Appendix D-7

Avian Interim Report Fall 2011

Avian Baseline Studies for the Alta East Wind Resource Area Kern County, California

Summer – Fall Interim Report
July 10 – November 12, 2010

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NATURAL RESOURCES ◆ SCIENTIFIC SOLUTIONS

EXECUTIVE SUMMARY

In July of 2010 Western EcoSystems Technology, Inc. initiated a second year of avian studies in the Alta East Wind Resource Area (AEWRA) in Kern County, California. The results of the first year of avian studies conducted in 2009 - 2010 suggested that a wind energy facility at the AEWRA, with appropriate avoidance and mitigation measures, would not have significant impacts to any avian species. During the 2009/2010 surveys, two golden eagle nests and golden eagle use were documented in areas outside the project boundary. The use by golden eagles was occurring to the north, northeast, and west of the current project boundary and the nests were located approximately 3.5 and 11 miles from the project boundary. Therefore, a second year of avian study was initiated to better understand the potential risks that the proposed project would pose to eagles, as well as to continue to better understand avian use of the project area in general. The second year of avian use studies was initiated at the AEWRA on July 10, 2010 and is scheduled to continue through June of 2011. This interim report presents the results of fixed-point bird use surveys conducted during the summer and fall of 2010. Seasonal interim reports are designed to give CH2M HILL and Alta Windpower, LLC, an assessment of wildlife use and if special-status species are observed within the study area.

A total of 114 30-minute fixed-point bird use surveys were conducted within the Alta East Wind Resource Area during 19 visits from July 10 to November 12, 2010. Fifty-four surveys were conducted in the summer during nine visits, and 60 surveys were conducted in the fall during ten visits. Twenty-nine unique bird species were observed, and a total of 743 individual birds within 269 separate groups were recorded.

Passerines (excluding large corvids) were the most frequently recorded bird type, accounting for 59.6% of observations. This was primarily due to relatively high numbers of sage sparrow (206 observations), house finch (49 observations), western meadowlark (49 observations), and cactus wren (31 observations). These four species represented only 13.8% of all species observed, yet they accounted for 45.1% of the total bird observations. Large corvids (common raven; 144 observations) were the second most frequently observed bird type, comprising 19.4% of total bird observations. Raptors accounted for 1.9% of all observations, with the red-tailed hawk and American kestrel being the most commonly observed raptor species (six and five individuals, respectively). Upland game birds were more commonly observed in the summer (89.5% of observations), while the majority of passerines, large covids, and raptors were recorded in the fall (80.6%, 95.1%, and 85.7%, respectively).

Two special-status species were observed during surveys: a single golden eagle, protected under the federal Bald and Golden Eagle Protection Act and a state fully-protected species, and fifteen observations of loggerhead shrike, a federal species of concern and a state species of special concern.

The results of this study are consistent with conclusions from earlier studies, which indicate that wind development at the AEWRA would not have significant impacts to avian species. Mean

raptor use (number of raptors divided by the number of 800-meter [2,625-foot] plots and the total number of surveys) was compared between the AEWRA and other existing and proposed wind energy facilities. During the summer and fall observation periods, mean raptor use in AEWRA was low (0.02 and 0.12 raptors/plot/20-minute survey, respectively) relative to the other wind resource areas with summer or fall data.

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REPORT REFERENCE

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INTRODUCTION

Alta Windpower, LLC is proposing to develop the Alta East Wind Project, a wind energy facility located in Kern County, California. CH2M HILL, a contractor to Alta Windpower, LLC, contracted Western EcoSystems Technology, Inc. (WEST) to develop and implement a standardized protocol for baseline avian studies in the Alta East Wind Project and surrounding area, defined in this report as the Alta East Wind Resource Area (AEWRA), with the purpose of estimating impacts of the proposed wind energy facility on birds and to assist with siting turbines to minimize impacts to avian resources. The protocols for the baseline study are similar to those used at other studies in California and throughout the western US with modifications to accommodate site-specific characteristics of the AEWRA. Additionally, the protocols follow guidance of the California Wind Energy Guidelines (CEC and CDFG, 2007) and the US Fish and Wildlife Service (USFWS) Wind Turbine Guidelines Advisory Committee (WTGAC 2010).

The purpose of the following interim report is to discuss the results of fixed-point bird use surveys conducted at the AEWRA from July 10 to November 12, 2010, and to bring items of biological interest to the attention of CH2M HILL and Alta Windpower, LLC, such as seasonal raptor use and the presence of special-status species (i.e., species considered to be of conservation concern at the state and/or federal level). This current survey effort is scheduled to continue through the spring of 2011 and is designed to supplement a previous year-long avian use study conducted at the AEWRA (previously known as the Sun Creek Wind Resource Area) in 2009-2010 (see Chatfield et al. 2010). The results of the first year of surveys indicated that a wind development at the AEWRA would not have significant impacts to avian species. Because use of the adjacent area by golden eagles (*Aquila chrysaetos*) and golden eagle nests located in the surrounding landscape was documented, a second year of avian study was initiated to better understand the potential risks that the proposed project would pose to eagles, as well as to continue to better understand avian use of the project site in general.

STUDY AREA

The proposed AEWRA is located in southeastern Kern County, approximately two miles (3.2 kilometers [km]) north-northwest of the unincorporated city of Mojave and 10 miles (16 km) east of the city of Tehachapi (Figure 1). The study area is comprised of undeveloped rangeland on a combination of privately-owned land and land administered by the Bureau of Land Management (BLM) within the Alta East Wind Project and surrounding area. The AEWRA falls within the high desert plains and hills on the western edge of the Mojave Desert. The existing natural conditions of the region are complex as the Tehachapi Mountains to the north and west transition into Mojave Desert to the south and east. Elevations within the study area range from approximately 3,100 to 4,200 feet (ft; 940 to 1,280 meters [m]) above sea level, with the highest elevations occurring in the northwestern portion of the study area (Figure 1). The habitat ranges from lowland creosote (*Larrea tridentata*) scrub and Joshua tree (*Yucca brevifolia*) woodland in the southeast to juniper (*Juniperus* spp.) shrubland on the steeper, rocky slopes in the north and west. Wetlands within the AEWRA are limited to a network of ephemeral drainages; there are

no perennial water sources within the study area. Highway 58 bisects the AEWRA, an underground portion of the Los Angeles Aqueduct runs along the southeast corner of the study area, and a network of dirt roads and off-highway vehicle trails run throughout the study area.

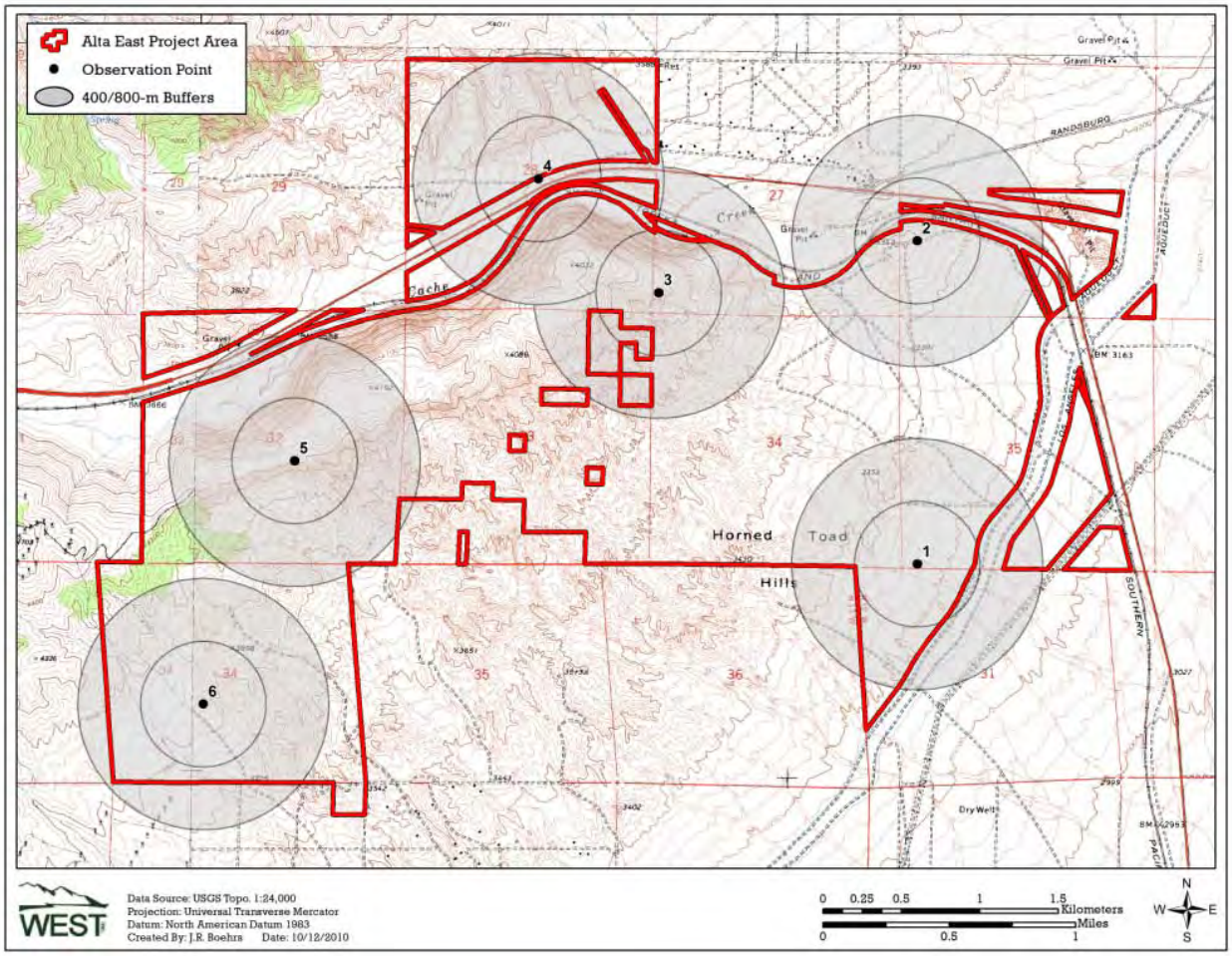

Figure 1. Study area map showing locations of fixed-point bird use survey stations conducted at the Alta East Wind Resource Area from July 10, 2010 through November 12, 2010.

METHODS

Fixed-Point Bird Use Surveys

The objective of the fixed-point bird use surveys was to estimate the seasonal and spatial use of the study area by birds, particularly diurnal raptors, defined here as kites, accipiters, buteos, harriers, eagles, and falcons. Fixed-point surveys (variable circular plots) were conducted using methods described by Reynolds et al. (1980). All birds seen during each 30-minute (min) fixed-point survey were recorded.

Bird Use Survey Plots

Six points were selected to survey representative habitats and topography of the study area while providing relatively even coverage (Figure 1). To the extent possible, survey stations were

selected to be consistent with locations used in the 2009 - 2010 survey effort at the AEWRA (Chatfield et al. 2010). However, due to changes to land access and changes within the boundary of the AEWRA, several new points were established. Each survey plot was an 800-m (2,625-ft) radius circle centered on the point.

Bird Survey Methods

All species of birds observed during fixed-point surveys were recorded. Observations of large birds beyond the 800-m radius were recorded, but were not included in the statistical analyses. For small birds, observations beyond a 100-m (328-ft) radius were excluded from the analysis.

The date, start, and end time of the survey period, and weather information, such as temperature, wind speed, wind direction, and cloud cover, were recorded for each survey. Species or best possible identification, number of individuals, sex and age class (if possible), distance from plot center when first observed, closest distance, altitude above ground, activity (behavior), and habitat(s) were recorded for each observation. Behavior and habitat type were recorded based on the point of first observation. Approximate flight height and flight direction at first observation were recorded to the nearest 5-m (16-ft) interval. Other information recorded included whether or not the observation was auditory only and the 10-min interval of the 30-min survey in which the observation was initially noted.

Observation Schedule

Sampling intensity was designed to document bird use and behavior by habitat and season within the study area. Surveys were conducted weekly during the summer (July 10 to August 31) and fall (September 1 to November 12). Surveys were conducted during daylight hours and survey periods varied to approximately cover all daylight hours during a season. Each point was surveyed the same number of times during the season.

RESULTS

This interim report presents the results of fixed-point bird use surveys conducted at the AEWRA from July 10 to November 12, 2010.

Fixed-Point Bird Use Surveys

A total of 114 30-min fixed-point bird use surveys were conducted within AEWRA during 19 visits from July 10 to November 12, 2010. Fifty-four fixed-point surveys were conducted in the summer during nine visits, and 60 surveys were conducted in the fall during ten visits.

Twenty-nine unique bird species were observed during fixed-point bird use surveys, and a total of 743 individual birds within 269 separate groups were recorded (Table 1). Passerines were the most frequently observed bird type, accounting for 59.6% of all observations. This was primarily due to relatively high numbers of sage sparrow (*Amphispiza belli*; 206 observations), house finch (*Carpodacus mexicanus*; 49 observations), western meadowlark (*Sturnella neglecta*; 49 observations), and cactus wren (*Campylorhynchus brunneicapillus*; 31 observations). These

four species represented only 13.8% of all species observed, yet they accounted for 45.1% of the total bird observations. The majority (80.6%) of passerines were observed during the fall. Large corvids, comprised solely of common ravens (*Corvus corax*; 144 observations), were the second most frequently observed bird type, accounting for 19.4% of all observations (Table 1). The majority (95.1%) of common ravens were recorded during fall surveys. Upland game birds, comprised of California quail (*Callipepla californica*) and chukar (*Alectoris chukar*), accounted for a further 16.7% of total bird observations. The majority (89.5%) of upland game birds were recorded in the summer. A total of 14 raptors representing four distinct species were observed during surveys, accounting for 1.9% of all bird observations. The majority (85.7%) of raptors were recorded in the fall, with red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*) being the most commonly observed raptor species (six and five observations, respectively; Table 1). A single golden eagle and a single unidentified hawk were also observed in the fall. In the summer only a single red-tailed hawk and a single unidentified accipiter were recorded.

Two special-status species were observed during surveys: a single golden eagle, protected under the federal Bald and Golden Eagle Protection Act (BGEPA 1940, MSU 2009) and a state fully-protected species, and fifteen observations of loggerhead shrike (*Lanius ludovicianus*), a federal species of concern and a state species of special concern (SDGFP 2006).

Table 1. Summary of group and individual observations by species and bird type for summer, fall, and overall seasons from fixed-point bird use surveys at the Alta East Wind Resource Area[a], July 10 to November 12, 2010.

		Summer		Fall		Overall	
Species	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
Diurnal Raptors		**2**	**2**	**12**	**12**	**14**	**14**
Accipiters		*1*	*1*	*0*	*0*	*1*	*1*
unidentified accipiter		1	1	0	0	1	1
Buteos		*1*	*1*	*5*	*5*	*6*	*6*
red-tailed hawk	*Buteo jamaicensis*	1	1	5	5	6	6
Eagles		*0*	*0*	*1*	*1*	*1*	*1*
golden eagle	*Aquila chrysaetos*	0	0	1	1	1	1
Falcons		*0*	*0*	*5*	*5*	*5*	*5*
American kestrel	*Falco sparverius*	0	0	5	5	5	5
Other Raptors		*0*	*0*	*1*	*1*	*1*	*1*
unidentified hawk		0	0	1	1	1	1
Upland Game Birds		**9**	**111**	**3**	**13**	**12**	**124**
California quail	*Callipepla californica*	8	84	1	1	9	85
chukar	*Alectoris chukar*	1	27	2	12	3	39
Doves/Pigeons		**8**	**9**	**2**	**2**	**10**	**11**
mourning dove	*Zenaida macroura*	8	9	2	2	10	11
Large Corvids		**5**	**7**	**40**	**137**	**45**	**144**
common raven	*Corvus corax*	5	7	40	137	45	144
Large Cuckoos		**0**	**0**	**2**	**2**	**2**	**2**
greater roadrunner	*Geococcyx californianus*	0	0	2	2	2	2

Table 1. Summary of group and individual observations by species and bird type for summer, fall, and overall seasons from fixed-point bird use surveys at the Alta East Wind Resource Area[a], July 10 to November 12, 2010.

		Summer		Fall		Overall	
Species	**Scientific Name**	**# grps**	**# obs**	**# grps**	**# obs**	**# grps**	**# obs**
Passerines		**55**	**86**	**126**	**357**	**181**	**443**
ash-throated flycatcher	*Myiarchus cinerascens*	0	0	1	1	1	1
cactus wren	*Campylorhynchus brunneicapillus*	21	24	6	7	27	31
chipping sparrow	*Spizella passerina*	0	0	4	21	4	21
dark-eyed junco	*Junco hyemalis*	0	0	3	7	3	7
horned lark	*Eremophila alpestris*	0	0	6	9	6	9
house finch	*Carpodacus mexicanus*	0	0	8	49	8	49
Le Conte's thrasher	*Toxostoma lecontei*	2	2	1	1	3	3
loggerhead shrike	*Lanius ludovicianus*	9	12	3	3	12	15
rock wren	*Salpinctes obsoletus*	0	0	1	1	1	1
sage sparrow	*Amphispiza belli*	17	34	64	172	81	206
Say's phoebe	*Sayornis saya*	0	0	1	1	1	1
unidentified sparrow		1	1	0	0	1	1
unidentified swallow		1	7	1	7	2	14
unidentified warbler		0	0	1	1	1	1
western bluebird	*Sialia mexicana*	0	0	2	5	2	5
western meadowlark	*Sturnella neglecta*	3	5	11	44	14	49
western scrub-jay	*Aphelocoma californica*	1	1	1	1	2	2
white-crowned sparrow	*Zonotrichia leucophrys*	0	0	11	25	11	25
yellow-rumped warbler	*Dendroica coronata*	0	0	1	2	1	2
Swifts/Hummingbirds		**3**	**3**	**1**	**1**	**4**	**4**
unidentified hummingbird		2	2	1	1	3	3
white-throated swift	*Aeronautes saxatalis*	1	1	0	0	1	1
Woodpeckers		**1**	**1**	**0**	**0**	**1**	**1**
ladder-backed woodpecker	*Picoides scalaris*	1	1	0	0	1	1
Overall		**83**	**219**	**186**	**524**	**269**	**743**

[a] regardless of distance from observer.

DISCUSSION

The current study was designed to supplement previous avian studies conducted at the AEWRA in 2009 - 2010 (Chatfield et al. 2010). The results of this study are consistent with conclusions from earlier studies, which indicate that wind-energy development within the AEWRA, with appropriate avoidance and mitigation measures, would not have significant impacts to avian species.

Only a single golden eagle was observed during the summer and fall of 2010, indicating that summer and fall use of the project by eagles during this period is very limited. These surveys are part of a larger one-year study effort, and are scheduled to continue through June of 2011.

Bird Use Surveys

Species diversity of birds observed during fixed-point bird use surveys generally reflected the desert scrub habitats comprising the AEWRA, and is consistent with results from the previous year of bird surveys (see Chatfield et al. 2010). Resident, breeding birds of dry, open shrubland and Joshua tree woodland were dominant in the summer. Upland game birds, such as California quail and chukar, and passerines, such as sage sparrow, cactus wren, loggerhead shrike, and common raven, were commonly observed throughout the summer season.

During the fall, the number and diversity of species increased, which is typical of the season, particularly in desert environments. Cooling temperatures in the fall allow birds to be more active throughout the day and many species become more mobile during the post-breeding season, allowing for higher rates of detection. South-bound migrants pass through the region at this time and many species are arriving on their desert wintering grounds. Over twice the number of birds were observed during the fall (524 observations; 24 species) compared to the summer (219; 13) even though the number of surveys conducted at each point were similar (nine in summer and ten in fall). During the fall, more passerines, ravens, and raptors, and fewer upland game birds were recorded. Approximately 80% of passerines were observed during the fall with migrating and/or wintering species such as chipping sparrow (*Spizella passerina*), dark-eyed junco (*Junco hyemalis*), house finch (*Carpodacus mexicanus*), western bluebird (*Sialia mexicana*), and white-crowned sparrow (*Zonotrichia leucophrys*) commonly recorded during the fall season. Twelve of the 14 raptors observed during surveys were recorded during the fall with red-tailed hawk and American kestrel being the most commonly observed raptor species.

Special-Status Species

The loggerhead shrike is a year-round resident of the area and was more commonly observed during summer surveys. The single golden eagle was observed near the center of the project during fall surveys (an adult observed soaring at Point 3 on October 7, 2010).

Comparison of Seasonal Raptor Use

Based on the results from other wind resource areas with similar data, mean adjusted raptor use (number of raptors divided by the number of 800-m plots and the total number of surveys) in the AEWRA during the summer and fall of 2010 was low (0.02 and 0.12 raptors/plot/20-min survey, respectively) relative to data collected at other existing and proposed wind energy facilities with data for summer or fall seasons (Figures 2 and 3). These results are similar to those reported during the first year of studies covering all seasons at the AEWRA (see Chatfield et al. 2010).

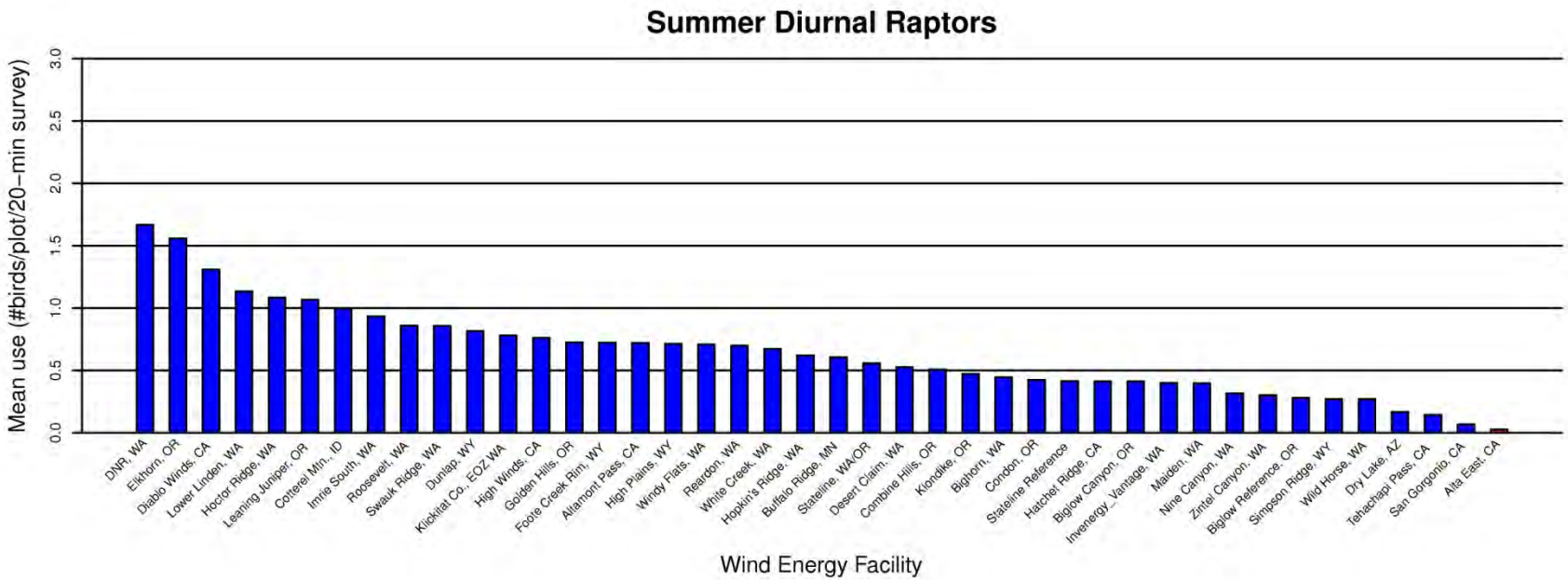

Figure 2. Comparison of summer raptor use between the Alta East Wind Resource Area and other US wind energy facilities. Data from the following sources

Alta East, CA, xx	This study.				
DNR, WA	Johnson et al. 2006b	Foote Creek Rim, WY	Erickson et al. 2002b	Stateline Reference	URS et al. 2001
Elkhorn, OR	WEST 2005a	Altamont Pass, CA	Ericksonet al. 2002b	Hatchet Ridge, CA	Young et al. 2007a
Diablo Winds, CA	WEST 2006	High Plains, WY	Johnson et al. 2009b	Biglow Canyon, OR	WEST 2005c
Lower Linden, WA	Johnson et al. 2007a	Windy Flats, WA	Johnson et al. 2007b	Invenergy_Vantage, WA	WEST 2007
Hoctor Ridge, WA	Johnson et al. 2006c	Reardon, WA	WEST 2005b	Maiden, WA	Ericksonet al. 2002b
Leaning Juniper, OR	Kronner et al. 2005	White Creek, WA	NWC and WEST 2005	Nine Canyon, WA	Erickson et al. 2001
Cotterel Mtn., ID	BLM 2006	Hopkin's Ridge, WA	Young et al. 2003a	Zintel Canyon, WA	Erickson et al. 2002a
Imrie South, WA	Johnson et al. 2006d	Buffalo Ridge, MN	Ericksonet al. 2002b	Biglow Reference, OR	WEST 2005c
Roosevelt, WA	NWC and WEST 2004	Stateline, WA/OR	Ericksonet al. 2002b	Simpson Ridge, WY	Johnson et al. 2000
Swauk Ridge, WA	Erickson et al. 2003a	Desert Claim, WA	Young et al. 2003b	Wild Horse, WA	Erickson et al. 2003b
Dunlap, WY	Johnson et al. 2009a	Combine Hills, OR	Young et al. 2003c	Dry Lake, AZ	Young et al. 2007b
Klickitat Co., EOZ WA	WEST and NWC 2003	Klondike, OR	Johnson et al. 2002	Tehachapi Pass, CA	Ericksonet al. 2002b
High Winds, CA	Kerlinger et al. 2005	Bighorn, WA	Johnson and Erickson 2004	San Gorgonio, CA	Ericksonet al. 2002b
Golden Hills, OR	Jeffrey et al. 2008	Condon, OR	Ericksonet al. 2002b		

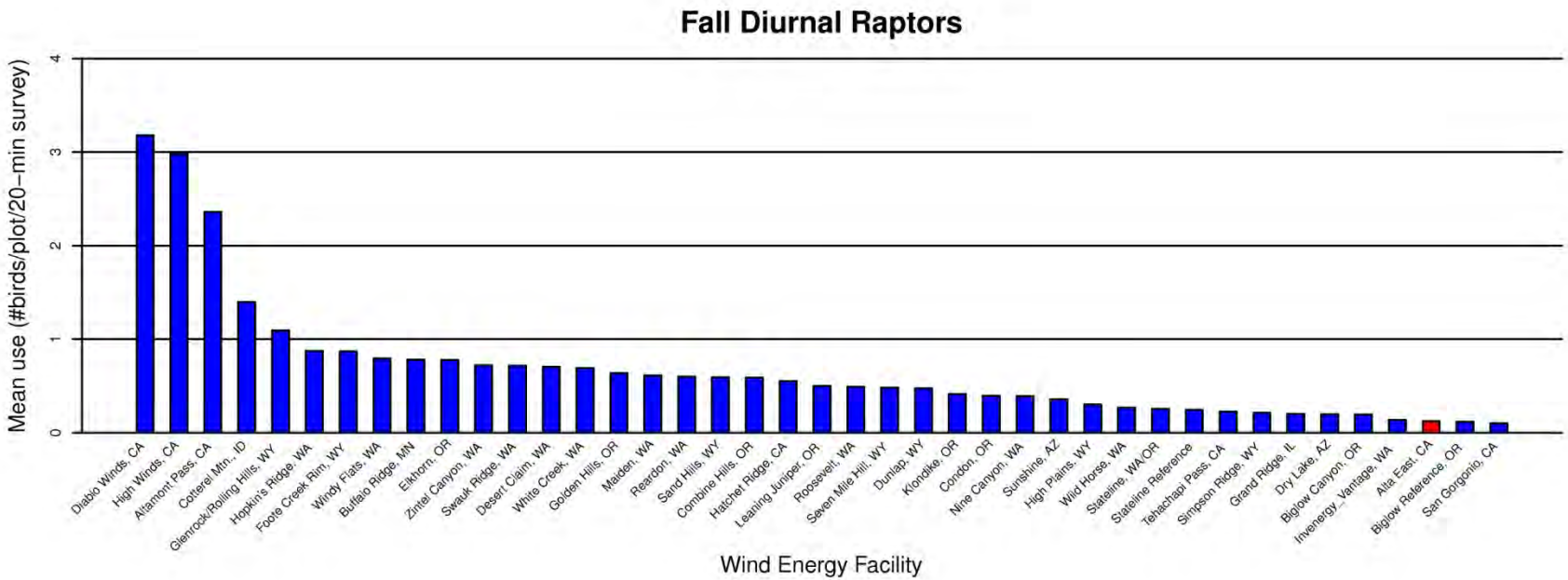

Figure 3. Comparison of fall raptor use between the Alta East Wind Resource Area and other US wind energy facilities.
Data from the following sources:

Alta East, CA	This study.				
Diablo Winds, CA	WEST 2006	Golden Hills, OR	Jeffreyet al. 2008	High Plains, WY	Johnsonet al. 2009b
High Winds, CA	Kerlingeret al. 2005	Maiden, WA	Ericksonet al. 2002b	Wild Horse, WA	Ericksonet al. 2003b
Altamont Pass, CA	Ericksonet al. 2002b	Reardon, WA	WEST 2005b	Stateline, WA/OR	Ericksonet al. 2002b
Cotterel Mtn., ID	BLM 2006	Sand Hills, WY	Johnson et al. 2006a	Stateline Reference	URS et al. 2001
Glenrock/Rolling Hills, WY	Johnson et al. 2008a	Combine Hills, OR	Younget al. 2003c	Tehachapi Pass, CA	Ericksonet al. 2002b
Hopkin's Ridge, WA	Younget al. 2003a	Hatchet Ridge, CA	Younget al. 2007a	Simpson Ridge, WY	Johnsonet al. 2000
Foote Creek Rim, WY	Ericksonet al. 2002b	Leaning Juniper, OR	Kronneret al. 2005	Grand Ridge, IL	Derby et al. 2009
Windy Flats, WA	Johnsonet al. 2007b	Roosevelt, WA	NWC and WEST 2004	Dry Lake, AZ	Younget al. 2007b
Buffalo Ridge, MN	Ericksonet al. 2002b	Seven Mile Hill, WY	Johnson et al. 2008b	Biglow Canyon, OR	WEST 2005c
Elkhorn, OR	WEST 2005a	Dunlap, WY	Johnsonet al. 2009a	Invenergy_Vantage, WA	WEST 2007
Zintel Canyon, WA	Ericksonet al. 2002a	Klondike, OR	Johnsonet al. 2002	Biglow Reference, OR	WEST 2005c
Swauk Ridge, WA	Ericksonet al. 2003a	Condon, OR	Ericksonet al. 2002b	San Gorgonio, CA	Ericksonet al. 2002b
Desert Claim, WA	Younget al. 2003b	Nine Canyon, WA	Ericksonet al. 2001		
White Creek, WA	NWC and WEST 2005	Sunshine, AZ	WEST and CPRS 2006		

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