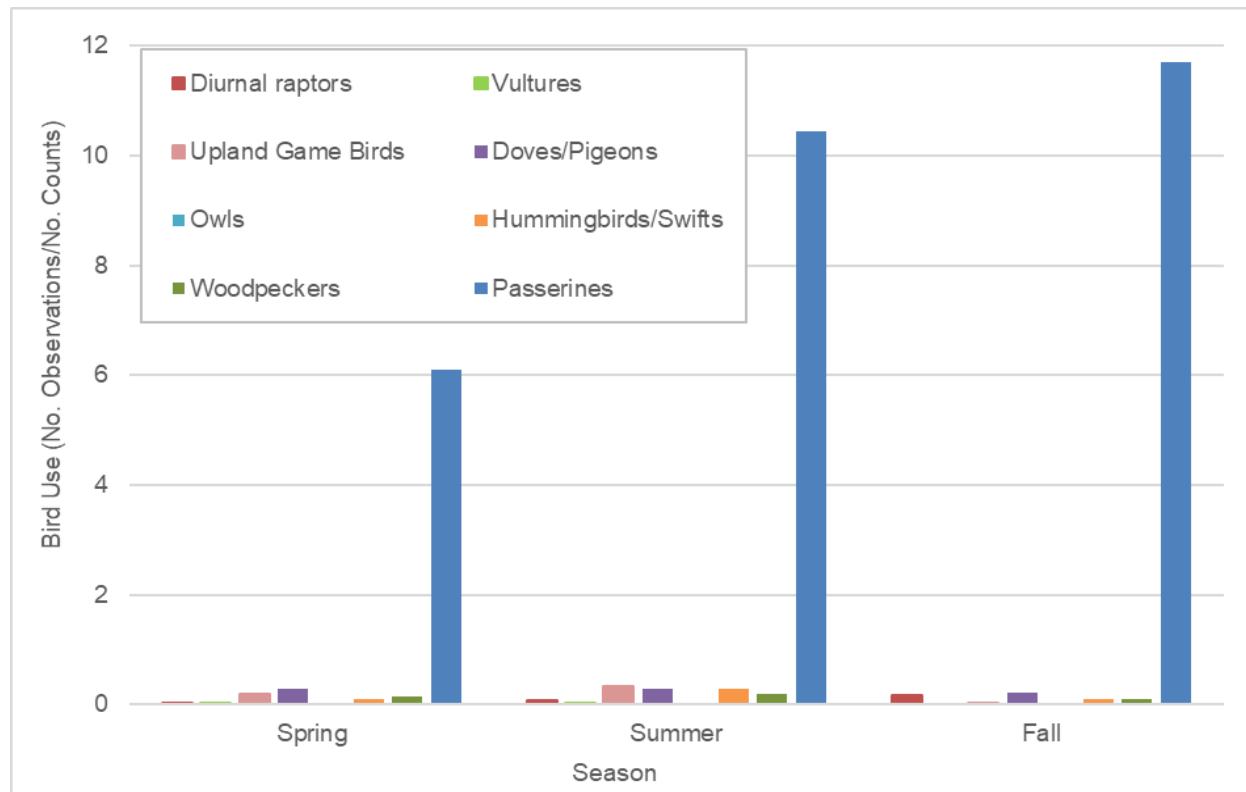
HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Type/Species	Scientific Name	Spring (119 surveys)				Summer (240 surveys)				Fall (160 surveys)				Total (519 surveys)		
		No. Obs.	RA ^{1,2}	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use	Fr	No. Obs.	RA	Use
Tanagers/Grosbeaks/Cardinals		21	2.57	0.18	35.00	101	3.63	0.42	75.00					122	2.19	0.24
black-headed grosbeak	<i>Pheucticus melanocephalus</i>	2	0.24	0.02	10.00	3	0.11	0.01	10.00					5	0.09	0.01
lazuli bunting	<i>Passerina amoena</i>	12	1.47	0.10	25.00	79	2.84	0.33	65.00					91	1.63	0.18
western tanager	<i>Piranga ludoviciana</i>	7	0.86	0.06	30.00	19	0.68	0.08	40.00					26	0.47	0.05
Sparrows/Larks		185	22.64	1.55	95.00	823	29.54	3.43	100.00	202	10.23	1.26	95.00	1210	21.70	2.33
chipping sparrow	<i>Spizella passerina</i>	2	0.24	0.02	10.00	47	1.69	0.20	40.00	8	0.41	0.05	15.00	57	1.02	0.11
dark-eyed junco	<i>Junco hyemalis</i>	50	6.12	0.42	40.00	302	10.84	1.26	75.00	92	4.66	0.58	45.00	444	7.96	0.86
fox sparrow	<i>Passerella iliaca</i>									4	0.20	0.03	15.00	4	0.07	0.01
golden-crowned sparrow	<i>Zonotrichia atricapilla</i>									10	0.51	0.06	15.00	10	0.18	0.02
grasshopper sparrow	<i>Ammodramus savannarum</i>	1	0.12	0.01	5.00	25	0.90	0.10	45.00					26	0.47	0.05
horned lark	<i>Eremophila alpestris</i>	4	0.49	0.03	15.00	9	0.32	0.04	20.00	9	0.46	0.06	10.00	22	0.39	0.04
lark sparrow	<i>Chondestes grammacus</i>	1	0.12	0.01	5.00	3	0.11	0.01	15.00					4	0.07	0.01
Savannah sparrow	<i>Passerculus sandwichensis</i>	41	5.02	0.34	50.00	252	9.05	1.05	55.00	31	1.57	0.19	40.00	324	5.81	0.62
song sparrow	<i>Melospiza melodia</i>	49	6.00	0.41	55.00	111	3.98	0.46	65.00	31	1.57	0.19	45.00	191	3.42	0.37
spotted towhee	<i>Pipilo maculatus</i>					1	0.04	<0.01	5.00					1	0.02	<0.01
white-crowned sparrow	<i>Zonotrichia leucophrys</i>	37	4.53	0.31	50.00	73	2.62	0.30	80.00	17	0.86	0.11	10.00	127	2.28	0.24
Blackbirds/Orioles		56	6.85	0.47	55.00	347	12.46	1.45	65.00	101	5.12	0.63	50.00	504	9.04	0.97
bobolink	<i>Dolichonyx oryzivorus</i>									2	0.10	0.01	5.00	2	0.04	<0.01
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	15	1.84	0.13	5.00	64	2.30	0.27	30.00	5	0.25	0.03	15.00	84	1.51	0.16
brown-headed cowbird	<i>Molothrus ater</i>	1	0.12	0.01	5.00	23	0.83	0.10	35.00	1	0.05	0.01	5.00	25	0.45	0.05
European starling	<i>Sturnus vulgaris</i>					17	0.61	0.07	10.00	31	1.57	0.19	25.00	48	0.86	0.09
red-winged blackbird	<i>Agelaius phoeniceus</i>									3	0.15	0.02	5.00	3	0.05	0.01
western meadowlark	<i>Sturnella neglecta</i>	40	4.90	0.34	50.00	243	8.72	1.01	55.00	59	2.99	0.37	35.00	342	6.13	0.66
Finches/Crossbills		28	3.43	0.24	40.00	91	3.27	0.38	70.00	526	26.65	3.29	90.00	645	11.57	1.24
American goldfinch	<i>Spinus tristis</i>	1	0.12	0.01	5.00	3	0.11	0.01	15.00	21	1.06	0.13	60.00	25	0.45	0.05
house finch	<i>Haemorhous mexicanus</i>									11	0.56	0.07	25.00	11	0.20	0.02
lesser goldfinch	<i>Spinus psaltria</i>					45	1.62	0.19	50.00	11	0.56	0.07	35.00	56	1.00	0.11
pine siskin	<i>Spinus pinus</i>	6	0.73	0.05	20.00	30	1.08	0.13	45.00	432	21.88	2.70	30.00	468	8.39	0.90
purple finch	<i>Haemorhous purpureus</i>	1	0.12	0.01	5.00	5	0.18	0.02	15.00	49	2.48	0.31	60.00	55	0.99	0.11
red crossbill	<i>Loxia curvirostra</i>	20	2.45	0.17	15.00	8	0.29	0.03	15.00	2	0.10	0.01	5.00	30	0.54	0.06
All Observations Combined		817	100.00	6.87	100.00	2,786	100.00	11.61	100.00	1,974	100.00	12.34	100.00	5,577	100.00	10.75

¹ Acronyms: RA = relative abundance; Fr = frequency.

² Because RA, use, and Fr values have multiple decimal places and only 2 are shown, the potential for rounding discrepancies exists for calculations.

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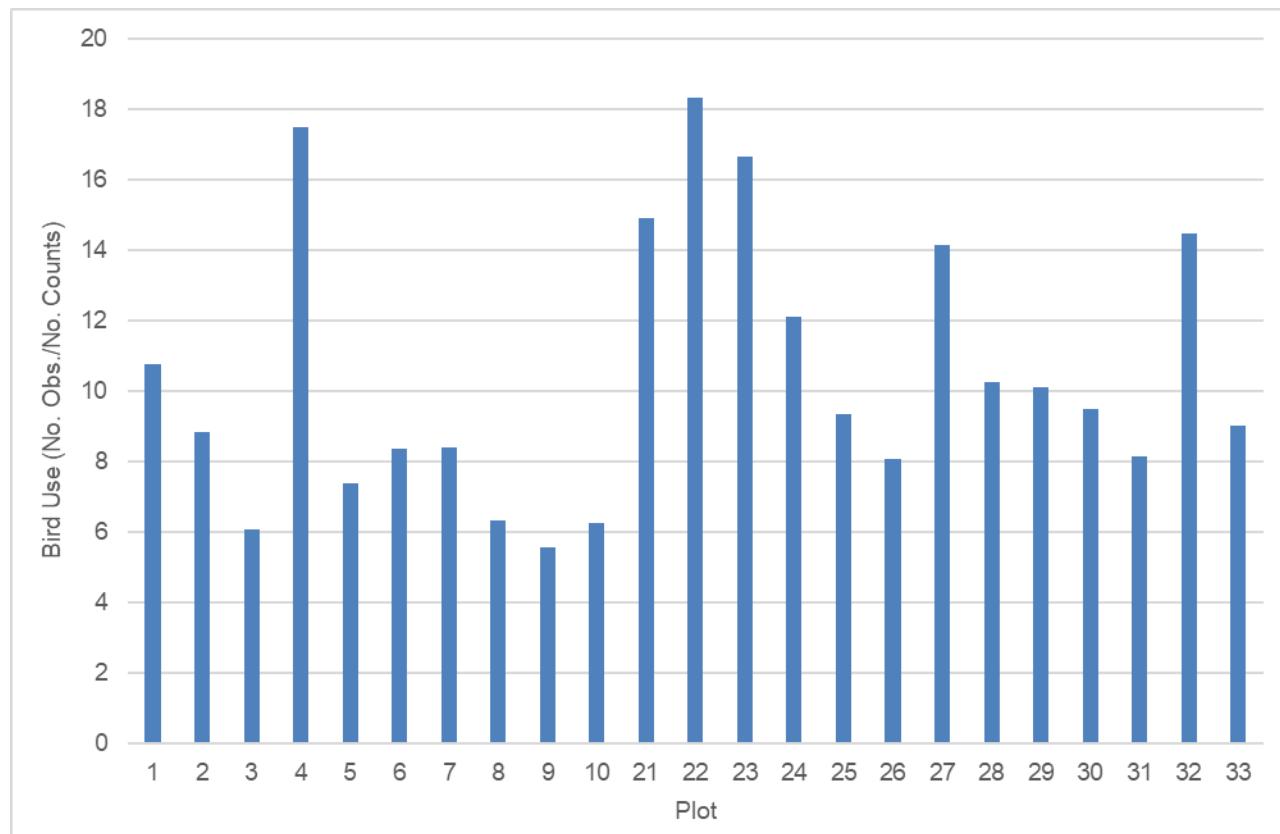
Graph 3. Bird use by type per season documented during small bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, April 3–October 26, 2018.

4.2.4 Use and Frequency of Occurrence by Plot

Birds were detected within the 100-m survey radius at all 23 plots, and use was greatest at plot 22 (18.30 observations/observation period), followed by plots 4 (17.48 observations/observation period) and 23 (16.65 observations/observation period). Bird use ranged from 5.56 to 14.91 observations/observation period at all other plots (Graph 4; Figure 6; Appendix B Table 2).

Frequency of occurrence per plot ranged from 88.89% to 100.00% for all birds combined. Frequency of occurrence per plot ranged from 88.89% to 100.00% for passerines, from 0.00% to 45.00% for woodpeckers, from 0.00% to 44.44% for hummingbirds/swifts, and from 0.00% to 34.48% for doves/pigeons (Appendix B Table 3).

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Graph 4. Bird use per plot observed during small bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, April 3–October 26, 2018.

4.2.5 Flight Height

Of the birds documented, 58.97% (3,289 observations) were flying, and 20.71% of these (681 observations) were flying within the RSZ for at least a portion of their flight (Table 8). Nineteen out of 92 species (not including unidentified species) were flying 100.00% of the time they were observed, and 11 species were not flying (Table 8). Frequency of occurrence within the RSZ was greatest for peregrine falcon (*Falco peregrinus*) and red-winged blackbird (*Agelaius phoeniceus*) (100.00%), followed by house finch (*Haemorhous mexicanus*) (85.71%), purple finch (*Haemorhous purpureus*) (82.98%), American goldfinch (*Spinus tristis*) (80.00%), and white-throated swift (*Aeronautus saxatalis*) (73.33%) (Table 8).

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Table 8. Percent of observations flying and percent flying within the RSZ for bird species observed during small bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, April 3–October 26, 2018.

Species	Scientific Name	No. of Total Obs.	% of Total Obs. Flying ¹	% of Flying Obs. within RSZ ¹
acorn woodpecker	<i>Melanerpes formicivorus</i>	3	33.33	0.00
Allen's hummingbird	<i>Selasphorus sasin</i>	4	100.00	0.00
American goldfinch	<i>Spinus tristis</i>	25	100.00	80.00
American kestrel	<i>Falco sparverius</i>	19	57.89	45.45
American pipit	<i>Anthus rubescens</i>	205	64.39	37.12
American robin	<i>Turdus migratorius</i>	348	69.54	37.60
Anna's hummingbird	<i>Calypte anna</i>	6	33.33	0.00
band-tailed pigeon	<i>Patagioenas fasciata</i>	140	93.57	30.53
barn swallow	<i>Hirundo rustica</i>	70	98.57	5.80
Bewick's wren	<i>Thryomanes bewickii</i>	22	9.09	0.00
black phoebe	<i>Sayornis nigricans</i>	3	100.00	0.00
black-headed grosbeak	<i>Pheucticus melanocephalus</i>	5	40.00	0.00
black-throated gray warbler	<i>Setophaga nigrescens</i>	7	28.57	0.00
bobolink	<i>Dolichonyx oryzivorus</i>	2	100.00	0.00
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	84	94.05	10.13
brown creeper	<i>Certhia americana</i>	40	17.50	0.00
brown-headed cowbird	<i>Molothrus ater</i>	25	92.00	8.70
bushtit	<i>Psaltriparus minimus</i>	5	0.00	n/a
California quail	<i>Callipepla californica</i>	71	14.08	0.00
California scrub-jay	<i>Aphelocoma californica</i>	8	25.00	0.00
cedar waxwing	<i>Bombycilla cedrorum</i>	57	98.25	66.07
chestnut-backed chickadee	<i>Poecile rufescens</i>	177	31.07	7.27
chipping sparrow	<i>Spizella passerina</i>	57	45.61	0.00
cliff swallow	<i>Petrochelidon pyrrhonota</i>	63	100.00	9.52
common raven	<i>Corvus corax</i>	96	78.13	16.00
Cooper's hawk	<i>Accipiter cooperii</i>	2	100.00	50.00
dark-eyed junco	<i>Junco hyemalis</i>	444	55.86	0.00
downy woodpecker	<i>Picoides pubescens</i>	1	0.00	n/a
European starling	<i>Sturnus vulgaris</i>	48	95.83	0.00
fox sparrow	<i>Passerella iliaca</i>	4	0.00	n/a
golden-crowned kinglet	<i>Regulus satrapa</i>	32	25.00	37.50
golden-crowned sparrow	<i>Zonotrichia atricapilla</i>	10	0.00	n/a
grasshopper sparrow	<i>Ammodramus savannarum</i>	26	96.15	0.00

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Species	Scientific Name	No. of Total Obs.	% of Total Obs. Flying ¹	% of Flying Obs. within RSZ ¹
hairy woodpecker	<i>Picoides villosus</i>	18	44.44	25.00
hermit thrush	<i>Catharus guttatus</i>	66	54.55	0.00
hermit warbler	<i>Setophaga occidentalis</i>	120	40.83	6.12
horned lark	<i>Eremophila alpestris</i>	22	77.27	11.76
house finch	<i>Haemorhous mexicanus</i>	11	63.64	85.71
house wren	<i>Troglodytes aedon</i>	2	50.00	0.00
Hutton's vireo	<i>Vireo huttoni</i>	29	20.69	0.00
lark sparrow	<i>Chondestes grammacus</i>	4	50.00	0.00
lazuli bunting	<i>Passerina amoena</i>	91	73.63	1.49
lesser goldfinch	<i>Spinus psaltria</i>	56	83.93	17.02
Macgillivray's warbler	<i>Geothlypis tolmiei</i>	1	0.00	n/a
merlin	<i>Falco columbarius</i>	1	100.00	0.00
mountain quail	<i>Oreortyx pictus</i>	5	60.00	0.00
mourning dove	<i>Zenaida macroura</i>	1	100.00	0.00
northern flicker	<i>Colaptes auratus</i>	49	28.57	7.14
northern harrier	<i>Circus cyaneus</i>	2	100.00	0.00
northern saw-whet owl	<i>Aegolius acadicus</i>	1	0.00	n/a
olive-sided flycatcher	<i>Contopus cooperi</i>	8	62.50	60.00
orange-crowned warbler	<i>Oreothlypis celata</i>	10	50.00	0.00
pacific wren	<i>Troglodytes pacificus</i>	64	21.88	0.00
pacific-slope flycatcher	<i>Empidonax difficilis</i>	28	39.29	0.00
peregrine falcon	<i>Falco peregrinus</i>	1	100.00	100.00
pileated woodpecker	<i>Dryocopus pileatus</i>	7	14.29	0.00
pine siskin	<i>Spinus pinus</i>	468	81.41	35.96
prairie falcon	<i>Falco mexicanus</i>	1	100.00	0.00
purple finch	<i>Haemorhous purpureus</i>	55	85.45	82.98
purple martin	<i>Progne subis</i>	9	100.00	55.56
red crossbill	<i>Loxia curvirostra</i>	30	100.00	73.33
red-breasted nuthatch	<i>Sitta canadensis</i>	199	8.54	5.88
red-breasted sapsucker	<i>Sphyrapicus ruber</i>	1	0.00	n/a
red-tailed hawk	<i>Buteo jamaicensis</i>	18	83.33	20.00
red-winged blackbird	<i>Agelaius phoeniceus</i>	3	100.00	100.00
ruby-crowned kinglet	<i>Regulus calendula</i>	15	0.00	n/a
Savannah sparrow	<i>Passerculus sandwichensis</i>	324	65.12	0.00
say's phoebe	<i>Sayornis saya</i>	1	0.00	n/a
sharp-shinned hawk	<i>Accipiter striatus</i>	3	100.00	0.00

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Species	Scientific Name	No. of Total Obs.	% of Total Obs. Flying ¹	% of Flying Obs. within RSZ ¹
song sparrow	<i>Melospiza melodia</i>	191	45.03	0.00
sooty grouse	<i>Dendragapus fuliginosus</i>	31	64.52	0.00
spotted towhee	<i>Pipilo maculatus</i>	1	0.00	n/a
Steller's jay	<i>Cyanocitta stelleri</i>	333	27.03	2.22
Swainson's thrush	<i>Catharus ustulatus</i>	11	36.36	0.00
Townsend's warbler	<i>Setophaga townsendi</i>	6	50.00	0.00
tree swallow	<i>Tachycineta bicolor</i>	21	100.00	42.86
turkey vulture	<i>Cathartes aura</i>	3	100.00	0.00
varied thrush	<i>Ixoreus naevius</i>	108	58.33	61.90
Vaux's swift	<i>Chaetura vauxi</i>	59	98.31	68.97
violet-green swallow	<i>Tachycineta thalassina</i>	73	97.26	36.62
warbling vireo	<i>Vireo gilvus</i>	5	40.00	0.00
western bluebird	<i>Sialia mexicana</i>	117	49.57	17.24
western meadowlark	<i>Sturnella neglecta</i>	342	65.50	1.34
western tanager	<i>Piranga ludoviciana</i>	26	34.62	22.22
western wood-peewee	<i>Contopus sordidulus</i>	1	100.00	0.00
white-crowned sparrow	<i>Zonotrichia leucophrys</i>	127	58.27	0.00
white-throated swift	<i>Aeronautes saxatalis</i>	15	100.00	73.33
wild turkey	<i>Meleagris gallopavo</i>	1	0.00	n/a
Wilson's warbler	<i>Cardellina pusilla</i>	86	53.49	0.00
wrentit	<i>Chamaea fasciata</i>	66	22.73	0.00
yellow warbler	<i>Setophaga petechia</i>	1	0.00	n/a
yellow-rumped warbler	<i>Setophaga coronata</i>	108	42.59	43.48
unidentified hummingbird	<i>Trochilidae (gen, sp)</i>	11	100.00	0.00
unidentified swallow	<i>Hirundidae (gen, sp)</i>	1	100.00	0.00
All Observations Combined		5,577	58.97	20.71

¹ Because % values have multiple decimal places and only 2 are shown, the potential for rounding discrepancies exists for calculations.

4.2.6 Habitat (Non-Flying Birds)

The majority of non-flying birds occurred in coniferous forest habitat (72.94%; 1,663 observations), followed by grassland habitat (27.59%; 629 observations). Other habitats in which non-flying birds occurred included barren/outcrop, chaparral, and oak woodland, and birds were also observed at man-made structures in grassland habitats such as powerlines or fence posts (Table 9).

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Table 9. Percent of observations by habitat type for all birds combined during small bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, April 3–October 26, 2018.

Habitat	No. Obs. Non-Flying Birds	% of Total Obs. Non-Flying Birds ^{1, 2}
coniferous forest	1,663	72.94
grassland	629	27.59
man-made structure ²	45	1.97
chaparral	62	2.72
oak woodland	60	2.63
barren, outcrop	18	0.79
agriculture	0	0.00
riparian	0	0.00
urban	0	0.00
wetland	0	0.00

¹ Many birds were observed occupying more than 1 habitat, thus the total percentage is greater than 100.

² Because % values have multiple decimal places and only 2 are shown, the potential for rounding discrepancies exists for calculations.

³ Including powerlines, fence posts, and other structures in grassland habitats.

4.2.7 Behaviors

The majority of birds were singing or calling (93.09%; 5,184 observations), followed by flying (59.06%; 3,289 observations) and perched on vegetation (35.28%; 1,965 observations). Other behaviors included aggressive display, foraging, and perched on structure or vegetation (Table 10).

Table 10. Percent of observations by behavior category for all birds combined during small bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, April 3–October 26, 2018.

Behavior	No. Obs.	% of Total Obs. ^{1, 2}
singing, calling	5,184	93.09
flying	3,289	59.06
perched on vegetation	1,965	35.28
perched on ground	1,514	27.19
foraging	402	7.22
perched on structure	165	2.96
aggressive display	54	0.97
nest building	0	0.00
migrating	0	0.00

¹ Many birds were observed displaying multiple behaviors, thus the total percentage is greater than 100.

² Because % values have multiple decimal places and only 2 are shown, the potential for rounding discrepancies exists for calculations.

5.0 DISCUSSION

Weather conditions during BUCs and SBUCs were generally suitable for bird detection during surveys and the survey protocol followed agency-approved methods. Representative habitats throughout the project area were sampled. Therefore, the surveys provide an accurate depiction of species and use of the project area.

Passerines (order Passeriformes) were the most abundant bird group detected during the BUC and SBUC surveys. Passeriformes are the most abundant order of birds in the world, and this order includes half of all bird species. During BUCs and SBUCs 13 special-status species were observed. One state endangered species, bald eagle (*Haliaeetus leucocephalus*), was observed in the project area during BUCs: one on February 20 at plot 12, and one on March 6 at plot 18. There was one fully protected species observed and 11 species of special concern observed (Table 11).

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Table 11. Number of observations of special-status species per survey type, Humboldt Wind Energy Project, Humboldt, California, October 24, 2017–October 26, 2018.

Survey Type			BUC	SBUC	Total	BUC Plot	SBUC Plot
Species	Scientific Name	Status ¹	No. Obs.				
common loon	<i>Gavia immer</i>	SSC	10		10	11, 13, 28, 29	
greater white-fronted goose	<i>Anser albifrons</i>	SSC	55		55	12, 29	
bald eagle	<i>Haliaeetus leucocephalus</i>	SE, BGEPA, FP	2		2	12, 18	
northern harrier	<i>Circus cyaneus</i>	SSC	4	2	6	11, 12, 28	
peregrine falcon	<i>Falco peregrinus</i>	FP	1	1	2	30	
burrowing owl	<i>Athene cunicularia</i>	SSC	1		1	31	
Vaux's swift	<i>Chaetura vauxi</i>	SSC	195	59	254	11, 12, 13, 14, 16, 17, 28, 29, 30, 31	3, 7, 21, 23, 24, 26, 27, 28, 29, 30, 32
olive-sided flycatcher	<i>Contopus cooperi</i>	SSC	46	8	54	11, 12, 13, 14, 16, 17, 18, 19, 28, 29, 31	4, 23, 31
purple martin	<i>Progne subis</i>	SSC	96	9	105	11, 12, 13, 14, 17, 18, 28, 29	6, 21, 27, 31
yellow warbler	<i>Setophaga petechia</i>	SSC	7	1	8	12, 16, 17, 28, 29, 31	28
grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	52	26	78	13, 29, 31	1, 21, 22, 24, 25, 26, 27, 28, 29, 30
Savannah sparrow ²	<i>Passerculus sandwichensis</i>	SSC	224	324	548	12, 13, 17, 28, 29, 30, 31	1, 2, 21, 22, 24, 25, 26, 27, 28, 29, 30
red-winged blackbird ³	<i>Agelaius phoeniceus</i>	SSC	11	3	14	16, 29, 31	22
			Total	704	433	1,106	

¹ SSC = state special concern

SE = state endangered

BGEPA = Bald and Golden Eagle Protection Act

FP = state fully protected species

² Savannah sparrows on the project are the Bryant's subspecies, which is listed as a California SSC.

³ Red-winged blackbirds in the area include the Kern subspecies, listed as a California SSC.

6.0 RISK ASSESSMENT

The purpose of this risk assessment was to investigate the potential level of mortality that may result from collision risk at the project based on species use of the project area and observed fatality rates at operational wind projects in California, Oregon, and Washington. For this analysis, fatality data from 21 wind projects¹ in California, Oregon, and Washington from 1999 to 2013 were compiled. Bird fatality rates in the region ranged from 0.06 bird to 10.44 birds per turbine per study period (birds/turbine/period) (Table 12; Graph 5). The average and median bird fatality rates were 3.34 and 2.90 birds/turbine/period, respectively.

¹ A different phase of a project was considered a different project for the purposes of this summary.

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Table 12. Bird fatality rates observed at regional wind projects.

Project site	Habitat type (No. turbines)	Survey dates	Turbines searched/search interval	Birds		Reference
				No. found (incidents)	Fatalities/turbine/study period (total)	
Mediterranean California Ecoregion¹						
High Winds, Solano Co, CA	hills of agricultural, pasture (90)	4 Aug 2003 to 30 July 2005	90/2x monthly	163 (3)	2.45 (221)	Kerlinger et al. 2006
Diablo Winds Energy Project, Alameda Co, CA (year 1) ²	grassland hills/valleys (31)	7 Mar 2005 to 22 Feb 2006	31/14-day	12 (4)	1.14 (35)	WEST 2006
Dillon Wind-Energy Facility, Riverside Co, CA	desert scrub (45)	26 March 2008 to 26 March 2009	8/7-day (Mar-Aug), 15/7-day (Sept-Oct), 15/14-day (Nov-Mar)	45 (1)	4.71 (212)	Chatfield et al. 2009
Buena Vista Wind Farm, Contra Costa Co, CA ²	grassland hills/valleys (38)	Feb 2008 to Dec 2008	38/monthly (Feb - Aug 2008), 2x monthly (Sept - Dec 2008)	12 (5)	1.15 ³ (44)	Insignia Environmental 2009
Shiloh Wind Power Project I, Solano Co, CA	mixed grasses, agricultural crops, grazed pasture (100)	10 Apr 2006 to 11 Apr 2009	50/7-day	511	10.44 (1044)	Kerlinger et al. 2009
Shiloh Wind Power Project II, Solano Co, CA	mixed grasses, agricultural crops, grazed pasture (75)	27 Apr 2009 to 24 Apr 2010	25/7-day	44	3.03 (227)	Kerlinger et al. 2010
Shiloh Wind Power Project III, Solano Co, CA	mixed grasses, agricultural crops, grazed pasture (50)	Jan 2012 to Jan 2013	25/2x weekly (Aug-Nov, Mar-Jun), 1x weekly (Jul, Dec-Feb)	67 (3)	6.7 (335)	Kerlinger et al. 2013

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Project site	Habitat type (No. turbines)	Survey dates	Turbines searched/search interval	Birds		Reference
				No. found (incidentals)	Fatalities/turbine/study period (total)	
Western Cordillera Ecoregion¹						
Vansycle Wind Project, Umatilla Co, OR	mixed grasslands, wheat (38)	Jan - Dec 1999	38/28-day	12	0.63 (24)	Erickson et al. 2000
Hatchet Ridge Wind Farm, Shasta County, CA (year 1)	conifer forest, commercial timber harvest (44)	Dec 2010 to Nov 2011	22/biweekly, other 22/monthly	63 (7)	0.06-5.69 (3-250) ⁴	Tetra Tech 2013
Hatchet Ridge Wind Farm, Shasta County, CA (year 2)	conifer forest, commercial timber harvest (44)	Dec 2011 to Dec 2012	22/biweekly, other 22/monthly	36 (1)	0.72-1.93 (32-85) ⁴	Tetra Tech 2013
Cold Desert Ecoregion¹						
Nine Canyon Wind Energy Project, WA	wheat fields, grasslands (37)	Sept 2002 to Aug 2003	37/approx. 14-day (Mar-Oct), monthly (Nov-Feb)	36	3.59 (133)	Erickson et al. 2003
Klondike Phase I Wind Energy Project, Sherman Co, OR	shrub-steppe, agriculture (16)	Mar 2001 to March 2002	16, 1 MET/28-30 day	6 (2)	1.42 (23)	Johnson et al. 2003
Klondike III Phase I Wind Energy Project, Sherman Co, OR	shrub-steppe, agriculture (122)	Oct 2007 to Oct 2008	46/14-day (16 Mar-13 May, 16 Aug-31 Oct), 28-day (14 May-15 Aug, 1 Nov-15 Mar)	56 (8)	5.87 (716)	Gritski et al. 2009
Klondike IIIa Phase II Wind Energy Project, Sherman Co, OR (year 1)	shrub-steppe, agriculture (51)	11 Aug 2008 to 15 Aug 2009	17/14-day (16 Mar-15 May, 16 Aug-31 Oct), 28-day (16 May-15 Aug, 1 Nov-15 Mar)	10	3.81 (194)	Gritski et al. 2011

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Project site	Habitat type (No. turbines)	Survey dates	Turbines searched/search interval	Birds		Reference
				No. found (incidentals)	Fatalities/turbine/study period (total)	
Klondike IIIa Phase II Wind Energy Project, Sherman Co, OR (year 2)	shrub-steppe, agriculture (51)	Aug 16, 2009 to Aug 18, 2010	17/14-day (Mar 16–May 15, Aug 16–Oct 31), 28-day (May 16–Aug 15, Nov 1–Mar 15)	14 (1)	4.59 (234)	Gritski et al. 2011
Stateline Wind Project, Walla Walla Co, WA/Umatilla Co, OR	grassland, shrub-steppe, agriculture (454)	July 2001 to Dec 2003	124/399 turbines, 2338 total searches (2001–2002); 241/454 turbines, 3029 total searches (2003); interval unknown	210 (22)	1.93 (876)	Erickson et al. 2004
Eurus Combine Hills Turbine Ranch Phase I, Umatilla Co, OR	grassland, shrub-steppe, agriculture (41)	9 Feb 2004 to 8 Feb 2005	41/14 total times each	34	2.56 (105)	Young et al. 2006
Big Horn Wind Power Project, Klickitat Co, WA	grassland, shrub-steppe, juniper woodlands (133)	Oct 2006 to Oct 2007	133/28-day in winter/summer, 14-day spring/fall	121	3.81 (507)	Kronner et al. 2008
Hopkins Ridge Wind Project, Phase I, Columbia Co, WA	grassland/shrub-steppe, dryland agriculture (83)	Jan to Dec 2006	41, 2 MET/28-day, except 7-day subset in spring/fall migration (22 surveys in subset)	38	2.21 (183)	Young et al. 2007
Wild Horse Wind Facility, Kittitas, WA	grassland/lithosol and shrub steppe (127)	Jan to Dec 2007	64/28-day	77	2.79 (355)	Erickson et al. 2008
Biglow Canyon Wind Farm Phase I, Sherman Co, OR	shrub-steppe, grassland (76)	Jan 2008 to Dec 2008	50/28-day (summer and winter), 14-day (Mar 15–May 15 /Aug 15–Oct 31)	42	2.9 (220)	Jeffrey et al. 2009
Biglow Canyon Wind Farm Phase I, Sherman Co, OR	shrub-steppe, grassland (76)	26 Jan 2009 to 11 Dec 2009	50/28-day (summer and winter), 14-day (Mar 15–May 15 /Aug 15–Oct 31)	76 (4)	4.07 (309)	Enk et al. 2010

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Project site	Habitat type (No. turbines)	Survey dates	Turbines searched/search interval	Birds		Reference
				No. found (incidentals)	Fatalities/turbine/study period (total)	
Biglow Canyon Wind Farm Phase III ⁵ , Sherman Co, OR	shrub-steppe, grassland (76)	Sep 13, 2010 to Sep 9, 2011	50/28-day (summer and winter), 14-day (Mar 15–May 15 /Aug 15–Oct 31)	36 (4)	5.25 (399)	Enk et al. 2012
				Minimum	0.06	
				Maximum	10.44	
				Average	3.34	
				Median	2.90	

¹ Commission of Environmental Cooperation 1997

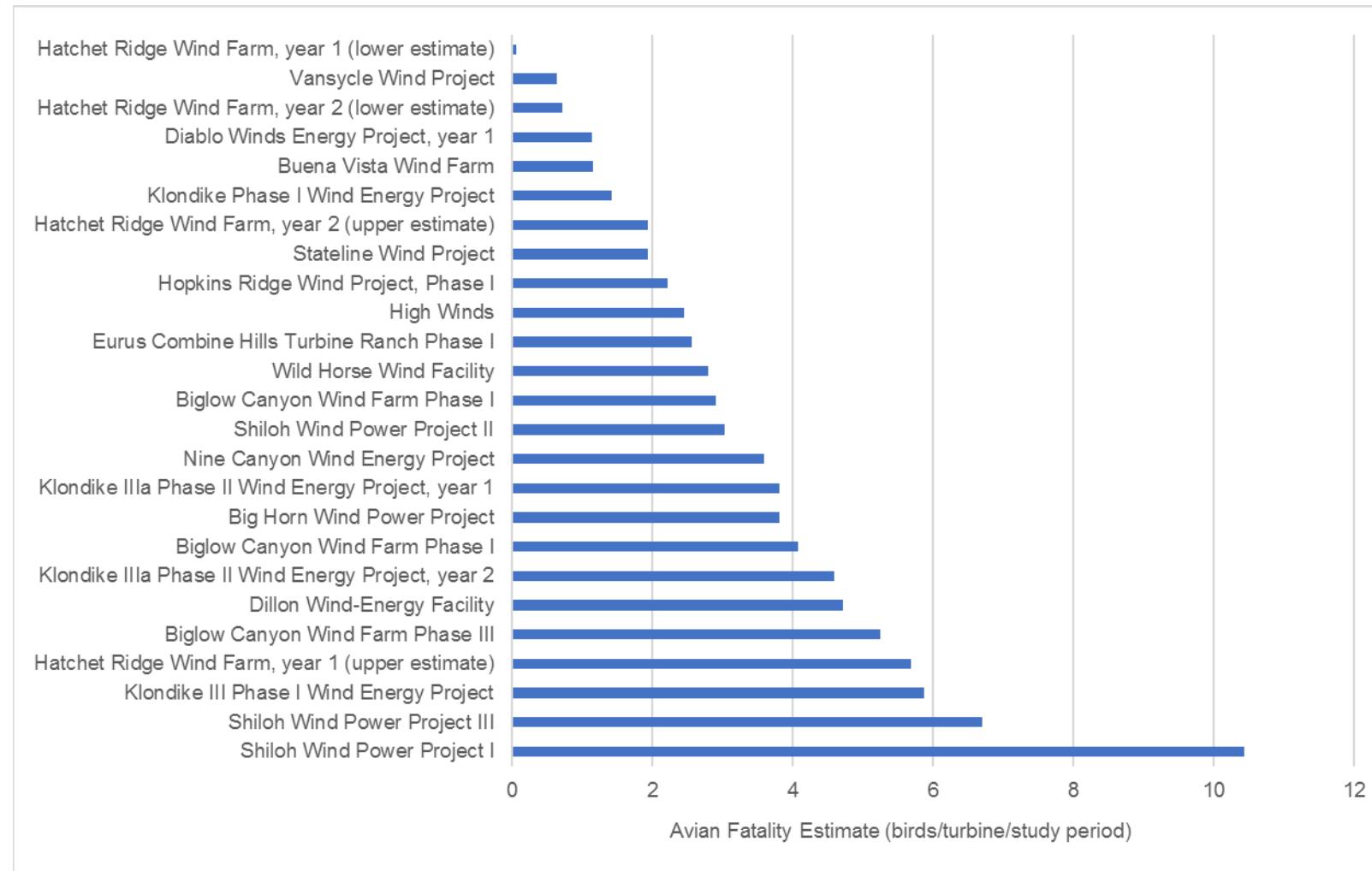
² Part of Altamont Pass Wind Resource Area

³ Combined estimate for birds and bats found

⁴ Rates were calculated by bird type, and not by total birds

⁵ Monitoring report unavailable for Phase II

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Graph 5. Bird fatality rates observed at regional wind projects, arranged lowest to highest.

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There were 16 regional projects for which carcass species and number of individuals information was available. Among birds found during searches (with numbers unadjusted for searcher or carcass persistence biases), passerines (60.10%) followed by diurnal raptors (14.24%) represented the bird types most commonly found (Table 13).

Table 13. Proportion of carcasses by species type discovered during fatality searches at 16 regional wind projects (unadjusted for searcher or carcass persistence biases).

Bird Type	No. of Individuals ¹	Percentage
Passerines	806	60.10
Diurnal Raptors	191	14.24
Upland Game Birds	86	6.41
Doves/Pigeons	68	5.07
Waterfowl	66	4.92
Unknown Bird	26	1.94
Owls	24	1.79
Waterbirds	19	1.42
Woodpeckers	15	1.12
Vultures	12	0.89
Hummingbirds/Swifts	9	0.67
Shorebirds	9	0.67
Nightjar	5	0.37
Gulls/Terns	3	0.22
Loons/Grebes	2	0.15

¹ Combined total for 16 regional projects (not adjusted for observer or persistence biases).

Among species found during fatality searches in the region, horned lark (*Eremophila alpestris*) (15.59%), western meadowlark (*Sturnella neglecta*) (9.10%), and American kestrel (*Falco sparverius*) (7.68%) were the most commonly found (Table 14).

Table 14. Proportion of species found during fatality searches at 16 regional wind projects (unadjusted for searcher or carcass persistence biases).

Species ¹	Scientific Name	No. of Individuals ²	Percentage
horned lark	<i>Eremophila alpestris</i>	209	15.59
western meadowlark	<i>Sturnella neglecta</i>	122	9.10
American kestrel	<i>Falco sparverius</i>	103	7.68
red-winged blackbird	<i>Agelaius phoeniceus</i>	71	5.29
red-tailed hawk	<i>Buteo jamaicensis</i>	61	4.55
ring-necked pheasant	<i>Phasianus colchicus</i>	54	4.03
mourning dove	<i>Zenaida macroura</i>	42	3.13
golden-crowned kinglet	<i>Regulus satrapa</i>	36	2.68
European starling	<i>Sturnus vulgaris</i>	31	2.31
rock pigeon	<i>Columba livia</i>	26	1.94
unidentified bird	<i>Aves (gen, sp)</i>	25	1.86
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	24	1.79
unidentified passerine	<i>Passeriformes (fam, gen, sp)</i>	22	1.64
American coot	<i>Fulica americana</i>	21	1.57

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Species ¹	Scientific Name	No. of Individuals ²	Percentage
Townsend's warbler	<i>Setophaga townsendi</i>	19	1.42
Savannah sparrow	<i>Passerculus sandwichensis</i>	18	1.34
yellow-rumped warbler	<i>Setophaga coronata</i>	18	1.34
dark-eyed junco	<i>Junco hyemalis</i>	17	1.27
chukar	<i>Alectoris chukar</i>	16	1.19
barn owl	<i>Tyto alba</i>	15	1.12
white-crowned sparrow	<i>Zonotrichia leucophrys</i>	15	1.12
gray partridge	<i>Perdix perdix</i>	13	0.97
mallard	<i>Anas platyrhynchos</i>	12	0.89
turkey vulture	<i>Cathartes aura</i>	12	0.89
American pipit	<i>Anthus rubescens</i>	11	0.82
northern flicker	<i>Colaptes auratus</i>	11	0.82
ruby-crowned kinglet	<i>Regulus calendula</i>	11	0.82
Wilson's warbler	<i>Cardellina pusilla</i>	11	0.82
snow goose	<i>Chen caerulescens</i>	10	0.75
unidentified waterfowl	<i>Anatidae (gen, sp)</i>	10	0.75
warbling vireo	<i>Vireo gilvus</i>	10	0.75

¹ Only those species for which 10 or greater carcasses were discovered during regional fatality searches are included here.

² Combined total for 16 regional projects (not adjusted for observer or persistence biases).

There were 389 carcasses for which date of discovery was available from regional studies. Fall (33.93%) and summer (25.96%) represent the seasons when peak numbers of carcasses were found (Table 15).

Table 15. Proportion of bird carcasses per season found during fatality searches at 16 regional wind projects (unadjusted for searcher or carcass persistence biases).

Season	No. of Individuals ^{1, 2}	Percentage
Fall	132	33.93
Summer	101	25.96
Spring	83	21.34
Winter	73	18.77

¹ Number of individuals were limited to those data available from reports that included date of carcass discovery.

² Combined total for 16 regional projects (not adjusted for observer or persistence biases).

The most commonly observed bird types during BUCs at the project included passerines, specifically thrushes, sparrows/larks, and blackbirds/orioles; species most commonly observed included American robin, dark-eyed junco and Brewer's blackbird (*Euphagus cyanocephalus*) (as described in Section 3.2.3). During the BUC, use was greatest during the summer, followed by the winter. The most commonly observed bird types during the SBUCs were the same as those observed during the BUC, with dark-eyed junco, Savannah sparrow (*Passerculus sandwichensis*), and western meadowlark among species most commonly detected (as described in Section 4.2.3). This report includes the results of the SBUC spring and summer surveys only, and use was greater in the summer.

Table 16 specifies the population estimate and proportion of carcasses found during regional fatality studies for five species that were the most common during bird use counts at the project. None of these species are listed or of special concern. In North America, these species are relatively abundant with stable populations. The proportion of

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these individual species among carcasses found ranges from 0.45% (American robin) to 9.10% (western meadowlark).

Table 16. Population estimates and proportions of carcasses found for most common species observed during bird use counts at the project.

Most common species observed during BUC/SBUC	Scientific Name	North American Population estimate	Proportion (%) among carcasses found during regional fatality studies ¹
American robin	<i>Turdus migratorius</i>	300,000,000	0.45
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	20,000,000	1.79
dark-eyed junco	<i>Junco hyemalis</i>	200,000,000	1.27
savannah sparrow	<i>Passerculus sandwichensis</i>	170,000,000	1.34
western meadowlark	<i>Sturnella neglecta</i>	79,000,000	9.10

¹ Based on numbers of carcasses found during searches and not adjusted for searcher or carcass persistence biases.
Source: Partners in Flight Database. <http://pif.birdconservancy.org/PopEstimates/Database.aspx>. Accessed October 26, 2018.

Table 17 specifies the population estimate and proportion of carcasses found for state species of conservation concern observed during bird use counts at the project. In North America in general, these species are abundant with stable populations. The proportion of these individual species among carcasses found during regional fatality studies ranges from 0.00% (multiple species) to 0.67% (yellow warbler).

Table 17. Population estimates and proportions of carcasses found for species of state conservation concern observed during bird use counts at the project.

Species of state conservation concern observed at project	Scientific Name	California status	North American Population estimate	Proportion (%) among carcasses found during regional fatality studies ²
bald eagle ¹	<i>Haliaeetus leucocephalus</i>	SE	300,000	0.00
common loon ¹	<i>Gavia immer</i>	SSC	635,000	0.00
golden eagle ³	<i>Aquila chrysaetos</i>	FP	130,000	0.45
grasshopper sparrow	<i>Ammodramus savannarum</i>	SSC	30,000,000	0.07
northern harrier	<i>Circus cyaneus</i>	SSC	700,000	0.30
olive-sided flycatcher	<i>Contopus cooperi</i>	SSC	1,700,000	0.00
purple martin	<i>Progne subis</i>	SSC	6,000,000	0.00
song sparrow	<i>Melospiza melodia</i>	SSC	130,000,000	0.07
Vaux's swift	<i>Chaetura vauxi</i>	SSC	340,000	0.30
white-tailed kite ¹	<i>Elanus leucurus</i>	FP	2,000,000	0.22
yellow warbler	<i>Setophaga petechia</i>	SSC	90,000,000	0.67

¹ Global population estimate (North American population not available)

² Based on numbers of carcasses found during searches and not adjusted for searcher or carcass persistence biases.

³ Golden eagles were observed during EUC surveys for the project.

Sources: Partners in Flight Database. <http://pif.birdconservancy.org/PopEstimates/Database.aspx>. Accessed October 26, 2018.

Birds of North American online. <https://birdsna.org/Species-Account/bna/species>. Accessed October 26, 2018.

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Erickson et al. (2014) noted that passerines are the most abundant bird group in North America and are also the most commonly found bird type during fatality studies at wind projects. Relatively abundant species appear to represent the species more commonly found during fatality surveys at wind facilities in the region of the project; however, abundance alone is not the only factor influencing collision risk. For example, American robins have a greater North American population than western meadowlarks, but western meadowlarks represent a greater proportion among carcasses found at regional projects (Table 16). This is consistent with the literature, which suggests that a combination of species' abundance, species-specific behaviors, time of year, and habitat use influence collision risk at wind farms (Smallwood et al. 2009, Erickson et al. 2014, Marques et al. 2014). Collision risk of migratory passerines with manmade structures (especially illuminated structures) is greatest at night, particularly during periods of rain or fog (Evans Ogden 1996; Kerlinger 2000).

Erickson et al. (2014) found that passerine fatality peaked in fall, followed by spring, with the fewest fatalities found in early winter. Their results suggest that collision risk of songbirds is greatest during migratory periods but also coincides with the early spring period when some species such as horned lark are establishing territories and engaging in courtship rituals, which may increase their risk of collision (Erickson et al. 2014). While songbirds and other bird types that only occur near a wind farm during migration are most at risk during migratory periods, resident raptors appear to be at greater risk than migrant raptors due to more frequent use of wind facilities and/or specific flight behaviors when making local flights (Marques et al. 2014).

Erickson et al. generated fatality estimates for individual passerine species based on fatality data collected during 116 fatality studies in North America. Their results indicated that the cumulative mortality per year among these wind projects represented 0.043% to 0.008% of individual species' North American populations. The authors noted that these rates are relatively low compared to other anthropogenic sources of bird mortality; collision mortality at communication towers represents as much as 9.0% of the North American population of the species most commonly found at communication towers (Erickson et al. 2014).

Collision risk at the project is expected to be within range of fatality rates observed at other regional projects; however, mortality may vary annually based on a range of factors including annual species productivity and survivorship and variations in annual weather patterns. From a habitat standpoint, the project is most similar to the Hatchet Ridge Wind Farm, which is also located on a forested ridgeline in California. In general, Hatchet Ridge is the only regional project sharing both the same habitat and landscape characteristics. At Hatchet Ridge, avian fatality rates ranged from 0.06 to 5.69 birds/turbine/period (Table 12). Of those birds found at Hatchet Ridge, the majority were waterfowl (42%), followed by passerines (41%), unidentified bird (7%) and upland game bird (3%); all other bird types found at Hatchet Ridge represented 1% of avian carcasses found (Tetra Tech 2013). In general, passerines were the most commonly detected bird type during the avian use surveys at the project and, based on the results of all of the fatality studies in the region, passerines are the species likely to comprise the majority of avian fatalities at this project.

Erickson et al. (2014) suggest that species with smaller populations are more susceptible to cumulative impacts from collision with wind turbines. Species most vulnerable to collision-related impacts would include populations already at risk, such as those species listed as endangered or threatened at either a federal or state level. However, there were no federally listed species observed during the 2017 to 2018 avian use surveys and use of the project by state-listed species was relatively low. To-date, there has been no significant impact to any one passerine species' population due to collision mortality at wind projects in North America; even for those passerine species of conservation concern

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found during fatality searches in North America, 0.016% or less of these species' populations were impacted (Erickson et al. 2014).

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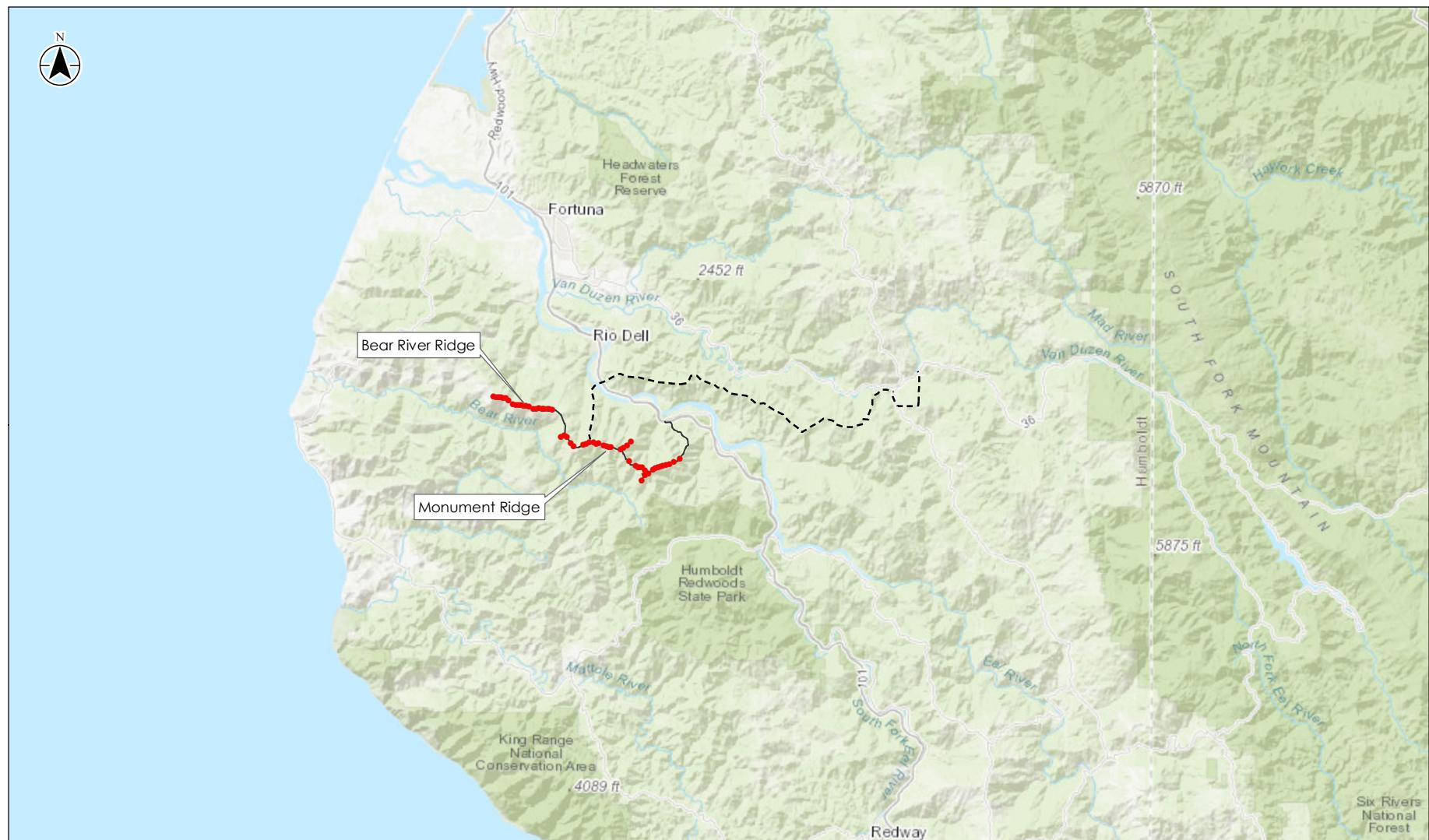
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FIGURES



- Proposed Representative Wind Turbine Locations
- - - Generation Transmission line (gen-tie)
- Proposed Access Roads

0 10
Miles
1 inch = 8 miles
(At original document size of 8.5x11)

Project Location
Humboldt County, California
Prepared by PG on 2018-08-06
Technical Review by YA on 2018-08-07
Independent Review by JD on 2018-08-07
185703758

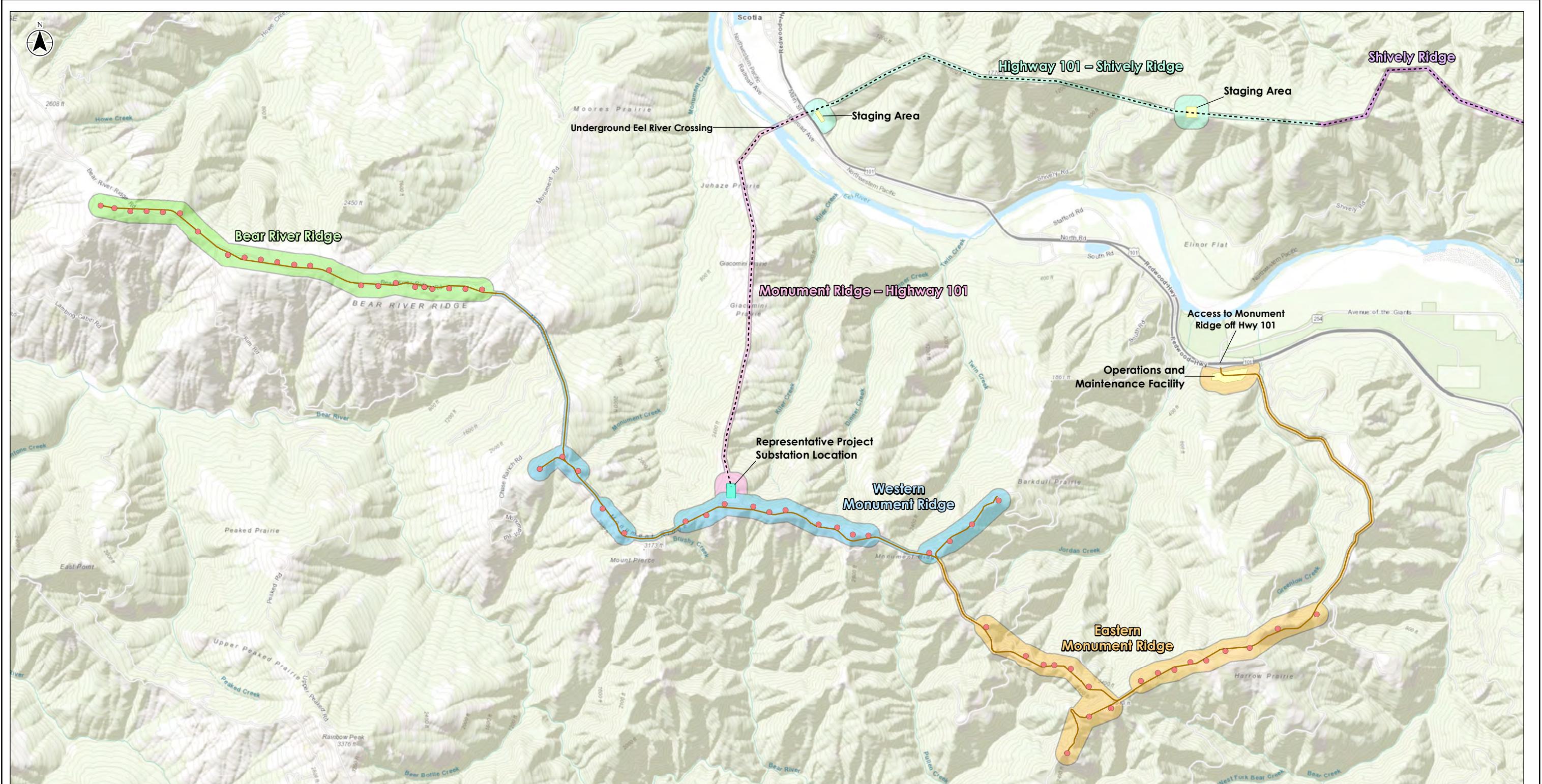
Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.

1

Title
General Overview

Stantec



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Revised 2018-09-17 by bgrenden



Project Area Segments

- Bear River Ridge
- Western Monument Ridge
- Monument Ridge - Highway 101
- Eastern Monument Ridge

Highway 101 - Shively Ridge

Shively Ridge

Bridgeville

Project Components

- Proposed Representative Wind Turbine Locations
- - - Generation Transmission Line (Gen-Tie)
- Proposed Access Roads
- Substation
- Staging Area

0 0.5 1 Miles

1:50,000 1 inch = 4,167 feet
(At original document size of 11x17)

Notes:
1. Coordinate System: NAD 1983 UTM Zone 10N
2. Base map: Esri World Topographic Map

Project Location: Humboldt County, California
Prepared by PG on 2018-09-13
195703768
Technical Review by SC on 2018-09-13

Client/Project:
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.:
2

Title:
Project Area

Stantec



Project Area Segments

- Bear River Ridge
- Western Monument Ridge
- Monument Ridge - Highway 101
- Eastern Monument Ridge

Project Components

- Highway 101 - Shively Ridge
- Shively Ridge
- Bridgeville
- Proposed Representative Wind Turbine Locations
- Generation Transmission Line (Gen-Tie)
- Proposed Access Roads
- Substation
- Staging Area

0 0.5 1
Miles
1:50,000 1 inch = 4,167 feet
(At original document size of 11x17)

Notes:
1. Coordinate System: NAD 1983 UTM Zone 10N
2. Base map: Esri World Topographic Map

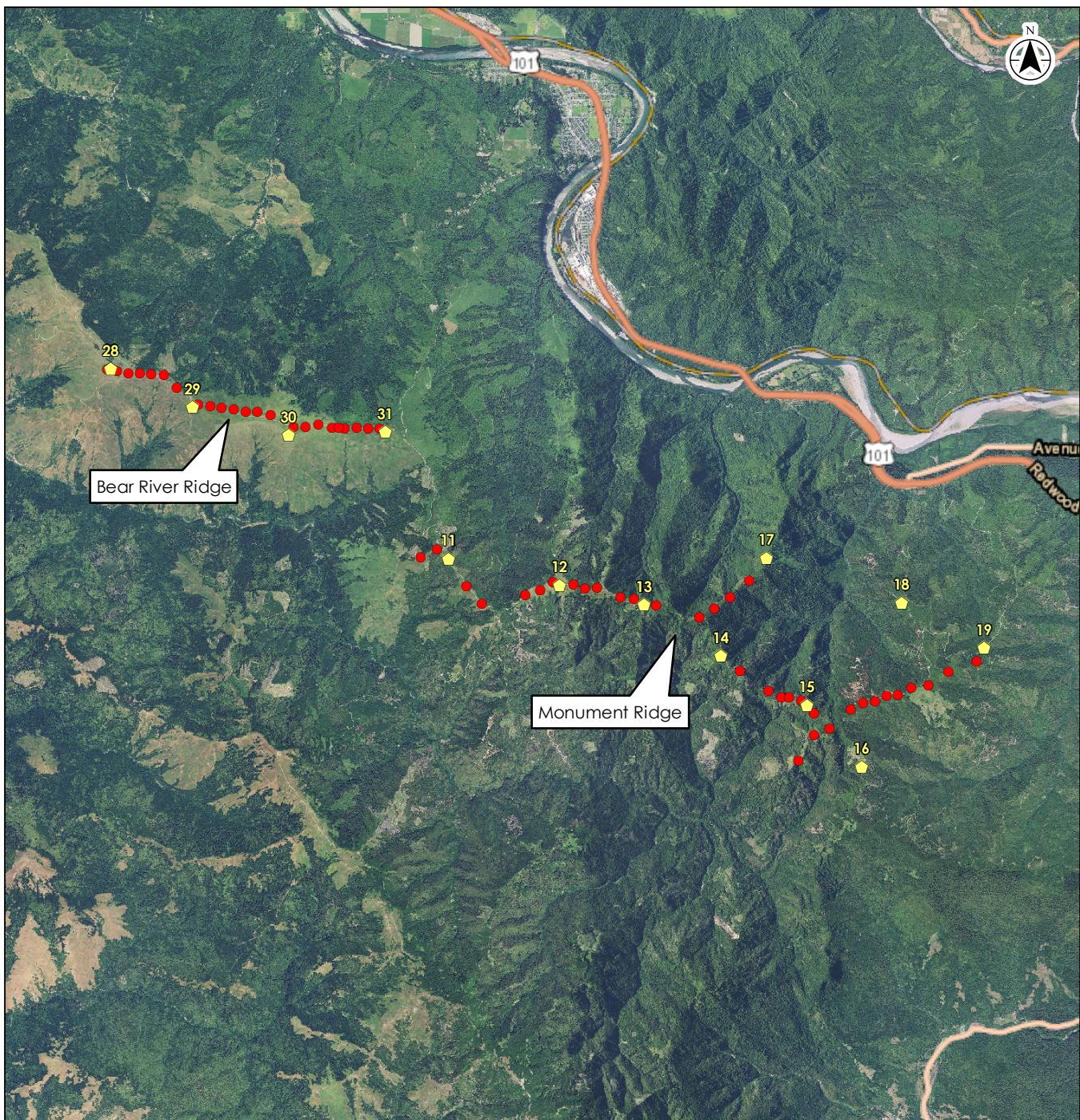
Project Location: Humboldt County, California
Prepared by PG on 2018-09-13
185703768
Technical Review by SC on 2018-09-13

Client/Project:
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.:
2

Title:
Project Area

Stantec



- Proposed Representative Wind Turbine Locations
- ◆ Bird Use Count Survey Plot Location

0 2
Miles
1 inch = 2 miles (At page size of 8.5" x 11")

 Stantec

Project Location 185703758
Humboldt County, California Prepared by GAC on 2018-08-06
Reviewed by JLC on 2018-08-07

Client/Project Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.

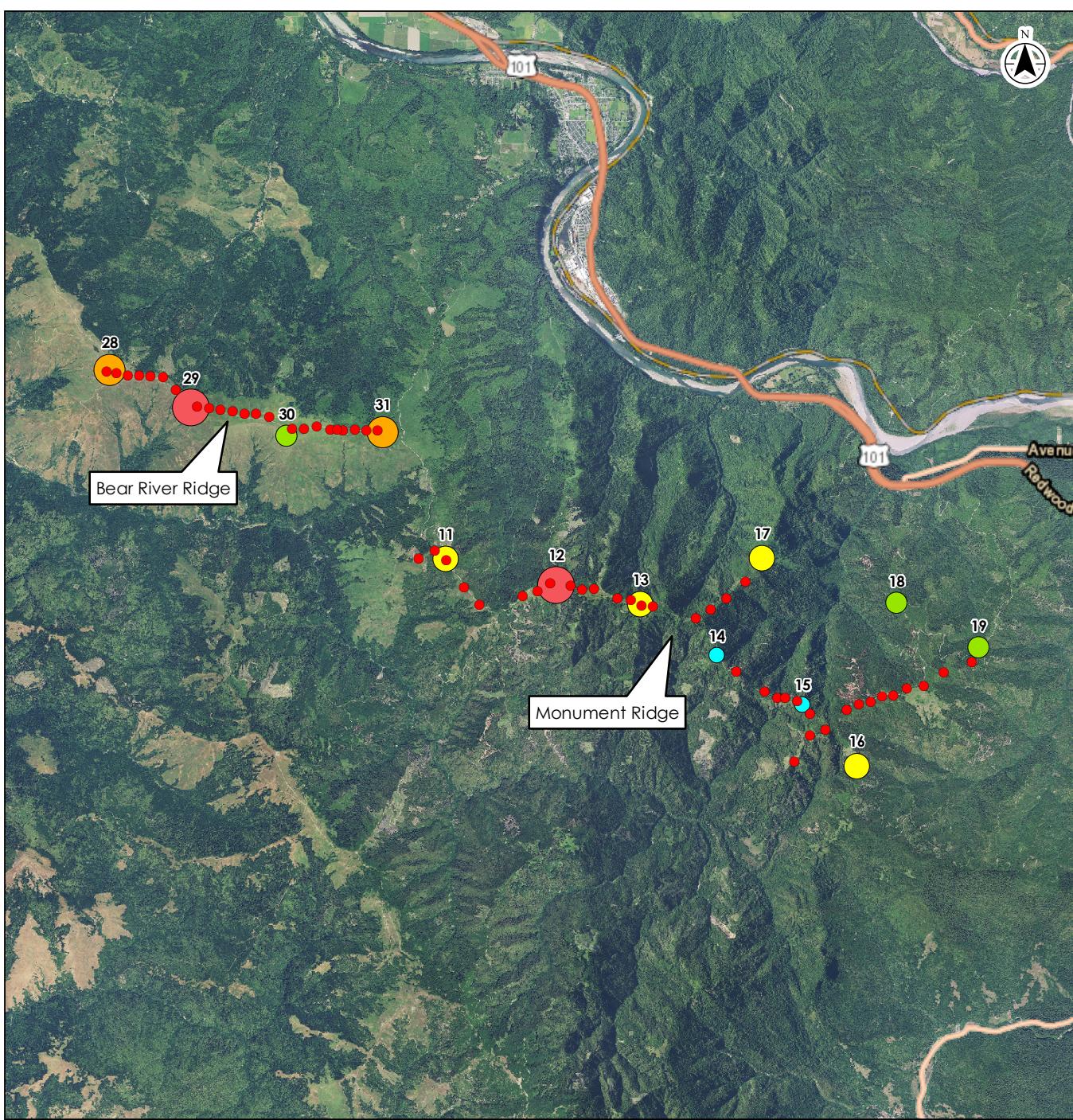
3

Title

Bird Use Survey Plot Locations

Notes
1. Coordinate System: NAD 1983 UTM Zone 10N
2. Aerial imagery and base map: NAIP 2016

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Proposed Representative Wind Turbine Locations

Bird Use by Survey Plot

17.76 - 19.00

19.01 - 24.00

24.01 - 34.00

34.01 - 44.00

44.01 - 63.76

Notes
1. Coordinate System: NAD 1983 UTM Zone 10N
2. Aerial imagery and base map: NAIP 2016

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0 Miles
1 inch = 2 miles (At page size of 8.5"x11")

 **Stantec**

Project Location
Humboldt County, California

185703758
Prepared by GAC on 2018-08-06
Reviewed by JLC on 2018-08-07

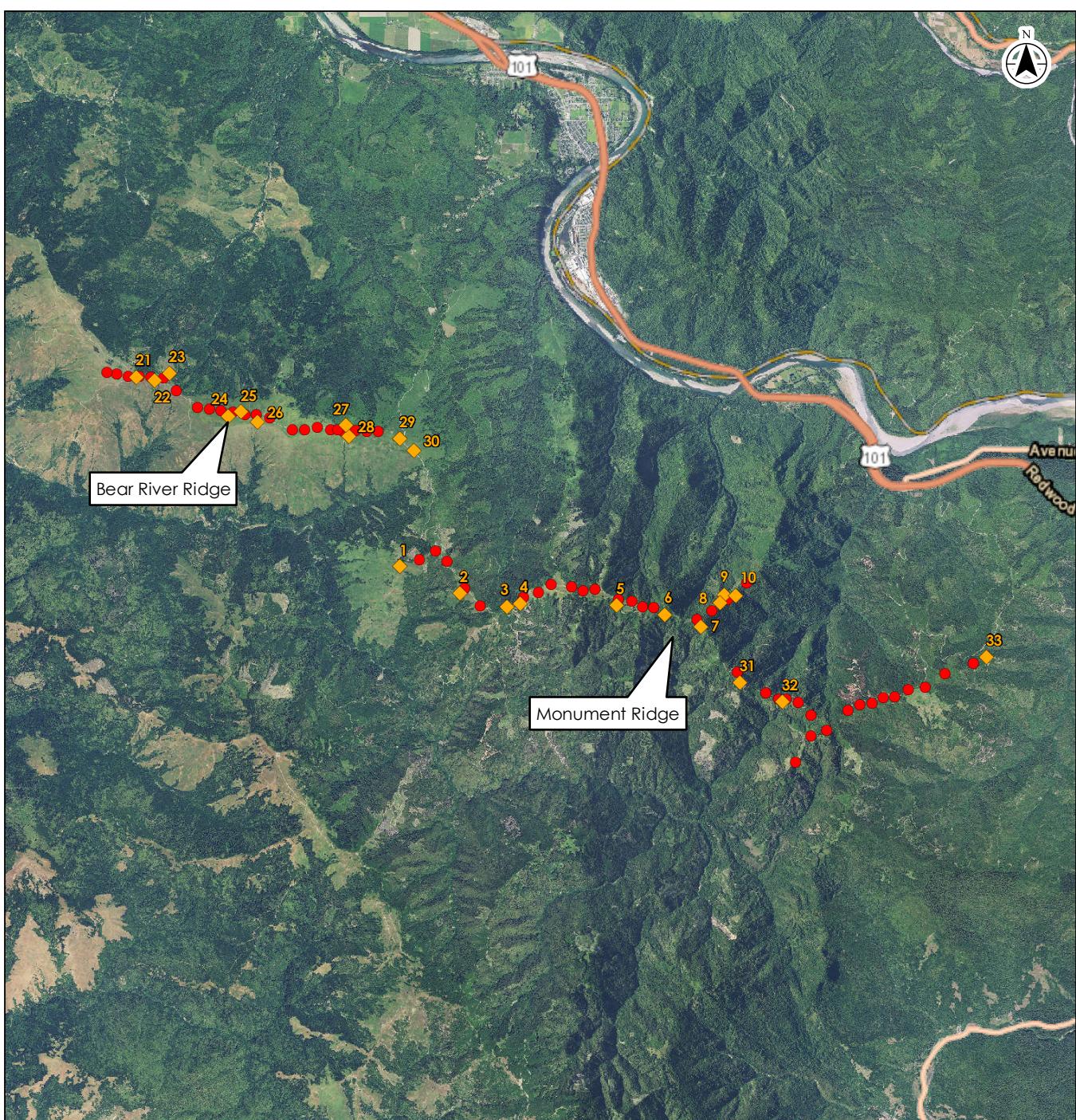
Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.

4

Title

Bird Use by Survey Plot



- Proposed Representative Wind Turbine Locations
 - ◆ Small Bird Use Count Survey Plot Location

A horizontal number line representing distance in miles. The line starts at 0 and ends at 2. There is a tick mark halfway between 0 and 2, labeled "Miles" below the line. Below the line, the text "1 inch = 2 miles (At page size of 8.5" x 11")" is written.

 Stantec
Project Location 185703758
Humboldt County, California Prepared by GAC on 2018-08-26

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.

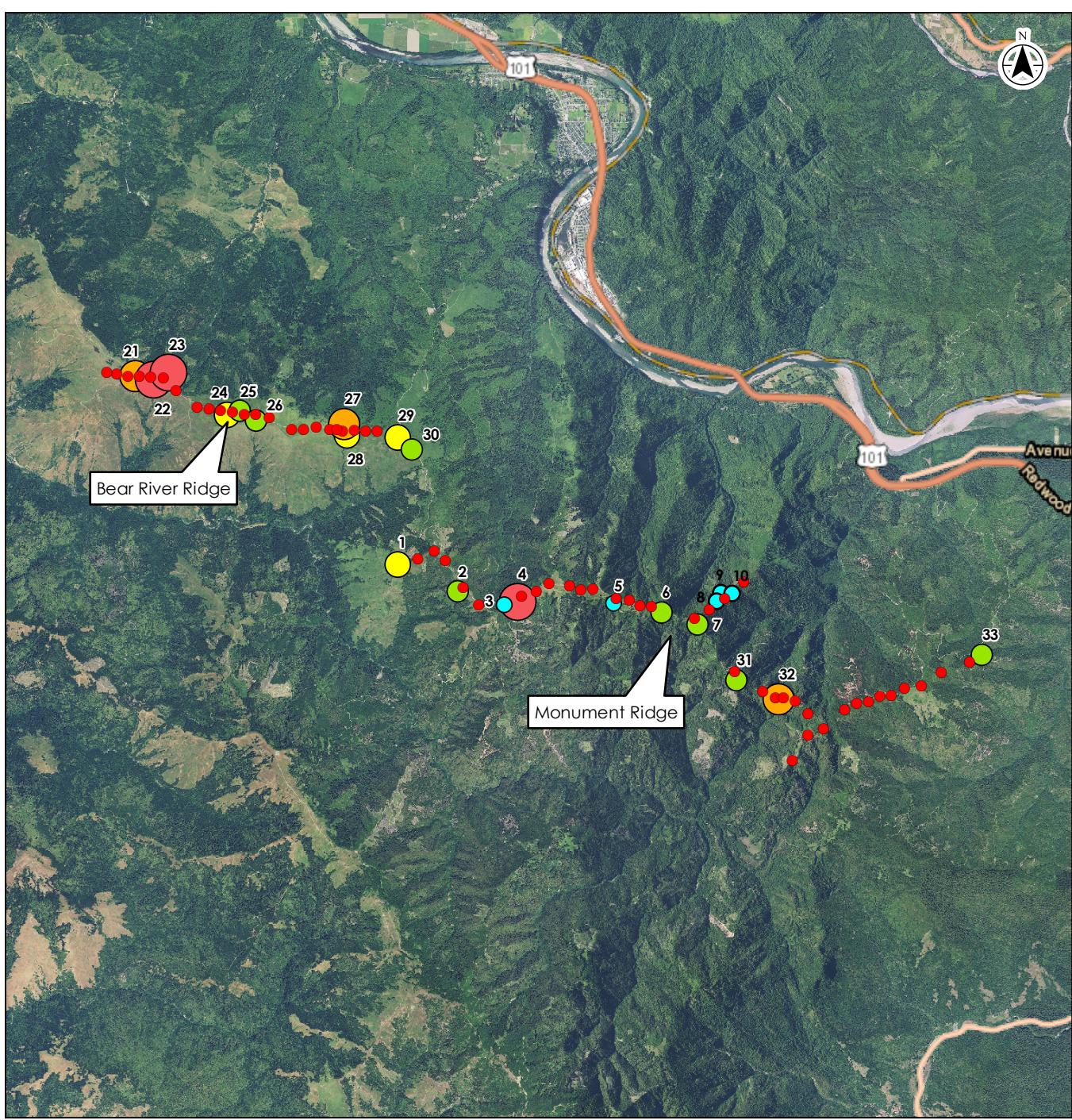
Figure No.
5

Title
Small Bird Use Survey Plot Locations

Notes

1. Coordinate System: NAD 1983 UTM Zone 10N
2. Aerial imagery and base map: NAIP 2016

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- Proposed Representative Wind Turbine Locations

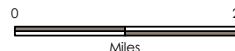
Small Bird Use by Survey Plot

- | |
|---------------|
| 5.56 - 7.38 |
| 7.39 - 10.00 |
| 10.01 - 13.00 |
| 13.01 - 16.00 |
| 16.01 - 18.30 |

Notes

1. Coordinate System: NAD 1983 UTM Zone 10N
2. Aerial imagery and base map: NAIP 2016

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1 inch = 2 miles (At page size of 8.5" x 11")

— 1 —

Project Location

185703758

Client/Project
Humboldt Wind, LLC
Humboldt Wind Energy Project

Figure No.

6

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

APPENDICES

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix A BIRD USE COUNT SURVEY TABLES

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix A Table 1. Bird use count survey weather data by plot and by survey event conducted at the Humboldt Wind Energy Project, Humboldt County, California, October 24, 2017–October 25, 2018.

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
2017								
11	1/Oct 24	28.8° C (84° F)	none	1.8–5.4 m/s (4–12 mph)	0	E	>6 mi	
12	1/Oct 25	19.0° C (66° F)	none	4.0–10.7 m/s (9–24 mph)	0	N	>6 mi	
13	1/Oct 25	24.0° C (75° F)	none	4.0–13.4 m/s (9–30 mph)	0	N	>6 mi	
14	1/Oct 25	24.0° C (75° F)	none	4.0–13.4 m/s (9–30 mph)	0	N	>6 mi	
17	1/Oct 25	25.0° C (77° F)	none	4.0–13.4 m/s (9–30 mph)	0	N	>6 mi	
15	1/Oct 26	17.3° C (63° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
16	1/Oct 26	21.0° C (70° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
18	1/Oct 26	25.0° C (77° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
19	1/Oct 26	23.4° C (74° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
14	2/Nov 1	13.4° C (56° F)	none	1.8–3.6 m/s (4–8 mph)	0	NE	>6 mi	
15	2/Nov 1	13.5° C (56° F)	none	0.4–1.3 m/s (1–3 mph)	0	NE	>6 mi	
16	2/Nov 1	13.3° C (56° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
17	2/Nov 1	14.1° C (57° F)	none	0.4–1.3 m/s (1–3 mph)	0	NE	>6 mi	
18	2/Nov 1	8.8° C (48° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
19	2/Nov 1	5.5° C (42° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
11	2/Nov 2	7.0° C (45° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	SE	<800 m	
12	2/Nov 2	5.8° C (42° F)	heavy fog	1.8–3.6 m/s (4–8 mph)	100	SE	<800 m	
13	2/Nov 2	5.0° C (41° F)	heavy fog	5.8–8.0 m/s (13–18 mph)	100	SE	<800 m	
11	3/Nov 8	8.8° C (48° F)	light rain	11.2–20.6 m/s (25–46 mph)	90	S	3–6 mi	
12	3/Nov 8	8.8° C (48° F)	light rain	11.2–20.6 m/s (25–46 mph)	100	S	3–6 mi	
13	3/Nov 8	6.6° C (44° F)	heavy fog, heavy rain	11.2–20.6 m/s (25–46 mph)	100	S	>6 mi	
14	3/Nov 8	7.7° C (46° F)	heavy fog, rain	11.2–20.6 m/s (25–46 mph)	100	S	80 m	
15	3/Nov 8	8.0° C (46° F)	heavy rain	4.0–5.4 m/s (9–12 mph)	100	SW	<800 m	
16	3/Nov 8	8.0° C (46° F)	heavy fog, heavy rain	4.0–5.4 m/s (9–12 mph)	100	SW	<800 m	
17	3/Nov 8	6.0° C (43° F)	none	8.5–10.7 m/s (19–24 mph)	100	SW	>6 mi	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
18	3/Nov 8	8.0° C (46° F)	heavy fog, heavy rain	1.8–3.6 m/s (4–8 mph)	100	SW	<800 m	
19	3/Nov 8	8.0° C (46° F)	heavy fog, heavy rain	1.8–3.6 m/s (4–8 mph)	100	SW	<800 m	
11	4/Nov 15	8.5° C (47° F)	light rain	4.0–5.4 m/s (9–12 mph)	50	SE	3–6 mi	
12	4/Nov 15	5.0° C (41° F)	heavy fog, light rain	8.5–10.7 m/s (19–24 mph)	100	SE	100 m	
13	4/Nov 15	5.0° C (41° F)	heavy fog, rain	8.5–10.7 m/s (19–24 mph)	100	SE	100 m	
14	4/Nov 15	5.5° C (42° F)	heavy fog, rain	4.0–5.4 m/s (9–12 mph)	100	S	50 m	
15	4/Nov 15	6.5° C (44° F)	fog, rain	4.0–5.4 m/s (9–12 mph)	100	S	150 m	
16	4/Nov 15	5.7° C (42° F)	fog, rain	4.0–5.4 m/s (9–12 mph)	100	SW	500 m	
17	4/Nov 15	9.0° C (48° F)	light fog, rain	4.0–10.7 m/s (9–24 mph)	100	S	400 m	
18	4/Nov 15	11.0° C (52° F)	light rain	1.8–5.4 m/s (4–12 mph)	100	W	1 mi	
19	4/Nov 15	10.0° C (50° F)	light rain	1.8–5.4 m/s (4–12 mph)	100	W	1 mi	
11	5/Nov 19	6.0° C (43° F)	none	4.0–5.4 m/s (9–12 mph)	75	SE	>6 mi	
12	5/Nov 19	6.0° C (43° F)	none	4.0–5.4 m/s (9–12 mph)	75	SE	3–6 mi	
13	5/Nov 19	5.5° C (42° F)	none	5.8–8.0 m/s (13–18 mph)	90	SE	>6 mi	
14	5/Nov 19	9.0° C (48° F)	none	4.0–5.4 m/s (9–12 mph)	95	SE	>6 mi	
15	5/Nov 19	8.0° C (46° F)	none	4.0–5.4 m/s (9–12 mph)	100	S	1–3 mi	
16	5/Nov 19	9.0° C (48° F)	none	0.4–1.3 m/s (1–3 mph)	100	S	3–6 mi	
17	5/Nov 19	8.5° C (47° F)	none	4.0–5.4 m/s (9–12 mph)	95	SE	>6 mi	
18	5/Nov 19	10.5° C (51° F)	none	1.8–3.6 m/s (4–8 mph)	100	SE	1–3 mi	
19	5/Nov 20	15.0° C (59° F)	rain	5.8–17.0 m/s (13–38 mph)	100	SW	400 m	
11	6/Nov 29	3.7° C (39° F)	heavy fog	4.0–5.4 m/s (9–12 mph)	100	NW	100 m	
12	6/Nov 29	5.0° C (41° F)	none	4.0–5.4 m/s (9–12 mph)	100	N	>6 mi	
13	6/Nov 29	5.5° C (42° F)	none	0.4–1.3 m/s (1–3 mph)	95	NE	>6 mi	
14	6/Nov 29	5.0° C (41° F)	none	4.0–5.4 m/s (9–12 mph)	75	NW	>6 mi	
15	6/Nov 29	4.0° C (39° F)	none	0.4–1.3 m/s (1–3 mph)	75	N	1–3 mi	
16	6/Nov 29	5.2° C (41° F)	none	0.4–5.4 m/s (1–12 mph)	80	NW	3–6 mi	
17	6/Nov 29	11.2° C (52° F)	none	0.4–3.6 m/s (1–8 mph)	90	NW	3–6 mi	
18	6/Nov 29	5.0° C (41° F)	none	0 m/s (0 mph)	90	N/A	1–3 mi	
19	6/Nov 29	5.7° C (42° F)	none	0.4–3.6 m/s (1–8 mph)	40	NW	3–6 mi	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix A Bird Use Count Survey Tables

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
11	7/Dec 6	7.7° C (46° F)	none	0–1.3 m/s (0–3 mph)	0	S	3–6 mi	
12	7/Dec 6	13.0° C (55° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
13	7/Dec 6	11.7° C (53° F)	none	0.4–3.6 m/s (1–8 mph)	10	S	3–6 mi	
14	7/Dec 6	11.5° C (53° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
15	7/Dec 6	11.5° C (53° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
16	7/Dec 6	13.0° C (55° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
17	7/Dec 6	15.7° C (60° F)	none	0 m/s (0 mph)	10	N/A	3–6 mi	
18	7/Dec 6	15.0° C (59° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
19	7/Dec 6	14.0° C (57° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
11	8/Dec 13	16.0° C (61° F)	none	1.8–5.4 m/s (4–12 mph)	5	NE	1–3 mi	
12	8/Dec 13	16.0° C (61° F)	none	4.0–5.4 m/s (9–12 mph)	10	N	1–3 mi	
13	8/Dec 13	16.0° C (61° F)	none	1.8–5.4 m/s (4–12 mph)	50	NE	1–3 mi	
14	8/Dec 13	12.0° C (54° F)	none	1.8–3.6 m/s (4–8 mph)	10	NW	3–6 mi	
15	8/Dec 13	11.5° C (53° F)	none	0.4–1.3 m/s (1–3 mph)	0	SE	>6 mi	
16	8/Dec 13	15.4° C (60° F)	none	0.4–5.4 m/s (1–12 mph)	0	SE	3 mi	
17	8/Dec 13	15.2° C (59° F)	none	0–1.3 m/s (0–3 mph)	20	N	400 m	
18	8/Dec 13	12.8° C (55° F)	none	0 m/s (0 mph)	10	N/A	>6 mi	
19	8/Dec 13	10.7° C (51° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
11	9/Dec 19	7.0° C (45° F)	none	1.8–5.4 m/s (4–12 mph)	100	SE	3–6 mi	
12	9/Dec 19	7.0° C (45° F)	none	4.0–8.0 m/s (9–18 mph)	90	S	3–6 mi	
13	9/Dec 19	6.0° C (43° F)	none	4.0–5.4 m/s (9–12 mph)	99	S	3–6 mi	
14	9/Dec 19	5.5° C (42° F)	none	4.0–5.4 m/s (9–12 mph)	100	S	3–6 mi	
15	9/Dec 19	5.5° C (42° F)	none	1.8–5.4 m/s (4–12 mph)	100	S	1–3 mi	
16	9/Dec 19	6.0° C (43° F)	heavy fog, light rain	0 m/s (0 mph)	100	N/A	100 m	
17	9/Dec 19	8.0° C (46° F)	none	0 m/s (0 mph)	95	N/A	3–6 mi	
18	9/Dec 20	2.0° C (36° F)	none	0 m/s (0 mph)	100	N/A	1–3 mi	
19	9/Dec 20	3.0° C (37° F)	none	0 m/s (0 mph)	50	N/A	1–3 mi	
2018								
11	10/Jan 3	14.5° C (58° F)	none	4.0–5.4 m/s (9–12 mph)	100	SE	>6 mi	
12	10/Jan 3	15.0° C (59° F)	none	0 m/s (0 mph)	100	N/A	>6 mi	
13	10/Jan 3	16.0° C (61° F)	none	1.8–3.6 m/s (4–8 mph)	50	SE	>6 mi	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
14	10/Jan 3	17.5° C (64° F)	none	1.8–3.6 m/s (4–8 mph)	100	S	>6 mi	
15	10/Jan 3	15.5° C (60° F)	none	0 m/s (0 mph)	90	N/A	>6 mi	
16	10/Jan 3	14.0° C (57° F)	none	0.4–1.3 m/s (1–3 mph)	100	S	3–6 mi	
17	10/Jan 3	18.0° C (64° F)	none	0.4–1.3 m/s (1–3 mph)	95	SE	>6 mi	
18	10/Jan 4	12.5° C (55° F)	none	1.8–3.6 m/s (4–8 mph)	90	SW	3–6 mi	
19	10/Jan 4	12.5° C (55° F)	none	0.4–1.3 m/s (1–3 mph)	100	S	>6 mi	
14	11/Jan 9	8.0° C (46° F)	heavy fog, heavy rain	4.0–8.0 m/s (9–18 mph)	100	SW	75 m	
15	11/Jan 9	8.5° C (47° F)	heavy fog, heavy rain	4.0–5.4 m/s (9–12 mph)	100	S	100 m	
16	11/Jan 9	8.5° C (47° F)	heavy fog, light rain	0.4–1.3 m/s (1–3 mph)	100	S	200 m	
17	11/Jan 9	8.0° C (46° F)	heavy fog, light rain	5.8–10.7 m/s (13–24 mph)	100	NE	100 m	
18	11/Jan 9	8.5° C (47° F)	heavy fog, light rain	0.4–1.3 m/s (1–3 mph)	100	SW	100 m	
19	11/Jan 9	8.5° C (47° F)	heavy fog	0 m/s (0 mph)	100	N/A	100 m	
11	11/Jan 10	7.5° C (46° F)	heavy fog	1.8–3.6 m/s (4–8 mph)	100	SW	100 m	
12	11/Jan 10	7.0° C (45° F)	heavy fog	4.0–8.0 m/s (9–18 mph)	100	SW	150 m	
13	11/Jan 10	5.0° C (41° F)	heavy fog	4.0–5.4 m/s (9–12 mph)	100	SW	100 m	
11	12/Jan 17	9.0° C (48° F)	none	4.0–10.7 m/s (9–24 mph)	90	S	>6 mi	
12	12/Jan 17	9.0° C (48° F)	none	1.8–8.0 m/s (4–18 mph)	70	S	>6 mi	
13	12/Jan 18	4.5° C (40° F)	fog	1.8–3.6 m/s (4–8 mph)	100	SW	1000 m	
14	12/Jan 18	6.5° C (44° F)	light fog	0.4–1.3 m/s (1–3 mph)	100	SW	3–6 mi	
15	12/Jan 18	6.5° C (44° F)	none	0.4–1.3 m/s (1–3 mph)	100	S	1 mi	
16	12/Jan 18	6.5° C (44° F)	fog, light rain	0.4–1.3 m/s (1–3 mph)	100	S	1000 m	
17	12/Jan 18	6.5° C (44° F)	light fog	0.4–1.3 m/s (1–3 mph)	100	S	1–2 mi	
19	12/Jan 18	6.5° C (44° F)	fog, light rain	0 m/s (0 mph)	100	N/A	500 m	
11	13/Jan 24	4.0° C (39° F)	fog, rain	4.0–8.0 m/s (9–18 mph)	100	SW	500 m	
12	13/Jan 24	5.5° C (42° F)	heavy fog, heavy rain	4.0–8.0 m/s (9–18 mph)	100	SW	300 m	
13	13/Jan 24	5.5° C (42° F)	heavy fog, heavy rain	4.0–8.0 m/s (9–18 mph)	100	SW	100 m	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix A Bird Use Count Survey Tables

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
14	13/Jan 24	6.5° C (44° F)	heavy fog, heavy rain	5.8–10.7 m/s (13–24 mph)	100	SW	100 m	
15	13/Jan 24	6.5° C (44° F)	fog, heavy rain	4.0–8.0 m/s (9–18 mph)	100	SW	300 m	
16	13/Jan 24	6.5° C (44° F)	fog, heavy rain	0.4–1.3 m/s (1–3 mph)	100	S	1000 m	
17	13/Jan 24	6.0° C (43° F)	fog, rain	4.0–8.0 m/s (9–18 mph)	100	SW	1000 m	
18	13/Jan 24	6.8° C (44° F)	light fog, rain	0 m/s (0 mph)	100	N/A	150 m	
19	13/Jan 24	6.1° C (43° F)	light fog, rain	0 m/s (0 mph)	100	N/A	200 m	
11	14/Jan 31	7.0° C (45° F)	none	0.4–3.6 m/s (1–8 mph)	75	E	3 mi	
12	14/Jan 31	9.1° C (48° F)	none	0–1.3 m/s (0–3 mph)	75	N	3 mi	
13	14/Jan 31	8.8° C (48° F)	none	0.4–3.6 m/s (1–8 mph)	60	N	3 mi	
14	14/Jan 31	6.0° C (43° F)	none	0 m/s (0 mph)	75	N/A	>6 mi	
15	14/Jan 31	7.5° C (46° F)	none	0 m/s (0 mph)	80	N/A	>6 mi	
16	14/Jan 31	7.5° C (46° F)	none	0.4–1.3 m/s (1–3 mph)	80	NW	>6 mi	
17	14/Jan 31	5.0° C (41° F)	none	0 m/s (0 mph)	90	N/A	>6 mi	
18	14/Jan 31	8.0° C (46° F)	none	0 m/s (0 mph)	90	N/A	>6 mi	
19	14/Jan 31	7.5° C (46° F)	none	0 m/s (0 mph)	75	N/A	>6 mi	
11	15/Feb 7	19.0° C (66° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
12	15/Feb 7	19.0° C (66° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
13	15/Feb 7	18.0° C (64° F)	none	1.8–3.6 m/s (4–8 mph)	5	S	>6 mi	
14	15/Feb 7	15.5° C (60° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
15	15/Feb 7	19.7° C (67° F)	none	0 m/s (0 mph)	10	N/A	3–6 mi	
16	15/Feb 7	16.2° C (61° F)	none	0 m/s (0 mph)	10	N/A	3–6 mi	
17	15/Feb 7	20.5° C (69° F)	none	0 m/s (0 mph)	5	N/A	>6 mi	
18	15/Feb 7	12.1° C (54° F)	none	0 m/s (0 mph)	10	N/A	3–6 mi	
19	15/Feb 7	15.0° C (59° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
11	16/Feb 14	2.7° C (37° F)	none	0 m/s (0 mph)	90	N/A	1 mi	
12	16/Feb 14	4.4° C (40° F)	none	0.4–1.3 m/s (1–3 mph)	60	NW	1 mi	
13	16/Feb 14	7.3° C (45° F)	light fog	0–1.3 m/s (0–3 mph)	70	N	600 m	
14	16/Feb 14	5.2° C (41° F)	none	0–1.3 m/s (0–3 mph)	60	N	1 mi	
15	16/Feb 14	6.5° C (44° F)	none	0 m/s (0 mph)	80	N/A	3–6 mi	
16	16/Feb 14	11.0° C (52° F)	none	0.4–1.3 m/s (1–3 mph)	75	N	3–6 mi	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
17	16/Feb 14	6.2° C (43° F)	none	0 m/s (0 mph)	90	N/A	3–6 mi	
18	16/Feb 15	1° C (34° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
19	16/Feb 15	4.3° C (40° F)	none	4.0–5.4 m/s (9–12 mph)	0	NW	>6 mi	
11	17/Feb 20	2.0° C (36° F)	light snow	0 m/s (0 mph)	100	N/A	800 m	light snowpack
12	17/Feb 20	5.1° C (41° F)	light snow	0 m/s (0 mph)	100	N/A	1–3 mi	light snowpack
13	17/Feb 20	0.7° C (33° F)	none	0 m/s (0 mph)	100	N/A	3–6 mi	light snowpack
14	17/Feb 20	1.5° C (35° F)	none	0 m/s (0 mph)	100	N/A	3–6 mi	light snowpack
15	17/Feb 20	2.0° C (36° F)	none	0 m/s (0 mph)	75	N/A	>6 mi	light snowpack
16	17/Feb 20	0.5° C (33° F)	none	0 m/s (0 mph)	90	N/A	>6 mi	light snowpack
17	17/Feb 20	2.0° C (36° F)	none	0 m/s (0 mph)	95	N/A	3–6 mi	light snowpack
18	17/Feb 20	-1.7° C (29° F)	none	0 m/s (0 mph)	75	N/A	3–6 mi	light snowpack
19	17/Feb 20	-1° C (30° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	light snowpack
11	18/Feb 26	-2.0° C (28° F)	heavy fog	4.0–8.0 m/s (9–18 mph)	100	NW	250 m	light snowpack
12	18/Feb 26	-1.5° C (29° F)	heavy fog	4.0–8.0 m/s (9–18 mph)	100	NW	200 m	light snowpack
13	18/Feb 27	5.0° C (41° F)	none	0.4–3.6 m/s (1–8 mph)	0	N	3–6 mi	light snowpack
14	18/Feb 27	5.5° C (42° F)	none	0.4–3.6 m/s (1–8 mph)	20	NW	3–6 mi	light snowpack
15	18/Feb 27	8.2° C (47° F)	none	0–3.6 m/s (0–8 mph)	20	N	3–6 mi	light snowpack
16	18/Feb 27	6.7° C (44° F)	none	0.4–3.6 m/s (1–8 mph)	20	NW	3–6 mi	light snowpack
17	18/Feb 27	11.7° C (53° F)	none	0.4–3.6 m/s (1–8 mph)	0	NW	3–6 mi	
18	18/Feb 27	7.8° C (46° F)	none	0.4–3.6 m/s (1–8 mph)	20	SW	3–6 mi	
19	18/Feb 27	5.9° C (43° F)	none	1.8–5.4 m/s (4–12 mph)	0	NW	3–6 mi	
18	19/Mar 6	18.6° C (65° F)	light snow	0 m/s (0 mph)	40	N/A	3–6 mi	
19	19/Mar 6	16.4° C (62° F)	none	0 m/s (0 mph)	5	N/A	>6 mi	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix A Bird Use Count Survey Tables

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
12	19/Mar 7	12.4° C (54° F)	none	5.8–10.7 m/s (13–24 mph)	50	S	3–6 mi	light snowpack
13	19/Mar 7	no data	none	8.5–13.4 m/s (19–30 mph)	0	S	>6 mi	light snowpack
14	19/Mar 7	no data	none	1.8–3.6 m/s (4–8 mph)	50	S	>6 mi	light snowpack
17	19/Mar 7	no data	none	1.8–8.0 m/s (4–18 mph)	50	SE	>6 mi	
11	19/Mar 8	6.8° C (44° F)	fog, rain	1.8–5.4 m/s (4–12 mph)	100	S	600 m	
11	20/Mar 14	2.9° C (37° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	N	300 m	
12	20/Mar 14	0.5° C (33° F)	heavy fog, heavy snow	4.0–5.4 m/s (9–12 mph)	100	NE	250 m	
13	20/Mar 14	3.5° C (38° F)	heavy fog	0 m/s (0 mph)	100	N/A	250 m	light snowpack
14	20/Mar 14	4.2° C (40° F)	fog	0 m/s (0 mph)	100	N/A	800 m	
17	20/Mar 14	5.5° C (42° F)	none	0 m/s (0 mph)	95	N/A	1–3 mi	
11	21/Mar 22	3.8° C (39° F)	heavy fog	0–1.3 m/s (0–3 mph)	100	NW	100 m	light snowpack
12	21/Mar 22	-0.1° C (32° F)	heavy fog	1.8–5.4 m/s (4–12 mph)	100	NE	150 m	snowpack
13	21/Mar 22	0.2° C (32° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	S	100 m	snowpack
14	21/Mar 22	0.1° C (32° F)	heavy fog, snow	1.8–5.4 m/s (4–12 mph)	100	NW	200 m	snowpack
17	21/Mar 22	2.7° C (37° F)	heavy fog, light rain	0.4–3.6 m/s (1–8 mph)	100	NW	200 m	
11	22/Mar 28	15.1° C (59° F)	none	1.8–8.0 m/s (4–18 mph)	30	N	3 mi	
12	22/Mar 28	13.0° C (55° F)	none	1.8–8.0 m/s (4–18 mph)	20	N	3 mi	
13	22/Mar 29	19.2° C (67° F)	none	0.4–3.6 m/s (1–8 mph)	30	N	3 mi	
14	22/Mar 29	20.2° C (68° F)	none	0.4–1.3 m/s (1–3 mph)	25	N	>6 mi	
17	22/Mar 29	20.6° C (69° F)	none	0 m/s (0 mph)	5	N/A	>6 mi	
11	23/Apr 3	14.3° C (58° F)	none	0–1.3 m/s (0–3 mph)	20	N	3–6 mi	
12	23/Apr 3	9.8° C (50° F)	none	0.4–3.6 m/s (1–8 mph)	30	N	3–6 mi	
13	23/Apr 3	16.7° C (62° F)	none	0 m/s (0 mph)	10	N/A	>6 mi	
14	23/Apr 3	15.5° C (60° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
17	23/Apr 3	12.2° C (54° F)	none	0 m/s (0 mph)	10	N/A	>6 mi	
11	24/Apr 10	7.5° C (46° F)	heavy fog, light rain	4.0–5.4 m/s (9–12 mph)	100	SW	200 m	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
12	24/Apr 10	4.6° C (40° F)	heavy fog, light rain	0.4–3.6 m/s (1–8 mph)	100	SE	50 m	
13	24/Apr 10	4.8° C (41° F)	heavy fog, light rain	5.8–8.0 m/s (13–18 mph)	100	SW	200 m	
14	24/Apr 10	5.0° C (41° F)	heavy fog, light rain	0.4–1.3 m/s (1–3 mph)	100	SW	100 m	
17	24/Apr 10	6.9° C (44° F)	heavy fog, light rain	0.4–3.6 m/s (1–8 mph)	100	E	100 m	
11	25/Apr 17	5.5° C (42° F)	none	0.4–3.6 m/s (1–8 mph)	20	N	1 mi	
12	25/Apr 17	8.8° C (48° F)	light fog	0 m/s (0 mph)	30	N/A	1 mi	
13	25/Apr 17	5.5° C (42° F)	light fog	0 m/s (0 mph)	20	N/A	1 mi	
14	25/Apr 17	4.9° C (41° F)	none	0 m/s (0 mph)	10	N/A	>6 mi	
17	25/Apr 17	9.5° C (49° F)	none	0 m/s (0 mph)	5	N/A	>6 mi	
11	26/Apr 27	22.9° C (73° F)	none	0 m/s (0 mph)	60	N/A	3–6 mi	
12	26/Apr 27	20.6° C (69° F)	none	0.4–3.6 m/s (1–8 mph)	60	SE	3–6 mi	
13	26/Apr 27	17.7° C (64° F)	none	0.4–3.6 m/s (1–8 mph)	50	SE	3–6 mi	
14	26/Apr 27	18.3° C (65° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
17	26/Apr 27	18.3° C (65° F)	none	0 m/s (0 mph)	10	N/A	>6 mi	
11	27/May 2	22.0° C (72° F)	none	0.4–3.6 m/s (1–8 mph)	0	N	3–6 mi	
12	27/May 2	21.2° C (70° F)	none	0–1.3 m/s (0–3 mph)	0	N	3–6 mi	
13	27/May 2	17.5° C (64° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
14	27/May 2	12.8° C (55° F)	none	0–1.3 m/s (0–3 mph)	0	E	3–6 mi	
17	27/May 2	18.2° C (65° F)	none	0–1.3 m/s (0–3 mph)	0	E	3–6 mi	
11	28/May 9	7.6° C (46° F)	heavy fog	0–1.3 m/s (0–3 mph)	100	NE	80 m	
12	28/May 9	10.8° C (51° F)	heavy fog	0–1.3 m/s (0–3 mph)	100	N	80 m	
13	28/May 9	11.9° C (53° F)	fog	0–1.3 m/s (0–3 mph)	80	N	200 m	
14	28/May 9	12.0° C (54° F)	fog	0.4–1.3 m/s (1–3 mph)	90	NW	600 m	
17	28/May 9	13.0° C (55° F)	fog	0 m/s (0 mph)	100	N/A	200 m	
11	29/May 15	13.2° C (56° F)	heavy fog	0–1.3 m/s (0–3 mph)	100	S	50 m	
12	29/May 15	8.9° C (48° F)	heavy fog	0 m/s (0 mph)	100	N/A	150 m	
13	29/May 15	9.5° C (49° F)	heavy fog	0 m/s (0 mph)	90	N/A	150 m	
14	29/May 15	14.0° C (57° F)	heavy fog	0 m/s (0 mph)	90	N/A	150 m	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix A Bird Use Count Survey Tables

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
17	29/May 15	11.8° C (53° F)	heavy fog	0 m/s (0 mph)	100	N/A	100 m	
28	29/May 17	7.6° C (46° F)	heavy fog	4.0–5.4 m/s (9–12 mph)	100	N	30 m	
29	29/May 17	10.0° C (50° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	N	30 m	
30	29/May 17	7.6° C (46° F)	heavy fog	4.0–5.4 m/s (9–12 mph)	100	N	25 m	
31	29/May 17	7.7° C (46° F)	heavy fog	4.0–5.4 m/s (9–12 mph)	100	N	30 m	
11	30/May 22	17.0° C (63° F)	none	4.0–5.4 m/s (9–12 mph)	0	NE	>6 mi	
12	30/May 22	17.0° C (63° F)	none	1.8–3.6 m/s (4–8 mph)	0	NE	>6 mi	
13	30/May 22	22.0° C (72° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
14	30/May 22	19.1° C (66° F)	none	0–1.3 m/s (0–3 mph)	10	W	3–6 mi	
15	30/May 22	16.7° C (62° F)	heavy fog	0–1.3 m/s (0–3 mph)	80	NE	80 m	
16	30/May 22	22.0° C (72° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
17	30/May 22	15.5° C (60° F)	heavy fog	0 m/s (0 mph)	100	N/A	80 m	
18	30/May 22	14.2° C (58° F)	heavy fog	0–1.3 m/s (0–3 mph)	100	NE	50 m	
19	30/May 22	19.0° C (66° F)	fog	0.4–1.3 m/s (1–3 mph)	100	N	200 m	
28	30/May 23	11.0° C (52° F)	heavy fog	1.8–3.6 m/s (4–8 mph)	100	N	150 m	
29	30/May 23	11.5° C (53° F)	heavy fog	0 m/s (0 mph)	100	N/A	100 m	
30	30/May 23	9.9° C (50° F)	heavy fog	0–1.3 m/s (0–3 mph)	100	N	50 m	
31	30/May 23	10.2° C (50° F)	heavy fog	0.4–3.6 m/s (1–8 mph)	100	N	50 m	
12	31/May 30	9.6° C (49° F)	heavy fog	1.8–8.0 m/s (4–18 mph)	100	N	50 m	
13	31/May 30	9.6° C (49° F)	heavy fog	1.8–3.6 m/s (4–8 mph)	100	SE	100 m	
14	31/May 30	6.8° C (44° F)	heavy fog	1.8–5.4 m/s (4–12 mph)	100	N	40 m	
15	31/May 30	9.0° C (48° F)	fog	1.8–3.6 m/s (4–8 mph)	90	S	500 m	
16	31/May 30	6.0° C (43° F)	heavy fog	4.0–8.0 m/s (9–18 mph)	100	S	500 m	
17	31/May 30	10.9° C (52° F)	none	0.4–3.6 m/s (1–8 mph)	90	N	1 mi	
18	31/May 30	6.4° C (44° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	SE	100 m	
19	31/May 30	6.2° C (43° F)	heavy fog	1.8–8.0 m/s (4–18 mph)	100	N	50 m	
28	31/May 30	9.6° C (49° F)	none	4.0–8.0 m/s (9–18 mph)	50	NW	3–6 mi	
29	31/May 30	16.9° C (62° F)	none	0.4–3.6 m/s (1–8 mph)	50	N	3 mi	
30	31/May 30	9.9° C (50° F)	none	4.0–5.4 m/s (9–12 mph)	30	N	3–6 mi	
31	31/May 30	10.0° C (50° F)	none	1.8–5.4 m/s (4–12 mph)	50	N	3 mi	
11	32/Jun 5	5.0° C (41° F)	heavy fog	5.8–10.7 m/s (13–24 mph)	100	N	100 m	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
12	32/Jun 5	5.0° C (41° F)	heavy fog	8.5–13.4 m/s (19–30 mph)	100	N	50 m	
13	32/Jun 5	6.9° C (44° F)	heavy fog	0.4–5.4 m/s (1–12 mph)	100	NE	50 m	
14	32/Jun 5	7.0° C (45° F)	heavy fog	4.0–5.4 m/s (9–12 mph)	100	N	50 m	
15	32/Jun 5	9.5° C (49° F)	fog	1.8–3.6 m/s (4–8 mph)	100	N	100 m	
16	32/Jun 5	9.5° C (49° F)	none	4.0–5.4 m/s (9–12 mph)	90	N	1 mi	
17	32/Jun 5	9.9° C (50° F)	none	1.8–5.4 m/s (4–12 mph)	90	N	1 mi	
18	32/Jun 5	15.3° C (60° F)	none	0.4–3.6 m/s (1–8 mph)	50	N	3 mi	
19	32/Jun 5	12.5° C (55° F)	none	4.0–5.4 m/s (9–12 mph)	10	N	>6 mi	
28	32/Jun 6	7.7° C (46° F)	heavy fog	1.8–3.6 m/s (4–8 mph)	100	N	20 m	
29	32/Jun 6	11.6° C (53° F)	heavy fog	0 m/s (0 mph)	100	N/A	30 m	
30	32/Jun 6	7.6° C (46° F)	heavy fog	1.8–3.6 m/s (4–8 mph)	100	N	20 m	
31	32/Jun 6	11.1° C (52° F)	heavy fog	1.8–3.6 m/s (4–8 mph)	100	N	400 m	
11	33/Jun 13	15.5° C (60° F)	none	4.0–5.4 m/s (9–12 mph)	0	N	3–6 mi	
14	33/Jun 13	18.0° C (64° F)	heavy fog	4.0–5.4 m/s (9–12 mph)	100	N	100 m	
15	33/Jun 13	16.9° C (62° F)	none	0 m/s (0 mph)	100	N/A	>6 mi	
16	33/Jun 13	12.0° C (54° F)	none	5.8–8.0 m/s (13–18 mph)	0	NW	3–6 mi	
17	33/Jun 13	18.0° C (64° F)	none	4.0–5.4 m/s (9–12 mph)	0	N	>6 mi	
18	33/Jun 13	13.5° C (56° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
19	33/Jun 13	13.3° C (56° F)	none	5.8–10.7 m/s (13–24 mph)	0	NW	3–6 mi	
12	33/Jun 14	11.0° C (52° F)	none	8.5–10.7 m/s (19–24 mph)	0	N	>6 mi	
13	33/Jun 14	12.2° C (54° F)	none	4.0–5.4 m/s (9–12 mph)	0	N	>6 mi	
28	33/Jun 14	14.5° C (58° F)	none	5.8–8.0 m/s (13–18 mph)	10	N	>6 mi	
29	33/Jun 14	12.0° C (54° F)	none	1.8–3.6 m/s (4–8 mph)	10	NW	>6 mi	
30	33/Jun 14	12.1° C (54° F)	light fog	5.8–8.0 m/s (13–18 mph)	10	NW	>6 mi	
31	33/Jun 14	12.1° C (54° F)	light fog	4.0–5.4 m/s (9–12 mph)	30	N	>6 mi	
28	34/Jun 19	18.1° C (65° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
29	34/Jun 19	20.5° C (69° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
30	34/Jun 19	22.0° C (72° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
31	34/Jun 19	28.0° C (82° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	>6 mi	
11	34/Jun 20	19.4° C (67° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	>6 mi	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix A Bird Use Count Survey Tables

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
12	34/Jun 20	17.7° C (64° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	>6 mi	
13	34/Jun 20	19.4° C (67° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
14	34/Jun 20	20.6° C (69° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
15	34/Jun 20	20.8° C (69° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
16	34/Jun 20	25.8° C (78° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
17	34/Jun 20	22.7° C (73° F)	heavy fog	0 m/s (0 mph)	100	N/A	50–75 m	
18	34/Jun 20	19.0° C (66° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
19	34/Jun 20	23.4° C (74° F)	light fog	0.4–1.3 m/s (1–3 mph)	75	NW	100–200 m	
11	35/Jun 26	21.6° C (71° F)	none	4.0–10.7 m/s (9–24 mph)	0	NW	>6 mi	
12	35/Jun 26	17.6° C (64° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	>6 mi	
13	35/Jun 26	19.0° C (66° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	>6 mi	
14	35/Jun 26	17.7° C (64° F)	none	1.8–3.6 m/s (4–8 mph)	0	NW	>6 mi	
15	35/Jun 26	23.3° C (74° F)	none	0.4–8.0 m/s (1–18 mph)	0	NW	>6 mi	
16	35/Jun 26	20.5° C (69° F)	none	4.0–8.0 m/s (9–18 mph)	0	NW	>6 mi	
17	35/Jun 26	16.1° C (61° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	>6 mi	
18	35/Jun 26	14.4° C (58° F)	none	0.4–3.6 m/s (1–8 mph)	0	NW	>6 mi	
19	35/Jun 26	12.2° C (54° F)	none	4.0–8.0 m/s (9–18 mph)	0	NW	>6 mi	
28	35/Jun 27	13.5° C (56° F)	none	5.8–8.0 m/s (13–18 mph)	0	N	>6 mi	
29	35/Jun 27	20.9° C (70° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	>6 mi	
30	35/Jun 27	15.4° C (60° F)	none	1.8–5.4 m/s (4–12 mph)	0	N	>6 mi	
31	35/Jun 27	23.1° C (74° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	>6 mi	
11	36/Jul 4	23.2° C (74° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	3–6 mi	
12	36/Jul 4	20.6° C (69° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	3–6 mi	
13	36/Jul 4	20.8° C (69° F)	none	0–1.3 m/s (0–3 mph)	20	N	3–6 mi	
14	36/Jul 4	21.6° C (71° F)	none	0.4–3.6 m/s (1–8 mph)	10	N	3–6 mi	
28	36/Jul 4	18.2° C (65° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	>6 mi	
29	36/Jul 4	18.3° C (65° F)	none	0–1.3 m/s (0–3 mph)	20	N	3–6 mi	
30	36/Jul 4	18.0° C (64° F)	none	0–1.3 m/s (0–3 mph)	30	N	3–6 mi	
31	36/Jul 4	12.5° C (55° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	N	100 m	
15	36/Jul 5	23.3° C (74° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
16	36/Jul 5	20.5° C (69° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
17	36/Jul 5	20.6° C (69° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
18	36/Jul 5	24.9° C (77° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
19	36/Jul 5	20.9° C (70° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
28	37/Jul 10	15.5° C (60° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	>6 mi	
29	37/Jul 10	13.2° C (56° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	>6 mi	
30	37/Jul 10	19.4° C (67° F)	none	1.8–3.6 m/s (4–8 mph)	0	NW	>6 mi	
31	37/Jul 10	15.4° C (60° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	>6 mi	
11	37/Jul 11	30.1° C (86° F)	none	0–1.3 m/s (0–3 mph)	0	N	>6 mi	
12	37/Jul 11	24.3° C (76° F)	none	0.4–3.6 m/s (1–8 mph)	0	NW	>6 mi	
13	37/Jul 11	28.5° C (83° F)	none	0.4–1.3 m/s (1–3 mph)	no data	NW	>6 mi	
14	37/Jul 11	31.2° C (88° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	>6 mi	
15	37/Jul 11	25.0° C (77° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
16	37/Jul 11	22.2° C (72° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
18	37/Jul 11	18.0° C (64° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
19	37/Jul 11	19.0° C (66° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
17	37/Jul 12	31.7° C (89° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
11	38/Jul 18	23.4° C (74° F)	none	4.0–5.4 m/s (9–12 mph)	50	N	>6 mi	
12	38/Jul 18	22.5° C (73° F)	none	4.0–5.4 m/s (9–12 mph)	70	NW	>6 mi	
13	38/Jul 18	25.5° C (78° F)	none	0.4–1.3 m/s (1–3 mph)	30	N	>6 mi	
14	38/Jul 18	27.5° C (82° F)	none	1.8–5.4 m/s (4–12 mph)	40	N	>6 mi	
15	38/Jul 18	31.5° C (89° F)	none	0–1.3 m/s (0–3 mph)	70	N	>6 mi	
16	38/Jul 18	26.6° C (80° F)	none	4.0–5.4 m/s (9–12 mph)	5	NW	>6 mi	
18	38/Jul 18	28.5° C (83° F)	none	0.4–1.3 m/s (1–3 mph)	25	N	>6 mi	
19	38/Jul 18	27.8° C (82° F)	none	1.8–3.6 m/s (4–8 mph)	5	NW	>6 mi	
28	38/Jul 18	19.3° C (67° F)	none	4.0–10.7 m/s (9–24 mph)	10	N	>6 mi	
29	38/Jul 18	19.0° C (66° F)	none	4.0–5.4 m/s (9–12 mph)	0	N	>6 mi	
30	38/Jul 18	21.0° C (70° F)	none	4.0–5.4 m/s (9–12 mph)	10	N	>6 mi	
31	38/Jul 18	21.1° C (70° F)	none	1.8–3.6 m/s (4–8 mph)	30	N	>6 mi	
17	38/Jul 19	23.5° C (74° F)	none	0.4–1.3 m/s (1–3 mph)	30	NW	>6 mi	
11	39/Aug 1	20.9° C (70° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	>6 mi	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix A Bird Use Count Survey Tables

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
12	39/Aug 1	22.8° C (73° F)	light fog	1.8–3.6 m/s (4–8 mph)	60	NW	3–6 mi	
28	39/Aug 1	12.5° C (55° F)	heavy fog	4.0–5.4 m/s (9–12 mph)	100	N	25 m	
29	39/Aug 1	10.8° C (51° F)	heavy fog	1.8–3.6 m/s (4–8 mph)	100	N	175 m	
30	39/Aug 1	10.5° C (51° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	N	20 m	
31	39/Aug 1	11.8° C (53° F)	heavy fog	0.4–3.6 m/s (1–8 mph)	100	N	125 m	
13	39/Aug 2	11.1° C (52° F)	light fog	0.4–3.6 m/s (1–8 mph)	60	N	800 m–1 mi	
14	39/Aug 2	19.4° C (67° F)	light fog	0.4–1.3 m/s (1–3 mph)	0	NW	1–3 mi	
15	39/Aug 2	16.6° C (62° F)	fog	0–1.3 m/s (0–3 mph)	100	E	800 m	
17	39/Aug 2	10.0° C (50° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	NW	25–50 m	
18	39/Aug 2	12.6° C (55° F)	heavy fog	0 m/s (0 mph)	100	N/A	100 m	
19	39/Aug 2	11.4° C (53° F)	heavy fog	1.8–3.6 m/s (4–8 mph)	100	N	100 m	
11	40/Aug 8	29.4° C (85° F)	none	0.4–1.3 m/s (1–3 mph)	90	SW	1–3 mi	
12	40/Aug 8	29.5° C (85° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
13	40/Aug 8	26.2° C (79° F)	none	0.4–1.3 m/s (1–3 mph)	80	N	3–6 mi	
14	40/Aug 8	26.6° C (80° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
15	40/Aug 8	19.5° C (67° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
16	40/Aug 8	19.0° C (66° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	3 mi	
17	40/Aug 8	21.5° C (71° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
18	40/Aug 8	17.7° C (64° F)	light fog	0 m/s (0 mph)	50	N/A	1 mi	
19	40/Aug 8	10.9° C (52° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	NW	250 m	
28	40/Aug 9	24.9° C (77° F)	none	0.4–3.6 m/s (1–8 mph)	0	N	1–3 mi	
29	40/Aug 9	25.0° C (77° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	3–6 mi	
30	40/Aug 9	22.4° C (72° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	3–6 mi	
31	40/Aug 9	20.3° C (69° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	3–6 mi	
11	41/Aug 15	20.1° C (68° F)	none	0.4–1.3 m/s (1–3 mph)	0	NE	500 m	
12	41/Aug 15	19.9° C (68° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
13	41/Aug 15	21.1° C (70° F)	light fog	0 m/s (0 mph)	0	N/A	1 mi	
14	41/Aug 15	20.1° C (68° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
15	41/Aug 15	25.0° C (77° F)	heavy fog	0 m/s (0 mph)	100	N/A	25 m	
16	41/Aug 15	25.0° C (77° F)	fog	0 m/s (0 mph)	0	N/A	1 mi	
17	41/Aug 15	14.2° C (58° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	W	150 m	

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Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
18	41/Aug 15	16.2° C (61° F)	light fog	0.4–1.3 m/s (1–3 mph)	100	N	350 m	
19	41/Aug 15	18.9° C (66° F)	fog	0.4–1.3 m/s (1–3 mph)	100	NW	50 m	
28	41/Aug 19	18.1° C (65° F)	none	4.0–5.4 m/s (9–12 mph)	0	N	1 mi	
29	41/Aug 19	16.2° C (61° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	1 mi	
30	41/Aug 19	16.9° C (62° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	1 mi	
31	41/Aug 19	18.0° C (64° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	1 mi	
11	42/Aug 22	26.1° C (79° F)	none	0–1.3 m/s (0–3 mph)	100	E	1–3 mi	
12	42/Aug 22	27.2° C (81° F)	light fog	0 m/s (0 mph)	0	N/A	1–3 mi	
13	42/Aug 22	22.5° C (73° F)	none	1.8–3.6 m/s (4–8 mph)	50	W	1–3 mi	
14	42/Aug 22	21.7° C (71° F)	fog	0.4–1.3 m/s (1–3 mph)	100	NW	1 mi	
15	42/Aug 22	21.4° C (71° F)	none	0–1.3 m/s (0–3 mph)	70	E	1–3 mi	
16	42/Aug 22	18.9° C (66° F)	none	0 m/s (0 mph)	90	N/A	1–3 mi	
17	42/Aug 22	23.3° C (74° F)	fog	0 m/s (0 mph)	0	N/A	1 mi	
18	42/Aug 22	20.1° C (68° F)	fog	0 m/s (0 mph)	100	N/A	1 mi	
19	42/Aug 22	11.8° C (53° F)	light fog	0 m/s (0 mph)	100	N/A	300 m	
28	42/Aug 23	18.5° C (65° F)	light fog	0.4–1.3 m/s (1–3 mph)	100	N	1 mi	
29	42/Aug 23	18.9° C (66° F)	light fog	0.4–1.3 m/s (1–3 mph)	70	S	1–3 mi	
30	42/Aug 23	18.5° C (65° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	N	25 m	
31	42/Aug 23	12.4° C (54° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	N	50 m	
11	43/Aug 28	21.6° C (71° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
12	43/Aug 28	21.1° C (70° F)	none	0.4–5.4 m/s (1–12 mph)	0	NE	3–6 mi	
13	43/Aug 28	27.5° C (82° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
14	43/Aug 28	29.3° C (85° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
17	43/Aug 28	22.0° C (72° F)	none	0 m/s (0 mph)	10	N/A	1–3 mi	
15	43/Aug 30	11.5° C (53° F)	heavy fog	0 m/s (0 mph)	100	N/A	50 m	
16	43/Aug 30	12.3° C (54° F)	heavy fog	0 m/s (0 mph)	100	N/A	50 m	
18	43/Aug 30	13.8° C (57° F)	heavy fog	0 m/s (0 mph)	100	N/A	50 m	
19	43/Aug 30	14.2° C (58° F)	heavy fog	0 m/s (0 mph)	100	N/A	50 m	
28	43/Aug 30	15.5° C (60° F)	none	0.4–1.3 m/s (1–3 mph)	100	SE	25–50 m	
29	43/Aug 30	11.8° C (53° F)	light fog	0.4–1.3 m/s (1–3 mph)	100	S	800 m	

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Appendix A Bird Use Count Survey Tables

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
30	43/Aug 30	15.2° C (59° F)	fog	0.4–1.3 m/s (1–3 mph)	100	NE	100–300 m	
31	43/Aug 30	11.7° C (53° F)	fog	0–1.3 m/s (0–3 mph)	100	N	800 m–1 mi	
11	44/Sep 7	18.2° C (65° F)	none	1.8–3.6 m/s (4–8 mph)	90	N	>6 mi	
12	44/Sep 7	17.9° C (64° F)	none	1.8–3.6 m/s (4–8 mph)	90	N	>6 mi	
13	44/Sep 7	23.8° C (75° F)	none	0 m/s (0 mph)	75	N/A	>6 mi	
14	44/Sep 6	21.8° C (71° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	>6 mi	
15	44/Sep 6	21.5° C (71° F)	none	0 m/s (0 mph)	10	N/A	>6 mi	
16	44/Sep 6	17.7° C (64° F)	none	0 m/s (0 mph)	50	N/A	>6 mi	
17	44/Sep 7	18.6° C (65° F)	none	0 m/s (0 mph)	5	N/A	>6 mi	
18	44/Sep 6	10.2° C (50° F)	none	0 m/s (0 mph)	25	N/A	>6 mi	
19	44/Sep 6	10.3° C (51° F)	moderate to heavy fog	0 m/s (0 mph)	50	N/A	100 m	
28	44/Sep 4	27.8° C (82° F)	none	0.4–1.3 m/s (1–3 mph)	0	S	3–6 mi	
29	44/Sep 4	23.9° C (75° F)	none	0 m/s (0 mph)	0	N/A	3–6 mi	
30	44/Sep 4	26.1° C (79° F)	none	0.4–1.3 m/s (1–3 mph)	0	SE	3–6 mi	
31	44/Sep 4	24.1° C (75° F)	none	0.4–1.3 m/s (1–3 mph)	0	SE	>6 mi	
11	45/Sep 10	11.1° C (52° F)	heavy fog	4.0–5.4 m/s (9–12 mph)	100	N	100 m	
12	45/Sep 10	11.1° C (52° F)	heavy fog	4.0–5.4 m/s (9–12 mph)	100	N	50 m	
13	45/Sep 10	11.7° C (53° F)	heavy fog	4.0–5.4 m/s (9–12 mph)	100	N	100 m	
14	45/Sep 10	15.1° C (59° F)	heavy fog	0.4–1.3 m/s (1–3 mph)	100	N	50 m	
15	45/Sep 10	18.0° C (64° F)	light to moderate fog	0 m/s (0 mph)	100	N/A	500 m	
16	45/Sep 10	19.2° C (67° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	>6 mi	
17	45/Sep 10	13.8° C (57° F)	none	1.8–3.6 m/s (4–8 mph)	100	N	3–6 mi	
18	45/Sep 10	21.9° C (71° F)	none	0 m/s (0 mph)	10	N/A	>6 mi	
19	45/Sep 10	17.8° C (64° F)	none	4.0–8.0 m/s (9–18 mph)	75	N	>6 mi	
28	45/Sep 12	9.6° C (49° F)	heavy fog	1.8–3.6 m/s (4–8 mph)	100	NW	100 m	
29	45/Sep 12	12.7° C (55° F)	none	1.8–3.6 m/s (4–8 mph)	90	N	>6 mi	
30	45/Sep 12	12.9° C (55° F)	none	0.4–1.3 m/s (1–3 mph)	75	N	>6 mi	
31	45/Sep 12	17.1° C (63° F)	none	1.8–3.6 m/s (4–8 mph)	75	N	>6 mi	
11	46/Sep 20	16.1° C (61° F)	none	4.0–5.4 m/s (9–12 mph)	0	N	>6 mi	
12	46/Sep 20	14.0° C (57° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	>6 mi	

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Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
13	46/Sep 20	19.9° C (68° F)	none	0.4–1.3 m/s (1–3 mph)	0	SE	>6 mi	
14	46/Sep 17	20.8° C (69° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
15	46/Sep 17	15.9° C (61° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
16	46/Sep 17	12.3° C (54° F)	none	0.4–3.6 m/s (1–8 mph)	0	N	>6 mi	
17	46/Sep 20	17.3° C (63° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
18	46/Sep 17	11.2° C (52° F)	none	0 m/s (0 mph)	75	N/A	1-3 mi	
19	46/Sep 17	9.7° C (49° F)	fog	0.4–1.3 m/s (1–3 mph)	50	N	500 m	
28	46/Sep 21	28.6° C (83° F)	none	0 m/s (0 mph)	10	N/A	>6 mi	
29	46/Sep 21	22.0° C (72° F)	none	0.4–1.3 m/s (1–3 mph)	10	N	>6 mi	
30	46/Sep 21	23.7° C (75° F)	none	0.4–1.3 m/s (1–3 mph)	25	N	>6 mi	
31	46/Sep 21	23.8° C (75° F)	none	0–1.3 m/s (0–3 mph)	25	N	>6 mi	
11	47/Sep 24	19.3° C (67° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	>6 mi	
12	47/Sep 24	21.8° C (71° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
13	47/Sep 24	23.2° C (74° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
14	47/Sep 24	26.4° C (80° F)	none	0.4–1.3 m/s (1–3 mph)	0	E	>6 mi	
15	47/Sep 25	23.8° C (75° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
16	47/Sep 25	28.6° C (83° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
17	47/Sep 24	22.9° C (73° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
18	47/Sep 25	32.2° C (90° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
19	47/Sep 25	33.5° C (92° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
28	47/Sep 26	28.2° C (83° F)	none	0.4–1.3 m/s (1–3 mph)	0	S	>6 mi	
29	47/Sep 26	31.1° C (88° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
30	47/Sep 26	37.5° C (100° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
31	47/Sep 26	24.8° C (77° F)	none	0 m/s (0 mph)	10	N/A	>6 mi	
11	48/Oct 2	15.2° C (59° F)	none	0.4–1.3 m/s (1–3 mph)	100	N	3-6 mi	
12	48/Oct 2	15.2° C (59° F)	light fog	0 m/s (0 mph)	100	N/A	1 mi	
13	48/Oct 2	13.9° C (57° F)	light fog	0.4–1.3 m/s (1–3 mph)	100	SW	1 mi	
14	48/Oct 1	15.9° C (61° F)	none	0.4–1.3 m/s (1–3 mph)	90	SW	>6 mi	
15	48/Oct 1	14.6° C (58° F)	none	0 m/s (0 mph)	100	N/A	3-6 mi	
16	48/Oct 1	14.0° C (57° F)	none	0.4–1.3 m/s (1–3 mph)	100	NE	3-6 mi	

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Appendix A Bird Use Count Survey Tables

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
17	48/Oct 1	16.4° C (62° F)	none	1.8–3.6 m/s (4–8 mph)	100	S	>6 mi	
18	48/Oct 1	14.1° C (57° F)	none	0.4–1.3 m/s (1–3 mph)	100	N	3–6 mi	
19	48/Oct 1	14.0° C (57° F)	none	0 m/s (0 mph)	100	N/A	3–6 mi	
28	48/Oct 4	6.5° C (44° F)	none	1.8–5.4 m/s (4–12 mph)	50	N	1 mi	
29	48/Oct 4	9.3° C (49° F)	none	0.4–1.3 m/s (1–3 mph)	100	N	3–6 mi	
30	48/Oct 3	16.6° C (62° F)	heavy fog	0 m/s (0 mph)	100	N/A	100 m	
31	48/Oct 3	18.1° C (65° F)	none	0 m/s (0 mph)	50	N/A	1–3 mi	
11	49/Oct 9	11.3° C (52° F)	none	4.0–8.0 m/s (9–18 mph)	0	N	>6 mi	
12	49/Oct 9	11.8° C (53° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	>6 mi	
13	49/Oct 9	14.7° C (58° F)	none	1.8–3.6 m/s (4–8 mph)	5	N	>6 mi	
14	49/Oct 9	13.6° C (56° F)	none	1.8–3.6 m/s (4–8 mph)	0	N	>6 mi	
15	49/Oct 10	13.0° C (55° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
16	49/Oct 10	12.2° C (54° F)	none	1.8–3.6 m/s (4–8 mph)	0	NW	>6 mi	
17	49/Oct 10	11.2° C (52° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
18	49/Oct 10	17.0° C (63° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
19	49/Oct 10	16.7° C (62° F)	none	0.4–1.3 m/s (1–3 mph)	0	NW	>6 mi	
28	49/Oct 12	21.7° C (71° F)	none	0.4–3.6 m/s (1–8 mph)	0	S	>6 mi	
29	49/Oct 12	27.2° C (81° F)	none	0.4–1.3 m/s (1–3 mph)	0	S	>6 mi	
30	49/Oct 12	24.0° C (75° F)	none	0.4–1.3 m/s (1–3 mph)	0	N	>6 mi	
31	49/Oct 12	24.8° C (77° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
11	50/Oct 20	25.4° C (78° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
12	50/Oct 20	22.2° C (72° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
13	50/Oct 20	20.8° C (69° F)	none	0.4–1.3 m/s (1–3 mph)	0	SE	>6 mi	
14	50/Oct 19	27.2° C (81° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
15	50/Oct 19	28.0° C (82° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
16	50/Oct 19	25.7° C (78° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
17	50/Oct 19	22.5° C (73° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
18	50/Oct 19	23.7° C (75° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
19	50/Oct 19	15.7° C (60° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
28	50/Oct 17	24.2° C (76° F)	none	0.4–1.3 m/s (1–3 mph)	0	SE	>6 mi	
29	50/Oct 17	23.6° C (74° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Cloud cover (%)	Wind Direction	Visibility	Other weather
30	50/Oct 16	24.0° C (75° F)	none	0–1.3 m/s (0–3 mph)	0	E	>6 mi	
31	50/Oct 16	23.4° C (74° F)	none	0–1.3 m/s (0–3 mph)	0	NE	>6 mi	
11	51/Oct 24	15.2° C (59° F)	heavy fog	0 m/s (0 mph)	100	N/A	100 m	
12	51/Oct 24	13.5° C (56° F)	heavy fog	0 m/s (0 mph)	100	N/A	100 m	
13	51/Oct 24	14.3° C (58° F)	fog	0 m/s (0 mph)	100	N/A	3-6 mi	
14	51/Oct 24	17.1° C (63° F)	none	0 m/s (0 mph)	100	N/A	>6 mi	
15	51/Oct 25	11.3° C (52° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
16	51/Oct 25	14.1° C (57° F)	none	0 m/s (0 mph)	25	N/A	>6 mi	
17	51/Oct 24	15.8° C (60° F)	none	0 m/s (0 mph)	90	N/A	>6 mi	
18	51/Oct 25	19.1° C (66° F)	none	0 m/s (0 mph)	50	N/A	>6 mi	
19	51/Oct 25	22.9° C (73° F)	none	0 m/s (0 mph)	5	N/A	>6 mi	
28	51/Oct 22	16.8° C (62° F)	none	0–1.3 m/s (0–3 mph)	0	E	>6 mi	
29	51/Oct 22	21.0° C (70° F)	none	0 m/s (0 mph)	0	N/A	>6 mi	
30	51/Oct 23	11.9° C (53° F)	none	0 m/s (0 mph)	100	N/A	>6 mi	
31	51/Oct 23	10.2° C (50° F)	none	0.4–1.3 m/s (1–3 mph)	100	S	>6 mi	

Acronyms: C = Celsius; F = Fahrenheit; mi = miles; m = meters; m/s = meters per second; mph = mph.

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix A Table 2. Bird use by plot for bird types during bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, October 24, 2017–October 25, 2018.

Bird Type	Plot ¹												
	11	12	13	14	15	16	17	18	19	28	29	30	31
Grebes and Loons	0.02	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.04	0.00	0.00
Waterbirds	0.00	0.00	0.00	0.12	0.00	0.00	0.02	0.00	0.00	0.00	0.74	0.04	0.00
Waterfowl	0.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.52	1.22	0.00	0.00
Diurnal Raptors	0.28	0.65	0.31	0.04	0.08	0.23	0.31	0.08	0.05	0.83	12.30	0.74	0.74
Accipiters	0.06	0.02	0.08	0.00	0.03	0.05	0.06	0.05	0.05	0.04	0.43	0.00	0.04
Buteos	0.16	0.49	0.20	0.04	0.05	0.18	0.24	0.00	0.00	0.57	11.26	0.22	0.39
Eagles	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
Falcons	0.02	0.10	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.61	0.52	0.30
Osprey	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Northern Harrier	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00
Vultures	0.46	0.25	0.25	0.24	0.05	0.31	0.25	0.28	0.20	0.43	0.61	0.57	0.22
Upland Game Birds	0.62	3.47	0.84	0.84	0.75	1.69	1.16	0.35	0.95	0.35	0.17	0.04	0.65
Shorebirds	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.00	0.17	0.00	0.00	0.00
Gulls and Terns	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00
Doves/Pigeons	0.14	0.20	0.20	0.37	0.88	4.15	0.84	0.15	1.44	0.22	1.70	0.17	0.91
Owls	0.00	0.02	0.02	0.02	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.04
Hummingbirds/Swifts	2.98	0.45	2.16	0.88	0.33	0.44	0.78	0.50	0.15	0.48	0.61	0.39	0.17
Woodpeckers	0.92	1.22	1.08	0.37	0.35	1.13	1.22	0.35	0.51	0.52	0.30	0.00	0.57
Passerines	22.48	56.98	22.04	14.88	15.48	19.67	23.27	18.13	16.17	35.48	38.35	18.17	31.65
Flycatchers	0.34	0.06	0.06	0.08	0.08	0.26	0.20	0.40	0.15	0.35	0.13	0.00	0.13
Vireos	0.24	0.06	0.08	0.45	0.55	0.62	0.39	0.85	0.24	0.13	0.09	0.00	0.04
Corvids	2.82	2.80	3.35	2.20	1.10	3.26	3.31	1.55	1.66	6.70	3.22	5.26	3.30
Swallows/Martins	4.60	4.10	1.88	0.22	0.05	0.10	0.53	0.13	0.22	8.48	5.91	0.96	4.65
Chickadees/Creepers/Nuthatches	0.98	0.43	0.96	1.27	1.03	1.15	1.96	1.43	1.93	0.48	0.43	0.00	0.70
Bushtit	0.10	0.02	0.00	0.51	0.70	0.10	0.04	1.03	0.17	0.00	0.00	0.00	0.00
Wrentit	0.94	0.18	0.10	0.82	1.20	1.13	0.63	1.13	1.12	0.09	0.00	0.00	0.22
Wrens	0.46	0.31	0.24	0.31	0.20	0.56	0.35	1.00	1.00	0.09	0.09	0.00	0.09
Gnatcatchers/Kinglets	0.32	0.06	0.22	0.67	0.95	0.31	0.98	1.45	1.29	0.00	0.00	0.00	0.00
Thrushes	4.62	23.10	3.51	2.96	4.60	5.72	3.71	4.48	3.44	4.43	5.74	0.57	1.22
Pipits	0.00	1.25	1.57	0.00	0.00	0.00	0.00	0.00	0.00	2.52	4.17	2.83	1.78
Waxwings	0.06	0.20	0.00	0.04	0.05	0.00	0.04	0.05	0.07	0.26	0.52	0.00	0.00
Warblers	1.18	0.73	1.75	0.94	1.28	1.18	1.86	1.53	0.95	0.96	0.48	0.04	0.91
Tanagers/Grosbeaks/Cardinals	0.60	0.35	0.22	0.08	0.00	0.49	0.10	0.03	0.10	0.17	0.48	0.00	0.35
Sparrows/Larks	4.56	7.69	5.69	3.53	2.58	2.95	8.24	1.30	2.98	6.04	7.61	1.78	5.09
Blackbirds/Orioles	0.20	14.57	1.14	0.00	0.00	0.10	0.00	0.00	0.00	3.83	6.96	6.43	12.78
Finches/Crossbills	0.46	1.06	1.29	0.78	1.13	1.74	0.94	1.60	0.85	0.96	2.52	0.30	0.39
Unidentified	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00
Total	27.90	63.76	27.00	17.76	17.90	27.62	27.94	19.88	19.49	43.13	56.04	20.13	34.96
Standard Error	1.71	4.35	1.67	1.13	1.18	1.50	1.76	1.38	1.23	2.70	2.98	1.39	2.42

¹ Because use values have multiple decimal places and only 2 are shown, the potential for rounding discrepancies exists for calculations.

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix A Table 3. Frequency of occurrence by plot for bird types during bird use counts at the Humboldt Wind Energy Project, Humboldt County, California, October 24, 2017–October 25, 2018.

Bird Type	Plot ¹												
	11	12	13	14	15	16	17	18	19	28	29	30	31
Grebes and Loons	2.00	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00	4.35	4.35	0.00	0.00
Waterbirds	0.00	0.00	0.00	1.96	0.00	0.00	1.96	0.00	0.00	0.00	4.35	4.35	0.00
Waterfowl	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.70	4.35	0.00	0.00
Diurnal Raptors	18.00	33.33	19.61	3.92	7.50	12.82	27.45	7.50	4.88	47.83	39.13	43.48	43.48
Accipiters	6.00	1.96	3.92	0.00	2.50	5.13	5.88	5.00	4.88	4.35	4.35	0.00	4.35
Buteos	12.00	25.49	15.69	3.92	5.00	10.26	19.61	0.00	0.00	47.83	21.74	21.74	34.78
Eagles	0.00	1.96	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00
Falcons	2.00	7.84	3.92	0.00	0.00	0.00	0.00	0.00	0.00	13.04	21.74	26.09	21.74
Osprey	0.00	0.00	0.00	0.00	0.00	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00
Northern Harrier	2.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.35	0.00	0.00	0.00
Vultures	14.00	11.76	15.69	11.76	5.00	15.38	17.65	12.50	9.76	21.74	17.39	17.39	21.74
Upland Game Birds	24.00	52.94	31.37	35.29	25.00	38.46	23.53	15.00	14.63	26.09	13.04	4.35	13.04
Shorebirds	0.00	0.00	0.00	0.00	0.00	0.00	1.96	2.50	0.00	8.70	0.00	0.00	0.00
Gulls and Terns	0.00	0.00	0.00	0.00	0.00	0.00	1.96	0.00	0.00	0.00	0.00	0.00	0.00
Doves/Pigeons	8.00	9.80	15.69	5.88	22.50	46.15	17.65	10.00	26.83	8.70	47.83	8.70	26.09
Owls	0.00	1.96	1.96	1.96	0.00	0.00	0.00	2.50	2.44	0.00	0.00	0.00	4.35
Hummingbirds/Swifts	18.00	17.65	17.65	13.73	27.50	17.95	31.37	30.00	12.20	21.74	17.39	8.70	13.04
Woodpeckers	48.00	47.06	56.86	29.41	15.00	56.41	64.71	30.00	31.71	34.78	26.09	0.00	30.43
Passerines	92.00	96.08	92.16	96.08	100.00	100.00	96.08	97.50	97.56	100.00	100.00	95.65	100.00
Flycatchers	16.00	3.92	3.92	7.84	7.50	23.08	15.69	25.00	9.76	21.74	13.04	0.00	13.04
Vireos	22.00	5.88	7.84	29.41	45.00	38.46	29.41	52.50	17.07	13.04	8.70	0.00	4.35
Corvids	80.00	80.39	84.31	82.35	62.50	97.44	88.24	72.50	65.85	86.96	78.26	56.52	69.57
Swallows/Martins	18.00	13.73	15.69	9.80	2.50	5.13	13.73	7.50	4.88	47.83	30.43	26.09	56.52
Chickadees/Creepers/Nuthatches	32.00	27.45	27.45	39.22	35.00	48.72	50.98	27.50	58.54	39.13	39.13	0.00	26.09
Bushtit	6.00	1.96	0.00	9.80	10.00	2.56	1.96	12.50	4.88	0.00	0.00	0.00	0.00
Wrentit	52.00	15.69	9.80	54.90	72.50	61.54	43.14	55.00	63.41	8.70	0.00	0.00	17.39
Wrens	42.00	17.65	17.65	25.49	15.00	46.15	25.49	57.50	65.85	8.70	8.70	0.00	8.70
Gnatcatchers/Kinglets	18.00	5.88	7.84	19.61	45.00	15.38	43.14	42.50	41.46	0.00	0.00	0.00	0.00
Thrushes	54.00	80.39	60.78	47.06	60.00	64.10	62.75	72.50	60.98	65.22	69.57	26.09	52.17
Pipits	0.00	13.73	1.96	0.00	0.00	0.00	0.00	0.00	0.00	17.39	21.74	13.04	21.74
Waxwings	4.00	3.92	0.00	1.96	2.50	0.00	1.96	2.50	2.44	4.35	4.35	0.00	0.00
Warblers	38.00	31.37	43.14	29.41	42.50	28.21	47.06	45.00	39.02	39.13	26.09	4.35	30.43
Tanagers/Grosbeaks/Cardinals	20.00	15.69	11.76	5.88	0.00	25.64	9.80	2.50	4.88	17.39	26.09	0.00	21.74
Sparrows/Larks	80.00	76.47	76.47	80.39	87.50	79.49	84.31	57.50	75.61	86.96	91.30	60.87	91.30
Blackbirds/Orioles	18.00	62.75	17.65	0.00	0.00	2.56	0.00	0.00	0.00	69.57	82.61	86.96	86.96
Finches/Crossbills	26.00	29.41	17.65	21.57	20.00	56.41	37.25	35.00	21.95	21.74	56.52	13.04	26.09
Unidentified	0.00	1.96	0.00	1.96	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00
Total	92.00	98.04	94.12	98.04	100.00	100.00	98.04	97.50	97.56	100.00	100.00	100.00	100.00

¹ Because % values have multiple decimal places and only 2 are shown, the potential for rounding discrepancies exists for calculations.

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix B SMALL BIRD USE SURVEY TABLES

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix B Table 1. Small bird use count survey weather data by plot and by survey event conducted at the Humboldt Wind Energy Project, Humboldt County, California, April 3–October 26, 2018.

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Wind Direction	Cloud cover (%)	Visibility
1	1/Apr 3	11.5° C (53° F)	none	0.4-1.3 m/s (1-3 mph)	N	20	3-6 mi
2	1/Apr 3	9.7° C (49° F)	none	0.4-1.3 m/s (1-3 mph)	N	20	3-6 mi
3	1/Apr 3	7.9° C (46° F)	none	0.4-1.3 m/s (1-3 mph)	N	20	3-6 mi
4	1/Apr 3	7.4° C (45° F)	none	0 m/s (0 mph)	N/A	20	3-6 mi
5	1/Apr 3	7.7° C (46° F)	none	0 m/s (0 mph)	N/A	40	3-6 mi
6	1/Apr 3	10.0° C (50° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
7	1/Apr 3	9.4° C (49° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
8	1/Apr 3	9.4° C (49° F)	none	0 m/s (0 mph)	N/A	10	3-6 mi
9	1/Apr 3	9.4° C (49° F)	none	0 m/s (0 mph)	N/A	100	3-6 mi
10	1/Apr 3	7.2° C (45° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
1	2/Apr 11	4.7° C (40° F)	none	5.8-8.0 m/s (13-18 mph)	SE	100	3-6 mi
2	2/Apr 11	3.9° C (39° F)	none	5.8-8.0 m/s (13-18 mph)	SE	100	3-6 mi
3	2/Apr 11	4.1° C (39° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	SW	100	100 m
4	2/Apr 11	3.0° C (37° F)	heavy fog	5.8-8.0 m/s (13-18 mph)	SW	100	100 m
5	2/Apr 11	3.0° C (37° F)	heavy fog	5.8-8.0 m/s (13-18 mph)	SW	100	100 m
6	2/Apr 11	2.9° C (37° F)	moderate to heavy fog	1.8-5.4 m/s (4-12 mph)	S	100	100 m
7	2/Apr 11	3.7° C (39° F)	moderate to heavy fog	1.8-5.4 m/s (4-12 mph)	S	100	100 m
8	2/Apr 11	4.0° C (39° F)	moderate to heavy fog	1.8-5.4 m/s (4-12 mph)	S	100	200 m
9	2/Apr 11	4.4° C (40° F)	fog	1.8-5.4 m/s (4-12 mph)	S	100	200 m
10	2/Apr 11	8.5° C (47° F)	light fog	0.4-3.6 m/s (1-8 mph)	S	100	300 m
1	3/Apr 18	6.3° C (43° F)	none	0.4-1.3 m/s (1-3 mph)	S	5	3-6 mi
2	3/Apr 18	4.3° C (40° F)	none	0 m/s (0 mph)	N/A	50	3-6 mi
3	3/Apr 18	3.6° C (38° F)	none	0 m/s (0 mph)	N/A	75	3-6 mi
4	3/Apr 18	3.3° C (38° F)	none	0.4-1.3 m/s (1-3 mph)	SE	75	3-6 mi
5	3/Apr 18	4.2° C (40° F)	none	0 m/s (0 mph)	N/A	75	3-6 mi
6	3/Apr 18	3.2° C (38° F)	none	0 m/s (0 mph)	N/A	50	1 mi
7	3/Apr 18	5.8° C (42° F)	none	0 m/s (0 mph)	N/A	60	1 mi
8	3/Apr 18	5.7° C (42° F)	none	0 m/s (0 mph)	N/A	70	1 mi
9	3/Apr 18	5.7° C (42° F)	none	0 m/s (0 mph)	N/A	70	1 mi
10	3/Apr 18	4.2° C (40° F)	none	0 m/s (0 mph)	N/A	90	1 mi
1	4/Apr 24	14.9° C (59° F)	none	0 m/s (0 mph)	N/A	30	3-6 mi
2	4/Apr 24	15.8° C (60° F)	none	0.4-1.3 m/s (1-3 mph)	E	40	3-6 mi
3	4/Apr 24	17.2° C (63° F)	none	0 m/s (0 mph)	N/A	30	3-6 mi
4	4/Apr 24	17.5° C (64° F)	none	0.4-1.3 m/s (1-3 mph)	E	40	3-6 mi
5	4/Apr 24	17.0° C (63° F)	none	0 m/s (0 mph)	N/A	40	3-6 mi
6	4/Apr 24	16.6° C (62° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
7	4/Apr 24	16.6° C (62° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
8	4/Apr 24	16.6° C (62° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
9	4/Apr 24	16.6° C (62° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
10	4/Apr 24	16.6° C (62° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
1	5/May 1	4.5° C (40° F)	none	0.4-1.3 m/s (1-3 mph)	NW	75	3-6 mi
2	5/May 1	4.0° C (39° F)	none	4.0-5.4 m/s (9-12 mph)	NW	50	3-6 mi
3	5/May 1	3.0° C (37° F)	light fog	4.0-8.0 m/s (9-18 mph)	NW	100	3-6 mi
4	5/May 1	3.0° C (37° F)	light fog	4.0-8.0 m/s (9-18 mph)	NW	10	3-6 mi
5	5/May 1	3.0° C (37° F)	light fog	1.8-3.6 m/s (4-8 mph)	NW	25	3-6 mi
6	5/May 1	6.8° C (44° F)	none	0.4-3.6 m/s (1-8 mph)	NE	0	3-6 mi
7	5/May 1	4.7° C (40° F)	none	0.4-3.6 m/s (1-8 mph)	N	0	3-6 mi
8	5/May 1	4.2° C (40° F)	none	0.4-3.6 m/s (1-8 mph)	N	30	3-6 mi
9	5/May 1	5.9° C (43° F)	none	0 m/s (0 mph)	N/A	20	3-6 mi
10	5/May 1	5.0° C (41° F)	none	0.4-3.6 m/s (1-8 mph)	N	30	3-6 mi
1	6/May 8	13.7° C (57° F)	none	0 m/s (0 mph)	N/A	40	3-6 mi
2	6/May 8	13.2° C (56° F)	none	0-1.3 m/s (0-3 mph)	N	40	3-6 mi
3	6/May 8	14.8° C (59° F)	none	0 m/s (0 mph)	N/A	40	3-6 mi
4	6/May 8	16.9° C (62° F)	none	0 m/s (0 mph)	N/A	40	3-6 mi
5	6/May 8	19.2° C (67° F)	none	0 m/s (0 mph)	N/A	70	3-6 mi
6	6/May 8	14.5° C (58° F)	none	0.4-1.3 m/s (1-3 mph)	SW	0	>6 mi
7	6/May 8	13.6° C (56° F)	none	0 m/s (0 mph)	N/A	5	>6 mi
8	6/May 8	15.8° C (60° F)	none	0 m/s (0 mph)	N/A	50	>6 mi
9	6/May 8	14.0° C (57° F)	none	0 m/s (0 mph)	N/A	50	>6 mi
10	6/May 9	13.0° C (55° F)	fog	0 m/s (0 mph)	N/A	100	100 m
1	7/May 16	11.0° C (52° F)	heavy fog	0-1.3 m/s (0-3 mph)	W	100	80 m
2	7/May 16	9.8° C (50° F)	heavy fog	0 m/s (0 mph)	N/A	100	30 m
3	7/May 16	7.3° C (45° F)	heavy fog	0 m/s (0 mph)	N/A	100	50 m
4	7/May 16	10.4° C (51° F)	heavy fog	0-1.3 m/s (0-3 mph)	N	100	80 m
5	7/May 16	9.1° C (48° F)	heavy fog	0 m/s (0 mph)	N/A	100	50 m
6	7/May 16	8.1° C (47° F)	heavy fog	0 m/s (0 mph)	N/A	100	100 m
7	7/May 16	8.1° C (47° F)	heavy fog	0 m/s (0 mph)	N/A	100	100 m
8	7/May 16	8.6° C (47° F)	heavy fog	0 m/s (0 mph)	N/A	100	100 m
9	7/May 16	8.1° C (47° F)	heavy fog	0 m/s (0 mph)	N/A	100	100 m

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Wind Direction	Cloud cover (%)	Visibility
10	7/May 16	7.5° C (46° F)	heavy fog	0 m/s (0 mph)	N/A	100	100 m
21	7/May 17	8.0° C (46° F)	heavy fog, light rain	0.4-1.3 m/s (1-3 mph)	SW	100	50 m
22	7/May 17	8.0° C (46° F)	heavy fog, light rain	0.4-1.3 m/s (1-3 mph)	N	100	75 m
23	7/May 17	8.0° C (46° F)	heavy fog, light rain	1.8-3.6 m/s (4-8 mph)	N	100	75 m
24	7/May 17	7.5° C (46° F)	heavy fog, light rain	4.0-5.4 m/s (9-12 mph)	N	100	50 m
25	7/May 17	7.5° C (46° F)	heavy fog, light rain	4.0-5.4 m/s (9-12 mph)	N	100	50 m
26	7/May 17	7.5° C (46° F)	heavy fog, light rain	4.0-8.0 m/s (9-18 mph)	N	100	50 m
27	7/May 17	7.5° C (46° F)	heavy fog, light rain	4.0-8.0 m/s (9-18 mph)	N	100	50 m
28	7/May 17	7.5° C (46° F)	heavy fog, light rain	4.0-8.0 m/s (9-18 mph)	N	100	100 m
29	7/May 17	8.0° C (46° F)	heavy fog, light rain	4.0-5.4 m/s (9-12 mph)	N	100	50 m
30	7/May 17	7.9° C (46° F)	heavy fog, light rain	4.0-5.4 m/s (9-12 mph)	N	100	50 m
1	8/May 22	9.8° C (50° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
2	8/May 22	13.2° C (56° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	3-6 mi
3	8/May 22	12.9° C (55° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	3-6 mi
4	8/May 22	17.0° C (63° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
5	8/May 22	14.9° C (59° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
6	8/May 22	12.1° C (54° F)	none	0.4-3.6 m/s (1-8 mph)	NE	0	3-6 mi
7	8/May 22	13.1° C (56° F)	none	0-1.3 m/s (0-3 mph)	N	0	3-6 mi
8	8/May 22	14.8° C (59° F)	none	0-1.3 m/s (0-3 mph)	N	0	3-6 mi
9	8/May 22	10.0° C (50° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
21	8/May 24	9.5° C (49° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	N	100	50 m
22	8/May 24	8.3° C (47° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	N	100	100 m
23	8/May 24	8.4° C (47° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	N	100	100 m
24	8/May 24	8.4° C (47° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	N	100	50 m
25	8/May 24	8.5° C (47° F)	heavy fog	0 m/s (0 mph)	N/A	100	50 m
26	8/May 24	9.1° C (48° F)	heavy fog	0.4-3.6 m/s (1-8 mph)	NW	100	25 m
27	8/May 24	9.0° C (48° F)	heavy fog	0.4-3.6 m/s (1-8 mph)	N	100	30 m
28	8/May 24	8.9° C (48° F)	heavy fog	0-1.3 m/s (0-3 mph)	N	100	25 m
29	8/May 24	10.7° C (51° F)	heavy fog	0-1.3 m/s (0-3 mph)	N	100	30 m
30	8/May 24	10.2° C (50° F)	heavy fog	0-1.3 m/s (0-3 mph)	N	100	30 m
1	9/May 31	8.3° C (47° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	NW	100	100 m
2	9/May 31	4.5° C (40° F)	heavy fog	4.0-8.0 m/s (9-18 mph)	NW	100	50 m
3	9/May 31	4.7° C (40° F)	heavy fog	4.0-8.0 m/s (9-18 mph)	NW	100	50 m
4	9/May 31	4.9° C (41° F)	heavy fog	4.0-8.0 m/s (9-18 mph)	NW	100	50 m
5	9/May 31	6.0° C (43° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	N	100	50 m
6	9/May 31	4.8° C (41° F)	heavy fog	1.8-8.0 m/s (4-18 mph)	N	100	50 m
7	9/May 31	6.6° C (44° F)	heavy fog	1.8-5.4 m/s (4-12 mph)	N	100	50 m
8	9/May 31	6.7° C (44° F)	heavy fog	1.8-8.0 m/s (4-18 mph)	N	100	50 m
9	9/May 31	7.5° C (46° F)	heavy fog	0.4-3.6 m/s (1-8 mph)	N	100	50 m
10	9/May 31	5.3° C (42° F)	heavy fog	1.8-8.0 m/s (4-18 mph)	N	100	40 m
21	9/Jun 1	9.0° C (48° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
22	9/Jun 1	9.0° C (48° F)	none	1.8-3.6 m/s (4-8 mph)	N	0	>6 mi
23	9/Jun 1	6.5° C (44° F)	none	5.8-8.0 m/s (13-18 mph)	N	0	>6 mi
24	9/Jun 1	6.5° C (44° F)	none	4.0-5.4 m/s (9-12 mph)	N	0	>6 mi
25	9/Jun 1	6.5° C (44° F)	none	4.0-5.4 m/s (9-12 mph)	N	0	>6 mi
26	9/Jun 1	6.8° C (44° F)	none	4.0-5.4 m/s (9-12 mph)	N	0	>6 mi
27	9/Jun 1	6.8° C (44° F)	none	4.0-5.4 m/s (9-12 mph)	N	0	>6 mi
28	9/Jun 1	6.9° C (44° F)	none	4.0-5.4 m/s (9-12 mph)	NW	0	>6 mi
29	9/Jun 1	6.3° C (43° F)	none	1.8-3.6 m/s (4-8 mph)	NW	0	>6 mi
30	9/Jun 1	6.3° C (43° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
1	10/Jun 7	7.8° C (46° F)	light fog	0 m/s (0 mph)	N/A	100	1 mi
2	10/Jun 7	7.2° C (45° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	SW	100	50 m
3	10/Jun 7	6.1° C (43° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	N	100	100 m
4	10/Jun 7	6.1° C (43° F)	heavy fog	0 m/s (0 mph)	N/A	100	100 m
5	10/Jun 7	6.8° C (44° F)	heavy fog	0 m/s (0 mph)	N/A	100	50 m
6	10/Jun 7	6.8° C (44° F)	heavy fog	0 m/s (0 mph)	N/A	100	50 m
7	10/Jun 7	8.7° C (48° F)	heavy fog	0 m/s (0 mph)	N/A	100	100 m
21	10/Jun 7	10.5° C (51° F)	heavy fog	0 m/s (0 mph)	N/A	100	30-100 m
22	10/Jun 7	8.6° C (47° F)	none	0-1.3 m/s (0-3 mph)	N	100	1 mi
23	10/Jun 7	6.5° C (44° F)	light fog	1.8-3.6 m/s (4-8 mph)	N	100	600 m
24	10/Jun 7	11.6° C (53° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	NW	100	50 m
25	10/Jun 7	6.0° C (43° F)	fog	0.4-1.3 m/s (1-3 mph)	N	100	800 m
26	10/Jun 7	9.5° C (49° F)	none	1.8-3.6 m/s (4-8 mph)	N	100	1 mi
27	10/Jun 7	9.7° C (49° F)	fog	0.4-1.3 m/s (1-3 mph)	N	100	600-800 m
28	10/Jun 7	8.3° C (47° F)	fog	0.4-1.3 m/s (1-3 mph)	N	100	80-500 m
29	10/Jun 7	9.9° C (50° F)	heavy fog	0.4-3.6 m/s (1-8 mph)	N	100	50 m
30	10/Jun 7	9.3° C (49° F)	light fog	0.4-3.6 m/s (1-8 mph)	N	100	200 m
31	10/Jun 7	7.7° C (46° F)	fog	0 m/s (0 mph)	N/A	100	200 m
32	10/Jun 7	11.0° C (52° F)	fog	0 m/s (0 mph)	N/A	100	800 m
33	10/Jun 7	10.8° C (51° F)	none	0 m/s (0 mph)	N/A	100	800 m
1	11/Jun 14	11.6° C (53° F)	none	1.8-3.6 m/s (4-8 mph)	N/A	0	3-6 mi
2	11/Jun 14	9.4° C (49° F)	light fog	4.0-5.4 m/s (9-12 mph)	N	50	3-6 mi

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix B Small Bird Use Survey Tables

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Wind Direction	Cloud cover (%)	Visibility
3	11/Jun 14	8.2° C (47° F)	heavy fog	5.8-8.0 m/s (13-18 mph)	N	100	200 m
4	11/Jun 14	13.6° C (56° F)	moderate to heavy fog	4.0-5.4 m/s (9-12 mph)	N	100	200 m
5	11/Jun 14	8.5° C (47° F)	light fog	4.0-5.4 m/s (9-12 mph)	S	90	1 mi
6	11/Jun 14	8.6° C (47° F)	fog	0.4-1.3 m/s (1-3 mph)	N	100	500 m
7	11/Jun 14	8.5° C (47° F)	light to moderate fog	0 m/s (0 mph)	N/A	90	600 m
21	11/Jun 14	10.6° C (51° F)	light fog	1.8-5.4 m/s (4-12 mph)	N	30	400 m
22	11/Jun 14	13.9° C (57° F)	light fog	1.8-3.6 m/s (4-8 mph)	N	40	1-3 mi
23	11/Jun 14	10.0° C (50° F)	light fog	4.0-5.4 m/s (9-12 mph)	NE	50	600-800 m
24	11/Jun 14	9.4° C (49° F)	moderate to heavy fog	1.8-5.4 m/s (4-12 mph)	N	70	75-100 m
25	11/Jun 14	12.8° C (55° F)	heavy fog	4.0-5.4 m/s (9-12 mph)	N	100	75 m
26	11/Jun 14	12.2° C (54° F)	heavy fog	4.0-5.4 m/s (9-12 mph)	NW	100	50-75 m
27	11/Jun 14	8.8° C (48° F)	moderate to heavy fog	1.8-8.0 m/s (4-18 mph)	N	70	100 m
28	11/Jun 14	8.9° C (48° F)	heavy fog	1.8-5.4 m/s (4-12 mph)	N	100	75 m
29	11/Jun 14	4.8° C (41° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	NW	100	50 m
30	11/Jun 14	9.9° C (50° F)	heavy fog	1.8-5.4 m/s (4-12 mph)	N	100	50 m
31	11/Jun 14	8.3° C (47° F)	fog	0.4-1.3 m/s (1-3 mph)	N	100	500 m
32	11/Jun 14	9.7° C (49° F)	moderate to heavy fog	0.4-1.3 m/s (1-3 mph)	N	10	800 m
33	11/Jun 14	9.7° C (49° F)	fog	0.4-1.3 m/s (1-3 mph)	N	100	600 m
1	12/Jun 21	11.6° C (53° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
2	12/Jun 21	13.1° C (56° F)	none	0-1.3 m/s (0-3 mph)	NW	0	3-6 mi
3	12/Jun 21	13.8° C (57° F)	none	0.4-1.3 m/s (1-3 mph)	NW	100	25-50 m
4	12/Jun 21	13.7° C (57° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
5	12/Jun 21	17.2° C (63° F)	none	0 m/s (0 mph)	N/A	0	10-25 m
6	12/Jun 21	17.1° C (63° F)	none	0.4-3.6 m/s (1-8 mph)	NE	0	1 mi
7	12/Jun 21	18.3° C (65° F)	none	0 m/s (0 mph)	N/A	0	25-100 m
31	12/Jun 21	16.8° C (62° F)	none	0-1.3 m/s (0-3 mph)	N	0	3 mi
32	12/Jun 21	13.5° C (56° F)	light fog	0-1.3 m/s (0-3 mph)	N	70	800 m
33	12/Jun 21	16.8° C (62° F)	light fog	0.4-1.3 m/s (1-3 mph)	NW	50	25-200 m
21	12/Jun 22	10.1° C (50° F)	light to moderate fog	0.4-1.3 m/s (1-3 mph)	NW	10	600 m
22	12/Jun 22	9.3° C (49° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	NW	90	400 m
23	12/Jun 22	9.8° C (50° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	NW	10	100 m
24	12/Jun 22	9.5° C (49° F)	moderate to heavy fog	1.8-3.6 m/s (4-8 mph)	NW	50	100 m
25	12/Jun 22	9.7° C (49° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	NW	90	100 m
26	12/Jun 22	10.0° C (50° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	NW	25	50 m
27	12/Jun 22	11.9° C (53° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	N	100	50 m
28	12/Jun 22	12.3° C (54° F)	light fog	0.4-1.3 m/s (1-3 mph)	NW	5	3-6 mi
29	12/Jun 22	13.9° C (57° F)	none	5.8-8.0 m/s (13-18 mph)	NW	5	>6 mi
30	12/Jun 22	14.5° C (58° F)	none	1.8-3.6 m/s (4-8 mph)	NW	5	>6 mi
1	13/Jun 27	17.6° C (64° F)	none	0.4-3.6 m/s (1-8 mph)	N	0	3-6 mi
2	13/Jun 27	17.7° C (64° F)	none	8.5-10.7 m/s (19-24 mph)	NW	0	>6 mi
3	13/Jun 27	12.9° C (55° F)	none	1.8-5.4 m/s (4-12 mph)	N	0	3-6 mi
4	13/Jun 27	17.7° C (64° F)	none	8.5-10.7 m/s (19-24 mph)	NW	0	>6 mi
5	13/Jun 27	14.4° C (58° F)	none	0.4-3.6 m/s (1-8 mph)	N	0	3-6 mi
6	13/Jun 27	17.7° C (64° F)	none	4.0-8.0 m/s (9-18 mph)	NW	0	>6 mi
7	13/Jun 27	14.3° C (58° F)	none	0.4-3.6 m/s (1-8 mph)	N	0	3-6 mi
21	13/Jun 27	13.6° C (56° F)	none	0.4-3.6 m/s (1-8 mph)	N	0	>6 mi
22	13/Jun 27	15.3° C (60° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
23	13/Jun 27	15.2° C (59° F)	none	0.4-3.6 m/s (1-8 mph)	NE	0	>6 mi
24	13/Jun 27	13.1° C (56° F)	none	1.8-3.6 m/s (4-8 mph)	N	0	>6 mi
25	13/Jun 27	18.9° C (66° F)	none	4.0-5.4 m/s (9-12 mph)	NW	0	>6 mi
26	13/Jun 27	14.2° C (58° F)	none	4.0-5.4 m/s (9-12 mph)	N	0	>6 mi
27	13/Jun 27	19.9° C (68° F)	none	0.4-1.3 m/s (1-3 mph)	NW	0	>6 mi
28	13/Jun 27	15.2° C (59° F)	none	1.8-3.6 m/s (4-8 mph)	N	0	>6 mi
29	13/Jun 27	19.7° C (67° F)	none	0.4-1.3 m/s (1-3 mph)	NW	0	>6 mi
30	13/Jun 27	15.8° C (60° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	800 m
31	13/Jun 27	15.5° C (60° F)	none	0.4-3.6 m/s (1-8 mph)	NW	0	>6 mi
32	13/Jun 27	13.7° C (57° F)	none	0.4-3.6 m/s (1-8 mph)	NE	0	3-6 mi
33	13/Jun 27	11.1° C (52° F)	fog	0 m/s (0 mph)	N/A	0	100 m
1	14/Jul 3	5.6° C (42° F)	none	0.4-1.3 m/s (1-3 mph)	NW	0	3-6 mi
2	14/Jul 3	9.7° C (49° F)	none	1.8-3.6 m/s (4-8 mph)	N	0	>6 mi
3	14/Jul 3	8.7° C (48° F)	none	5.8-8.0 m/s (13-18 mph)	N	0	>6 mi
4	14/Jul 3	11.4° C (53° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
5	14/Jul 3	9.2° C (49° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
6	14/Jul 3	11.2° C (52° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
7	14/Jul 3	11.9° C (53° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
31	14/Jul 3	13.0° C (55° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
32	14/Jul 3	15.2° C (59° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
33	14/Jul 3	12.4° C (54° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
21	14/Jul 5	15.0° C (59° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
22	14/Jul 5	16.3° C (61° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
23	14/Jul 5	18.2° C (65° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
24	14/Jul 5	20.2° C (68° F)	none	0 m/s (0 mph)	N/A	0	>6 mi

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Wind Direction	Cloud cover (%)	Visibility
25	14/Jul 5	19.0° C (66° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
26	14/Jul 5	17.9° C (64° F)	none	0 m/s (0 mph)	N/A	10	3-6 mi
27	14/Jul 5	22.2° C (72° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
28	14/Jul 5	19.8° C (68° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
29	14/Jul 5	18.3° C (65° F)	none	0 m/s (0 mph)	N/A	10	3-6 mi
30	14/Jul 5	18.4° C (65° F)	none	0 m/s (0 mph)	N/A	10	3-6 mi
21	15/Jul 10	16.6° C (62° F)	none	0.4-1.3 m/s (1-3 mph)	NW	0	>6 mi
22	15/Jul 10	16.6° C (62° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
23	15/Jul 10	17.6° C (64° F)	none	4.0-5.4 m/s (9-12 mph)	NW	0	>6 mi
24	15/Jul 10	12.8° C (55° F)	none	1.8-5.4 m/s (4-12 mph)	N	0	>6 mi
25	15/Jul 10	12.0° C (54° F)	none	1.8-3.6 m/s (4-8 mph)	N	0	>6 mi
26	15/Jul 10	11.3° C (52° F)	none	4.0-5.4 m/s (9-12 mph)	N	0	>6 mi
27	15/Jul 10	13.2° C (56° F)	none	1.8-3.6 m/s (4-8 mph)	NW	0	>6 mi
28	15/Jul 10	12.1° C (54° F)	none	1.8-3.6 m/s (4-8 mph)	N	0	3-6 mi
29	15/Jul 10	14.5° C (58° F)	none	1.8-3.6 m/s (4-8 mph)	NW	0	>6 mi
30	15/Jul 10	12.4° C (54° F)	none	1.8-3.6 m/s (4-8 mph)	N	0	>6 mi
1	15/Jul 12	28.0° C (82° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
2	15/Jul 12	27.5° C (82° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
3	15/Jul 12	26.2° C (79° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
4	15/Jul 12	28.3° C (83° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
5	15/Jul 12	25.5° C (78° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
6	15/Jul 12	22.8° C (73° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
7	15/Jul 12	22.4° C (72° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
31	15/Jul 12	22.9° C (73° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
32	15/Jul 12	21.7° C (71° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
33	15/Jul 12	18.5° C (65° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
21	16/Jul 19	16.0° C (61° F)	none	0.4-3.6 m/s (1-8 mph)	NW	50	>6 mi
22	16/Jul 19	16.1° C (61° F)	none	1.8-3.6 m/s (4-8 mph)	N	25	>6 mi
23	16/Jul 19	16.6° C (62° F)	none	4.0-5.4 m/s (9-12 mph)	N	25	>6 mi
24	16/Jul 19	17.1° C (63° F)	none	1.8-5.4 m/s (4-12 mph)	NW	30	>6 mi
25	16/Jul 19	16.7° C (62° F)	none	4.0-5.4 m/s (9-12 mph)	N	40	>6 mi
26	16/Jul 19	16.8° C (62° F)	none	4.0-5.4 m/s (9-12 mph)	N	0	>6 mi
27	16/Jul 19	19.0° C (66° F)	none	0.4-5.4 m/s (1-12 mph)	NW	40	>6 mi
28	16/Jul 19	19.6° C (67° F)	none	4.0-5.4 m/s (9-12 mph)	N	40	>6 mi
29	16/Jul 19	19.2° C (67° F)	none	5.8-8.0 m/s (13-18 mph)	N	10	>6 mi
30	16/Jul 19	20.3° C (69° F)	none	1.8-3.6 m/s (4-8 mph)	N	10	>6 mi
1	16/Jul 20	16.1° C (61° F)	none	0.4-1.3 m/s (1-3 mph)	N	10	3-6 mi
2	16/Jul 20	16.5° C (62° F)	none	0.4-1.3 m/s (1-3 mph)	NE	0	3-6 mi
3	16/Jul 20	16.9° C (62° F)	none	0.4-3.6 m/s (1-8 mph)	NW	0	3-6 mi
4	16/Jul 20	16.8° C (62° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	3-6 mi
5	16/Jul 20	21.6° C (71° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
6	16/Jul 20	22.2° C (72° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
7	16/Jul 20	25.2° C (77° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
31	16/Jul 20	22.5° C (73° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
32	16/Jul 20	24.3° C (76° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
33	16/Jul 20	19.4° C (67° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
21	17/Aug 1	12.8° C (55° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	NW	100	50-100 m
22	17/Aug 1	10.5° C (51° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	N	100	300 m
23	17/Aug 1	10.2° C (50° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	N	100	250 m
24	17/Aug 1	8.8° C (48° F)	heavy fog	4.0-5.4 m/s (9-12 mph)	N	100	25-50 m
25	17/Aug 1	10.6° C (51° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	NW	100	25-50 m
26	17/Aug 1	10.1° C (50° F)	heavy fog	4.0-5.4 m/s (9-12 mph)	N	100	100 m
27	17/Aug 1	11.4° C (53° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	N	100	25 m
28	17/Aug 1	11.1° C (52° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	N	100	25-50 m
29	17/Aug 1	10.7° C (51° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	N	100	50 m
30	17/Aug 1	11.0° C (52° F)	heavy fog	1.8-5.4 m/s (4-12 mph)	N	100	175 m
1	17/Aug 2	14.3° C (58° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	N	100	50 m
2	17/Aug 2	9.4° C (49° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	E	100	150 m
3	17/Aug 2	14.8° C (59° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	N	100	25 m
4	17/Aug 2	14.4° C (58° F)	light fog	0.4-1.3 m/s (1-3 mph)	NW	60	300-500 m
5	17/Aug 2	10.3° C (51° F)	light fog	0.4-1.3 m/s (1-3 mph)	S	60	1 mi
6	17/Aug 2	12.7° C (55° F)	light fog	0 m/s (0 mph)	N/A	70	700 m
7	17/Aug 2	no data	none	0 m/s (0 mph)	N/A	0	300-500 m
31	17/Aug 2	11.5° C (53° F)	fog	0 m/s (0 mph)	N/A	100	800 m
32	17/Aug 2	20.1° C (68° F)	fog	0.4-1.3 m/s (1-3 mph)	N	100	50-100 m
33	17/Aug 2	11.0° C (52° F)	light to moderate fog	0 m/s (0 mph)	N/A	100	800 m
21	18/Aug 8	23.0° C (73° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
22	18/Aug 8	21.6° C (71° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
23	18/Aug 8	23.6 C (74° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
24	18/Aug 8	24.2° C (76° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
25	18/Aug 8	20.8° C (69° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
26	18/Aug 8	19.2° C (67° F)	none	0 m/s (0 mph)	N/A	0	>6 mi

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix B Small Bird Use Survey Tables

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Wind Direction	Cloud cover (%)	Visibility
27	18/Aug 8	13.7° C (57° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
28	18/Aug 8	14.3° C (58° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
29	18/Aug 8	17.5° C (64° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
30	18/Aug 8	17.5° C (64° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
1	18/Aug 9	29.1° C (84° F)	none	0 m/s (0 mph)	N/A	0	1-3 mi
2	18/Aug 9	29.4° C (85° F)	none	0.4-1.3 m/s (1-3 mph)	NE	0	3-6 mi
3	18/Aug 9	22.4° C (72° F)	none	0 m/s (0 mph)	N/A	0	1-3 mi
4	18/Aug 9	26.6° C (80° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
5	18/Aug 9	25.0° C (77° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
6	18/Aug 9	23.7 C (75° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	3-6 mi
7	18/Aug 9	21.5° C (71° F)	none	0 m/s (0 mph)	N/A	0	1-3 mi
31	18/Aug 9	20.2° C (68° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	3-6 mi
32	18/Aug 9	19.8° C (68° F)	none	0 m/s (0 mph)	N/A	0	1-3 mi
33	18/Aug 9	17.4° C (63° F)	none	0 m/s (0 mph)	N/A	0	1-3 mi
1	19/Aug 16	12.0° C (54° F)	heavy fog	0 m/s (0 mph)	N/A	50	50 m
2	19/Aug 16	16.8° C (62° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
3	19/Aug 16	18.8° C (66° F)	heavy fog	0 m/s (0 mph)	N/A	100	25 m
4	19/Aug 16	18.4° C (65° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
5	19/Aug 16	19.5° C (67° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
6	19/Aug 16	20.6° C (69° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
7	19/Aug 16	17.6° C (64° F)	light fog	0 m/s (0 mph)	N/A	0	1-3 mi
31	19/Aug 16	22.1° C (72° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
32	19/Aug 16	21.7° C (71° F)	light fog	0 m/s (0 mph)	N/A	0	1-3 mi
33	19/Aug 16	19.0° C (66° F)	heavy fog	0 m/s (0 mph)	N/A	100	25 m
21	19/Aug 18	19.9° C (68° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	1-3 mi
22	19/Aug 18	19.8° C (68° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	1-3 mi
23	19/Aug 18	21.7° C (71° F)	none	0 m/s (0 mph)	N/A	0	1 mi
24	19/Aug 18	22.8° C (73° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	1-3 mi
25	19/Aug 18	26.3° C (79° F)	none	0 m/s (0 mph)	N/A	0	1-3 mi
26	19/Aug 18	29.0° C (84° F)	none	0 m/s (0 mph)	N/A	0	1-3 mi
27	19/Aug 18	27.2° C (81° F)	none	0 m/s (0 mph)	N/A	0	1-3 mi
28	19/Aug 18	24.2° C (76° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	1-3 mi
29	19/Aug 18	27.5° C (82° F)	none	0 m/s (0 mph)	N/A	0	1-3 mi
30	19/Aug 18	30.2° C (86° F)	none	0 m/s (0 mph)	N/A	0	1-3 mi
1	20/Aug 21	27.3° C (81° F)	light fog	0 m/s (0 mph)	N/A	0	1-3 mi
2	20/Aug 21	25.7° C (78° F)	light fog	0 m/s (0 mph)	N/A	no data	1-3 mi
3	20/Aug 21	27.0° C (81° F)	light fog	0.4-1.3 m/s (1-3 mph)	NW	0	1-3 mi
4	20/Aug 21	25.4° C (78° F)	light fog	0 m/s (0 mph)	N/A	0	1-3 mi
5	20/Aug 21	25.1° C (77° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
6	20/Aug 21	23.6 C (74° F)	light fog	0 m/s (0 mph)	N/A	0	3-6 mi
7	20/Aug 21	20.1° C (68° F)	light fog	0 m/s (0 mph)	N/A	0	1-3 mi
31	20/Aug 21	17.7° C (64° F)	light fog	0 m/s (0 mph)	N/A	0	1-3 mi
32	20/Aug 21	16.3° C (61° F)	light fog	0 m/s (0 mph)	N/A	0	1-3 mi
33	20/Aug 21	14.2° C (58° F)	light fog	0 m/s (0 mph)	N/A	0	1-3 mi
21	20/Aug 23	10.9° C (52° F)	fog	0.4-1.3 m/s (1-3 mph)	N	70	90 m
22	20/Aug 23	13.6° C (56° F)	heavy fog	4.0-5.4 m/s (9-12 mph)	N	100	30-60 m
23	20/Aug 23	10.9° C (52° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	N	100	60 m
24	20/Aug 23	8.8° C (48° F)	heavy fog	4.0-5.4 m/s (9-12 mph)	N	100	20-40 m
25	20/Aug 23	8.8° C (48° F)	heavy fog	4.0-5.4 m/s (9-12 mph)	N	100	20-40 m
26	20/Aug 23	12.0° C (54° F)	none	4.0-5.4 m/s (9-12 mph)	N	100	15-25 m
27	20/Aug 23	10.8° C (51° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	N	100	60 m
28	20/Aug 23	10.7° C (51° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	N	100	70 m
29	20/Aug 23	14.0° C (57° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	N	100	15-25 m
30	20/Aug 23	10.9° C (52° F)	heavy fog	0.4-3.6 m/s (1-8 mph)	NW	100	100 m
1	21/Aug 29	13.7° C (57° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
2	21/Aug 29	16.8° C (62° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
3	21/Aug 29	15.6° C (60° F)	none	0-1.3 m/s (0-3 mph)	SE	10	>6 mi
4	21/Aug 29	14.9° C (59° F)	none	0.4-1.3 m/s (1-3 mph)	W	0	3-6 mi
5	21/Aug 29	15.8° C (60° F)	none	0 m/s (0 mph)	N/A	10	>6 mi
6	21/Aug 29	19.8° C (68° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
7	21/Aug 29	16.0° C (61° F)	none	0 m/s (0 mph)	N/A	10	3-6 mi
31	21/Aug 29	20.1° C (68° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
32	21/Aug 29	21.7° C (71° F)	none	0 m/s (0 mph)	N/A	0	3-6 mi
33	21/Aug 29	14.0° C (57° F)	light fog	0 m/s (0 mph)	N/A	100	300 m
21	21/Aug 30	13.1° C (56° F)	heavy fog	0 m/s (0 mph)	N/A	100	20 m
22	21/Aug 30	10.4° C (51° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	N	100	125 m
23	21/Aug 30	11.4° C (53° F)	heavy fog	0 m/s (0 mph)	N/A	100	100 m
24	21/Aug 30	13.5° C (56° F)	heavy fog	0 m/s (0 mph)	N/A	100	20 m
25	21/Aug 30	16.1° C (61° F)	heavy fog	0 m/s (0 mph)	N/A	100	20 m
26	21/Aug 30	10.4° C (51° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	N	100	50 m
27	21/Aug 30	16.3° C (61° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	SW	100	15 m
28	21/Aug 30	15.4° C (60° F)	heavy fog	0 m/s (0 mph)	N/A	100	25 m

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Wind Direction	Cloud cover (%)	Visibility
29	21/Aug 30	11.1° C (52° F)	heavy fog	0.4-3.6 m/s (1-8 mph)	N	100	75 m
30	21/Aug 30	10.5° C (51° F)	heavy fog	0.4-3.6 m/s (1-8 mph)	S	100	40 m
1	22/Sep 4	22.5° C (73° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
2	22/Sep 4	21.6° C (71° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
3	22/Sep 4	19.3° C (67° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
4	22/Sep 4	22.1° C (72° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
5	22/Sep 4	18.7° C (66° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
6	22/Sep 4	18.8° C (66° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
7	22/Sep 4	17.2° C (63° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
21	22/Sep 7	15.6° C (60° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
22	22/Sep 7	15.9° C (60° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
23	22/Sep 7	17.1° C (63° F)	none	1.8-5.4 m/s (4-12 mph)	N	0	>6 mi
24	22/Sep 7	15.7° C (60° F)	none	1.8-3.6 m/s (4-8 mph)	N	0	>6 mi
25	22/Sep 7	14.6° C (58° F)	none	1.8-3.6 m/s (4-8 mph)	N	0	>6 mi
26	22/Sep 7	14.0° C (57° F)	none	1.8-5.4 m/s (4-12 mph)	N	0	>6 mi
27	22/Sep 7	14.9° C (59° F)	none	0.4-1.3 m/s (1-3 mph)	N	10	>6 mi
28	22/Sep 7	14.0° C (57° F)	none	0.4-1.3 m/s (1-3 mph)	N	25	>6 mi
29	22/Sep 7	13.2° C (56° F)	none	0.4-1.3 m/s (1-3 mph)	N	10	>6 mi
30	22/Sep 7	13.3° C (56° F)	none	0.4-1.3 m/s (1-3 mph)	N	10	>6 mi
31	22/Sep 4	16.8° C (62° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
32	22/Sep 4	15.3° C (60° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
33	22/Sep 4	12.4° C (54° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
1	23/Sep 12	13.5° C (56° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	NW	100	100 m
2	23/Sep 12	9.5° C (49° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	NW	100	50 m
3	23/Sep 12	8.7° C (48° F)	heavy fog	4.0-8.0 m/s (9-18 mph)	NW	100	100 m
4	23/Sep 12	9.0° C (48° F)	heavy fog	0 m/s (0 mph)	N/A	100	50 m
5	23/Sep 12	10.1° C (50° F)	heavy fog	0.4-1.3 m/s (1-3 mph)	S	100	50 m
6	23/Sep 13	8.5° C (47° F)	heavy fog	0 m/s (0 mph)	N/A	100	50 m
7	23/Sep 13	9.5° C (49° F)	moderate to heavy fog	0 m/s (0 mph)	N/A	100	200 m
21	23/Sep 14	8.7° C (48° F)	light to moderate fog	0.4-1.3 m/s (1-3 mph)	N	90	1 mi
22	23/Sep 14	8.0° C (46° F)	light fog	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
23	23/Sep 14	9.2° C (49° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
24	23/Sep 14	11.7° C (53° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
25	23/Sep 14	10.0° C (50° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
26	23/Sep 14	10.7° C (51° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
27	23/Sep 14	12.3° C (54° F)	none	1.8-3.6 m/s (4-8 mph)	N	0	>6 mi
28	23/Sep 14	11.3° C (52° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
29	23/Sep 14	11.8° C (53° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
30	23/Sep 14	14.0° C (57° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
31	23/Sep 13	12.0° C (54° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
32	23/Sep 13	11.0° C (52° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
33	23/Sep 13	12.0° C (54° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
1	24/Sep 21	21.8° C (71° F)	none	0 m/s (0 mph)	N/A	10	>6 mi
2	24/Sep 21	19.4° C (67° F)	none	0 m/s (0 mph)	N/A	25	>6 mi
3	24/Sep 21	17.4° C (63° F)	none	0.4-1.3 m/s (1-3 mph)	N	10	>6 mi
4	24/Sep 21	17.8° C (64° F)	none	0-1.3 m/s (0-3 mph)	N	10	>6 mi
5	24/Sep 21	15.6° C (60° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
6	24/Sep 20	12.4° C (54° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
7	24/Sep 20	14.1° C (57° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
21	24/Sep 18	12.7° C (55° F)	none	0 m/s (0 mph)	N/A	10	>6 mi
22	24/Sep 18	12.2° C (54° F)	light fog	0 m/s (0 mph)	N/A	50	3-6 mi
23	24/Sep 18	11.7° C (53° F)	moderate fog	1.8-3.6 m/s (4-8 mph)	N	0	500 m
24	24/Sep 18	10.0° C (50° F)	heavy fog	1.8-3.6 m/s (4-8 mph)	N	0	100 m
25	24/Sep 18	9.5° C (49° F)	none	1.8-3.6 m/s (4-8 mph)	N	0	>6 mi
26	24/Sep 18	9.6° C (49° F)	light to moderate fog	1.8-3.6 m/s (4-8 mph)	N	0	3-6 mi
27	24/Sep 18	9.6° C (49° F)	heavy fog	0 m/s (0 mph)	N/A	0	50 m
28	24/Sep 18	10.1° C (50° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
29	24/Sep 18	8.7° C (48° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
30	24/Sep 18	8.9° C (48° F)	light fog	0 m/s (0 mph)	N/A	0	>6 mi
31	24/Sep 20	12.3° C (54° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
32	24/Sep 20	13.6° C (56° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
33	24/Sep 20	11.7° C (53° F)	moderate fog	0 m/s (0 mph)	N/A	100	200 m
1	25/Sep 25	19.9° C (68° F)	none	1.8-5.4 m/s (4-12 mph)	E	0	>6 mi
2	25/Sep 25	22.8° C (73° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
3	25/Sep 25	22.4° C (72° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
4	25/Sep 25	25.0° C (77° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
5	25/Sep 25	22.9° C (73° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
6	25/Sep 26	20.0° C (68° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
7	25/Sep 26	21.4° C (71° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
21	25/Sep 27	21.2° C (70° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
22	25/Sep 27	22.9° C (73° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
23	25/Sep 27	26.3° C (79° F)	none	0 m/s (0 mph)	N/A	0	>6 mi

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix B Small Bird Use Survey Tables

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Wind Direction	Cloud cover (%)	Visibility
24	25/Sep 27	27.6° C (82° F)	none	0 m/s (0 mph)	N/A	5	>6 mi
25	25/Sep 27	32.0° C (90° F)	none	0 m/s (0 mph)	N/A	5	>6 mi
26	25/Sep 27	31.7° C (89° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
27	25/Sep 27	28.8° C (84° F)	none	0 m/s (0 mph)	N/A	10	>6 mi
28	25/Sep 27	28.5° C (83° F)	none	0 m/s (0 mph)	N/A	5	>6 mi
29	25/Sep 27	28.5° C (83° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
30	25/Sep 27	33.5° C (92° F)	none	0.4-1.3 m/s (1-3 mph)	NE	10	>6 mi
31	25/Sep 26	24.2° C (76° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
32	25/Sep 26	24.4° C (76° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
33	25/Sep 26	22.6° C (73° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
1	26/Oct 3	21.0° C (70° F)	none	0 m/s (0 mph)	N/A	75	>6 mi
2	26/Oct 3	17.0° C (63° F)	none	0 m/s (0 mph)	N/A	80	>6 mi
3	26/Oct 3	15.0° C (59° F)	none	0 m/s (0 mph)	N/A	25	>6 mi
4	26/Oct 3	16.0° C (61° F)	none	0 m/s (0 mph)	N/A	5	>6 mi
5	26/Oct 3	15.2° C (59° F)	none	0 m/s (0 mph)	N/A	10	>6 mi
6	26/Oct 2	14.6° C (58° F)	heavy fog	0 m/s (0 mph)	N/A	100	100 m
7	26/Oct 2	14.6° C (58° F)	heavy fog, light rain	0 m/s (0 mph)	N/A	100	100 m
21	26/Oct 5	17.0° C (63° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
22	26/Oct 5	13.7° C (57° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
23	26/Oct 5	13.4° C (56° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
24	26/Oct 5	12.5° C (55° F)	none	0.4-1.3 m/s (1-3 mph)	N	0	>6 mi
25	26/Oct 5	11.9° C (53° F)	none	0-1.3 m/s (0-3 mph)	N	0	>6 mi
26	26/Oct 5	10.5° C (51° F)	none	0-1.3 m/s (0-3 mph)	N	0	>6 mi
27	26/Oct 5	10.6° C (51° F)	none	0.4-1.3 m/s (1-3 mph)	N	10	>6 mi
28	26/Oct 5	10.4° C (51° F)	none	0 m/s (0 mph)	N/A	10	>6 mi
29	26/Oct 5	10.3° C (51° F)	none	0-1.3 m/s (0-3 mph)	N	75	>6 mi
30	26/Oct 5	9.9° C (50° F)	none	0-1.3 m/s (0-3 mph)	N	0	>6 mi
31	26/Oct 2	14.0° C (57° F)	moderate fog, light rain	0 m/s (0 mph)	N/A	100	800 m
32	26/Oct 2	16.5° C (62° F)	moderate fog, light rain	0 m/s (0 mph)	N/A	100	800 m
33	26/Oct 2	16.2° C (61° F)	none	0 m/s (0 mph)	N/A	100	>6 mi
1	27/Oct 10	6.0° C (43° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
2	27/Oct 10	8.5° C (47° F)	none	0-1.3 m/s (0-3 mph)	N	15	>6 mi
3	27/Oct 10	5.9° C (43° F)	none	0.4-3.6 m/s (1-8 mph)	N	0	>6 mi
4	27/Oct 10	8.2° C (47° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
5	27/Oct 10	10.7° C (51° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
6	27/Oct 11	11.3° C (52° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
7	27/Oct 11	11.5° C (53° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
21	27/Oct 12	12.0° C (54° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
22	27/Oct 12	14.7° C (58° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
23	27/Oct 12	16.3° C (61° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
24	27/Oct 12	16.4° C (62° F)	none	0-1.3 m/s (0-3 mph)	NE	0	>6 mi
25	27/Oct 12	18.8° C (66° F)	none	0.4-1.3 m/s (1-3 mph)	NE	0	>6 mi
26	27/Oct 12	19.5° C (67° F)	none	0.4-1.3 m/s (1-3 mph)	NE	0	>6 mi
27	27/Oct 12	20.4° C (69° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
28	27/Oct 12	20.4° C (69° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
29	27/Oct 12	21.3° C (70° F)	none	0.4-1.3 m/s (1-3 mph)	NE	0	>6 mi
30	27/Oct 12	22.0° C (72° F)	none	0.4-1.3 m/s (1-3 mph)	NE	0	>6 mi
31	27/Oct 11	11.9° C (53° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
32	27/Oct 11	10.4° C (51° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
33	27/Oct 11	10.4° C (51° F)	light fog	0 m/s (0 mph)	N/A	0	>6 mi
1	28/Oct 16	21.7° C (71° F)	none	0-1.3 m/s (0-3 mph)	E	0	>6 mi
2	28/Oct 16	19.5° C (67° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
3	28/Oct 16	20.3° C (69° F)	none	0-1.3 m/s (0-3 mph)	E	0	>6 mi
4	28/Oct 16	19.0° C (66° F)	none	0-1.3 m/s (0-3 mph)	E	0	>6 mi
5	28/Oct 16	15.3° C (60° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
6	28/Oct 15	16.1° C (61° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
7	28/Oct 15	15.7° C (60° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
21	28/Oct 19	23.7 C (75° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
22	28/Oct 19	20.9° C (70° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
23	28/Oct 19	18.9° C (66° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
24	28/Oct 19	17.9° C (64° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
25	28/Oct 19	14.9° C (59° F)	none	0 m/s (0 mph)	N/A	50	>6 mi
26	28/Oct 17	21.3° C (70° F)	none	0.4-1.3 m/s (1-3 mph)	E	0	>6 mi
27	28/Oct 17	17.7° C (64° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
28	28/Oct 17	19.0° C (66° F)	none	0.4-1.3 m/s (1-3 mph)	NE	0	>6 mi
29	28/Oct 17	18.7° C (66° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
30	28/Oct 17	17.1° C (63° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
31	28/Oct 15	14.4° C (58° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
32	28/Oct 15	12.7° C (55° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
33	28/Oct 15	13.8° C (57° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
1	29/Oct 25	11.4° C (53° F)	none	0 m/s (0 mph)	N/A	10	>6 mi
2	29/Oct 25	11.8° C (53° F)	none	0.4-1.3 m/s (1-3 mph)	N	10	>6 mi

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Plot No.	Survey Event/Date	Temperature	Precipitation	Wind Speed	Wind Direction	Cloud cover (%)	Visibility
3	29/Oct 25	13.2° C (56° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
4	29/Oct 25	14.3° C (58° F)	none	0 m/s (0 mph)	N/A	5	>6 mi
5	29/Oct 25	13.6° C (56° F)	none	0 m/s (0 mph)	N/A	0	>6 mi
6	29/Oct 26	13.5° C (56° F)	none	0 m/s (0 mph)	N/A	5	>6 mi
7	29/Oct 26	16.5° C (62° F)	none	0 m/s (0 mph)	N/A	10	>6 mi
21	29/Oct 23	8.4° C (47° F)	none	0.4-1.3 m/s (1-3 mph)	W	100	>6 mi
22	29/Oct 23	5.9° C (43° F)	none	4.0-5.4 m/s (9-12 mph)	W	75	>6 mi
23	29/Oct 23	6.1° C (43° F)	none	0.4-1.3 m/s (1-3 mph)	W	100	>6 mi
24	29/Oct 23	7.7° C (46° F)	none	1.8-3.6 m/s (4-8 mph)	S	100	>6 mi
25	29/Oct 23	6.0° C (43° F)	none	1.8-3.6 m/s (4-8 mph)	S	100	>6 mi
26	29/Oct 24	11.1° C (52° F)	light to moderate fog	0 m/s (0 mph)	N/A	100	1 mi
27	29/Oct 24	12.3° C (54° F)	none	0 m/s (0 mph)	N/A	90	>6 mi
28	29/Oct 24	10.3° C (51° F)	light to moderate fog	0.4-1.3 m/s (1-3 mph)	N	50	3-6 mi
29	29/Oct 24	12.0° C (54° F)	none	0 m/s (0 mph)	N/A	75	3-6 mi
30	29/Oct 24	14.4° C (58° F)	light fog	0 m/s (0 mph)	N/A	90	1 mi
31	29/Oct 26	15.0° C (59° F)	none	0 m/s (0 mph)	N/A	10	>6 mi
32	29/Oct 26	14.3° C (58° F)	none	0 m/s (0 mph)	N/A	10	>6 mi
33	29/Oct 26	15.0° C (59° F)	none	0 m/s (0 mph)	N/A	10	>6 mi

Acronyms: C = Celsius; F = Fahrenheit; mi = miles; m = meters; m/s = meters per second; mph = mph.

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix B Table 2. Bird use by plot for bird types during small bird use counts conducted at the Humboldt Wind Energy Project, Humboldt County, California, April 3–October 26, 2018.

Bird Type	Plot ¹																						
	1	2	3	4	5	6	7	8	9	10	21	22	23	24	25	26	27	28	29	30	31	32	33
Diurnal Raptors	0.00	0.07	0.00	0.21	0.03	0.00	0.00	0.00	0.00	0.13	0.04	0.30	0.09	0.04	0.00	0.35	0.09	0.09	0.48	0.00	0.00	0.05	
Accipiters	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.04	0.00	0.00	
Buteos	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	
Falcons	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09	0.04	0.00	0.26	0.09	0.09	0.22	0.00	0.00	0.00	
Northern Harrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Vultures	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Upland Game Birds	0.28	0.83	0.03	0.00	0.38	0.21	0.17	0.00	0.00	0.04	0.00	1.52	0.00	0.00	0.00	0.17	0.04	0.00	0.00	0.15	0.40	0.05	
Doves/Pigeons	0.79	0.34	0.14	1.17	0.17	0.00	0.21	0.11	0.00	0.00	0.26	0.17	0.00	0.00	0.00	0.22	0.09	0.09	1.17	0.05	0.40	0.15	
Owls	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	
Hummingbirds/Swifts	0.03	0.14	0.03	0.00	0.03	0.00	0.07	0.44	0.11	0.00	0.13	0.04	0.17	0.13	0.13	0.04	0.22	0.43	0.30	1.30	0.00	0.70	0.00
Woodpeckers	0.10	0.10	0.10	0.24	0.21	0.41	0.21	0.22	0.00	0.50	0.04	0.00	0.17	0.00	0.04	0.00	0.09	0.13	0.00	0.00	0.30	0.80	0.00
Passerines	9.55	7.34	5.76	15.86	6.52	7.72	7.76	5.56	5.44	5.75	14.57	17.91	14.26	11.87	9.13	8.04	13.09	9.48	9.61	6.52	7.65	12.15	8.70
Flycatchers	0.10	0.03	0.03	0.07	0.07	0.03	0.07	0.22	0.11	0.13	0.04	0.04	0.30	0.00	0.00	0.09	0.09	0.00	0.00	0.00	0.30	0.00	0.30
Vireos	0.07	0.03	0.03	0.17	0.21	0.07	0.03	0.00	0.33	0.00	0.13	0.00	0.17	0.00	0.00	0.00	0.04	0.00	0.00	0.10	0.10	0.05	
Corvids	0.07	1.14	1.00	1.45	1.34	1.41	1.59	1.11	0.33	1.00	0.87	0.17	0.39	0.78	0.61	0.43	0.91	0.04	0.22	0.30	1.40	1.10	1.25
Swallows/Martins	0.00	0.00	0.00	0.10	0.00	0.10	0.07	0.00	0.00	0.00	0.91	0.57	0.26	0.22	0.65	0.13	0.48	2.65	2.13	1.43	0.10	0.00	0.50
Chickadees/Creepers/Nuthatches	0.93	0.34	1.48	0.93	0.97	1.59	1.72	0.56	1.44	0.75	0.30	0.04	1.04	0.00	0.00	0.00	1.43	0.09	0.00	0.00	1.45	1.05	2.20
Bushtit	0.07	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	
Wrentit	0.00	0.00	0.07	0.00	0.10	0.03	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.04	0.00	0.00	1.10	1.15	0.25
Wrens	0.00	0.03	0.34	0.10	0.10	0.31	0.21	0.11	0.44	0.63	0.00	0.00	0.17	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.20	0.45	1.20
Gnatcatchers/Kinglets	0.07	0.03	0.24	0.00	0.21	0.17	0.24	0.00	0.00	0.25	0.00	0.00	0.13	0.00	0.00	0.00	0.22	0.00	0.00	0.15	0.00	0.30	
Thrushes	2.03	0.52	0.62	3.90	1.00	1.24	0.66	0.22	0.22	1.38	3.17	1.91	1.74	0.30	0.39	0.13	2.04	0.04	0.26	0.52	0.80	3.70	0.70
Pipits	0.10	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.04	0.09	2.78	2.04	2.43	0.09	0.13	0.65	0.43	0.00	0.00	0.00	
Waxwings	0.14	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.74	0.00	0.35	0.78	0.00	0.00	0.05	0.00	0.35	
Warblers	0.72	0.59	0.97	0.93	0.52	0.76	1.00	1.78	2.44	1.38	0.61	0.52	0.74	0.00	0.04	0.09	1.26	0.35	0.04	0.04	0.65	0.90	0.75
Tanagers/Grosbeaks/Cardinals	0.66	0.41	0.21	1.07	0.14	0.03	0.03	0.00	0.00	0.00	0.52	0.26	0.17	0.00	0.04	0.00	0.57	0.26	0.04	0.00	0.05	0.15	0.05
Sparrows/Larks	2.72	3.07	0.69	4.83	1.69	1.97	2.07	1.00	0.00	0.25	3.39	2.04	3.57	3.91	1.87	1.57	3.65	1.91	3.39	1.17	0.90	3.25	0.65
Blackbirds/Orioles	0.31	0.72	0.00	0.66	0.00	0.00	0.00	0.00	0.00	0.00	1.78	1.57	0.17	3.78	2.61	3.09	0.52	2.22	2.26	1.78	0.00	0.00	
Finches/Crossbills	1.55	0.38	0.07	1.62	0.07	0.00	0.07	0.22	0.11	0.00	2.83	10.70	5.30	0.09	0.13	0.09	0.96	0.96	0.61	0.83	0.40	0.25	0.15
Total	10.76	8.83	6.07	17.48	7.38	8.34	8.41	6.33	5.56	6.25	14.91	18.30	16.65	12.09									

HUMBOLDT WIND ENERGY PROJECT BIRD USE COUNT AND SMALL BIRD USE COUNT SURVEY REPORT

Appendix B Table 3. Frequency of occurrence by plot for bird types during small bird use counts conducted at the Humboldt Wind Energy Project, Humboldt County, California, April 3–October 26, 2018.

Bird Type	Plot ¹																							
	1	2	3	4	5	6	7	8	9	10	21	22	23	24	25	26	27	28	29	30	31	32	33	
Diurnal Raptors	0.00	6.90	0.00	13.79	3.45	0.00	0.00	0.00	0.00	13.04	4.35	26.09	8.70	4.35	0.00	21.74	4.35	8.70	21.74	0.00	0.00	5.00		
Accipiters	0.00	0.00	0.00	3.45	3.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.70	0.00	0.00	4.35	0.00	0.00	0.00		
Buteos	0.00	0.00	0.00	13.79	0.00	0.00	0.00	0.00	0.00	0.00	13.04	0.00	17.39	0.00	0.00	0.00	0.00	0.00	0.00	8.70	0.00	0.00	5.00	
Falcons	0.00	6.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.70	8.70	4.35	0.00	21.74	4.35	8.70	17.39	0.00	0.00	0.00	
Northern Harrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.35	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Vultures	0.00	0.00	0.00	0.00	3.45	0.00	0.00	0.00	0.00	0.00	4.35	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Upland Game Birds	24.14	13.79	3.45	0.00	20.69	17.24	13.79	0.00	0.00	0.00	4.35	0.00	26.09	0.00	0.00	0.00	4.35	4.35	0.00	0.00	0.00	15.00	25.00	5.00
Doves/Pigeons	34.48	10.34	6.90	20.69	17.24	0.00	13.79	11.11	0.00	0.00	0.00	13.04	17.39	0.00	0.00	0.00	13.04	8.70	4.35	21.74	5.00	25.00	15.00	
Owls	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	
Hummingbirds/Swifts	3.45	13.79	3.45	0.00	3.45	0.00	3.45	44.44	11.11	0.00	8.70	4.35	8.70	8.70	13.04	4.35	17.39	17.39	13.04	8.70	0.00	10.00	0.00	0.00
Woodpeckers	10.34	6.90	6.90	17.24	13.79	37.93	13.79	22.22	0.00	25.00	4.35	0.00	13.04	0.00	4.35	0.00	8.70	8.70	0.00	0.00	25.00	45.00	0.00	0.00
Passerines	100.00	100.00	89.66	96.55	96.55	100.00	100.00	100.00	88.89	100.00	100.00	100.00	100.00	95.65	100.00	100.00	100.00	100.00	100.00	95.65	100.00	100.00	100.00	
Flycatchers	10.34	3.45	3.45	6.90	6.90	3.45	6.90	22.22	11.11	12.50	4.35	4.35	26.09	0.00	0.00	8.70	4.35	0.00	0.00	0.00	20.00	0.00	25.00	
Vireos	6.90	3.45	3.45	17.24	17.24	6.90	3.45	0.00	33.33	0.00	8.70	0.00	17.39	0.00	0.00	0.00	4.35	0.00	0.00	0.00	10.00	10.00	5.00	
Corvids	6.90	34.48	58.62	58.62	72.41	65.52	65.52	66.67	22.22	62.50	34.78	8.70	30.43	39.13	30.43	30.43	39.13	4.35	4.35	8.70	65.00	60.00	70.00	
Swallows/Martins	0.00	0.00	0.00	6.90	0.00	3.45	3.45	0.00	0.00	0.00	26.09	17.39	13.04	8.70	17.39	8.70	21.74	34.78	26.09	21.74	5.00	0.00	10.00	
Chickadees/Creepers/Nuthatches	34.48	27.59	55.17	55.17	48.28	72.41	65.52	22.22	77.78	50.00	13.04	4.35	39.13	0.00	0.00	0.00	34.78	4.35	0.00	0.00	70.00	25.00	70.00	
Bushtit	3.45	0.00	0.00	0.00	3.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	
Wrentit	0.00	0.00	6.90	0.00	6.90	3.45	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.09	4.35	0.00	0.00	70.00	65.00	25.00	
Wrens	0.00	3.45	27.59	6.90	10.34	27.59	13.79	11.11	33.33	62.50	0.00	0.00	13.04	0.00	0.00	0.00	21.74	0.00	0.00	0.00	20.00	35.00	65.00	
Gnatcatchers/Kinglets	6.90	3.45	17.24	0.00	10.34	17.24	17.24	0.00	0.00	25.00	0.00	0.00	8.70	0.00	0.00	0.00	8.70	0.00	0.00	0.00	15.00	0.00	15.00	
Thrushes	55.17	27.59	37.93	68.97	55.17	62.07	37.93	22.22	11.11	62.50	56.52	39.13	43.48	13.04	8.70	4.35	34.78	4.35	13.04	30.43	45.00	40.00	40.00	
Pipits	3.45	3.45	0.00	0.00	3.45	0.00	0.00	0.00	0.00	0.00	0.00	4.35	4.35	8.70	17.39	13.04	8.70	8.70	17.39	13.04	0.00	0.00	0.00	
Waxwings	3.45	0.00	0.00	3.45	0.00	0.00	0.00	0.00	0.00	0.00	4.35	0.00	0.00	4.35	0.00	8.70	4.35	0.00	0.00	0.00	5.00	5.00	5.00	
Warblers	51.72	34.48	41.38	55.17	41.38	37.93	51.72	66.67	66.67	50.00	39.13	30.43	34.78	0.00	4.35	4.35	4.35	47.83	21.74	4.35	4.35	35.00	60.00	50.00
Tanagers/Grosbeaks/Cardinals	34.48	31.03	13.79	44.83	10.34	3.45	3.45	0.00	0.00	0.00	21.74	26.09	13.04	0.00	4.35	0.00	26.09	21.74	4.35	0.00	5.00	10.00	5.00	
Sparrows/Larks	62.07	55.17	37.93	89.66	65.52	68.97	68.97	77.78	0.00	25.00	69.57	73.91	69.57	73.91	56.52	65.22	91.30	69.57	69.57	39.13	55.00	100.00	35.00	
Blackbirds/Orioles	24.14	44.83	0.00	13.79	0.00	0.00	0.00	0.00	0.00	0.00	34.78	43.48	13.04	60.87	60.87	73.91	26.09	69.57	56.52	52.17	0.00	0.00	0.00	
Finches/Crossbills																								