

NORTHERN LONG-EARED BAT ACOUSTIC SURVEY REPORT FOR PROJECT FEASIBILITY AND LOCATION

Prevailing Winds Study Area in Bon Homme and Charles Mix Counties, South Dakota



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INTRODUCTION

Prevailing Winds, LLC (Prevailing Winds), is considering the development of the Prevailing Winds Wind Farm (Project), located in Bon Homme and Charles Mix Counties, South Dakota. To help in siting the eventual Project, Prevailing Winds evaluated a large Study Area (see Figure 1 for depiction of the Study Area as defined for 2015 studies). Prevailing Winds requested that Western Ecosystems Technology, Inc. (WEST) evaluate the potential for the federally threatened northern long-eared bat (*Myotis septentrionalis*; [NLEB]) to occur within the 2015 Study Area during the summer months. This report describes the results of the NLEB presence or probable absence acoustical assessment completed for the Study Area by WEST. These surveys were conducted following the survey recommendations found in the U.S. Fish and Wildlife Service (USFWS) *Northern Long-eared Bat Interim Conference and Planning Guidance* (USFWS 2014a) and *2015 Range-Wide Indiana Bat Summer Survey Guidelines* (USFWS 2015).

NORTHERN LONG-EARED BAT SUMMER HABITAT REQUIREMENTS

NLEB are forest dependent species, generally relying on forest features for both foraging and roosting during the summer months (USFWS 2013; USFWS 2007). In particular, NLEB appear to be a forest interior species that require adequate canopy closure for both roost and foraging habitat (Lausen 2009). Additionally, riparian areas are considered critical resource areas for many species of bats because they support higher concentrations of prey, provide drinking areas, and act as unobstructed commuting corridors (Grindal et al. 1999). While NLEB are associated with forest habitats, they also occur in agricultural settings where forest habitats have been highly fragmented.

Wing morphology of the NLEB makes them ideally suited for the high maneuverability required for glean-type foraging within a cluttered forest interior (Henderson and Broders 2008). Abundance of NLEB prey items, particularly beetles and moths, are typically higher in more closed forest stands than in openings, which supports studies which have found that NLEB tend to avoid open habitats (Owen et al. 2003).

During the summer, NLEB roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees (USFWS 2007; USFWS 2013). Males and non-reproductive females may also roost in cooler places, like caves and mines. NLEB seem opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. NLEB have also been found roosting in structures like barns and sheds.

During the summer months, NLEBs are unlikely to cross over large open lands (i.e., land lacking suitable habitat) to search for foraging and roosting habitats, but rather to use tree-lined linear features as travel corridors to and from roosting and foraging habitats (USFWS 2014a). These tree-lined corridors may be important for bats as navigational aids in agricultural landscapes, as protection from predators and wind, and may act to concentrate insect prey (Verboom and Huitema 1997). The NLEB is expected to be particularly tied to intact forested habitats; for example, Henderson and Broders (2008) found that NLEB did not travel more than 255 feet (78 meters) from the edge of intact forest structure. A study of nine female NLEBs using an

intensively managed forest in West Virginia found this species forages in areas with forest patch sizes between 114 and 161 acres (46 and 65 hectares; Owen et al. 2003); however, studies in landscapes dominated by agricultural activities found NLEB can use woodlots and riparian zones with as little as 15 to 49 acres (6 to 20 hectares) of forest cover (Henderson and Broders 2008; Foster and Kurta 1999).

METHODS

Acoustic surveys followed the USFWS *2015 Range-Wide Indiana Bat Summer Survey Guidelines* (USFWS 2015), per the *Northern Long-Eared Bat Interim Conference and Planning Guidance* (USFWS 2014a). The USFWS guidelines require one survey site for every 123 acres of suitable habitat for a minimum of four detector nights (USFWS 2014a). Two sampling locations at each survey site should then be surveyed for a minimum of two detector/nights each.

Initial desktop assessment of potential habitat conducted by WEST, identified approximately 1,180 acres of forested habitat; as such, this equates to 20 survey locations (two detectors per site). Although the USFWS protocol calls for 20 survey locations (10 sites with two detectors per site) for two detector/nights (for a total of 40 detector/nights), WEST surveyed 20 locations/stations for a minimum of two nights each for a total of 104 detector nights. WEST biologists deployed up to eight detectors at suitable sites throughout the Study Area for a minimum of four detector nights.

Acoustic surveys were conducted from July 21 – August 10, 2015 following USFWS guidelines (USFWS 2015). Bats were surveyed using SD1 or SD2 AnaBat™ ultrasonic detectors (Titley Electronics Pty Ltd., NSW, Australia), or SM2 Song Meter detectors (Wildlife Acoustics, Inc., Concord, Maine). Acoustic monitoring began before sunset and continued for the entire night. Survey duration at each site was for a minimum of two nights. If weather conditions such as persistent rain (> 30 minutes), strong winds (> 9 mph for > 30 minutes), or persistent cold temperatures (below 10°C [50°F] for > 30 minutes) occurred during the first five hours of a survey night, then that site was surveyed for an additional night (USFWS 2014). To maximize the quality of recorded echolocation calls, detectors were positioned at least 1.5 meters off the ground, at $\geq 45^\circ$ angle, and with PVC tube weatherproofing (Britzke et al. 2010, USFWS 2014a). Sensitivity was set to “6” on AnaBat detectors, and the amplifier gain was set to 36 decibels for the SM2 units.

Bat calls were identified to species using Bat Call Identification (BCID; Allen 2012). If the identification program identified calls as NLEB at a site with a high degree of probability ($P < 0.05$), then qualitative analysis was conducted to determine if NLEB were present or absent at the site. Qualitative echolocation call analysis was conducted by a biologist experienced with acoustic identification and who met required USFWS qualifications (Dr. Kevin Murray of WEST; USFWS 2014a). If probable NLEB echolocation call sequences identified by BCID were not characteristic of NLEB, contained distinct calls produced by species other than NLEB, or were of insufficient quality, they were reclassified. Per USFWS guidelines, NLEB were considered present at sites with probable calls verified by qualitative analysis. NLEB were considered

absent from sites with no probable NLEB calls or from sites with probable NLEB calls that were not verified by qualitative analysis. The Study Area lies well outside of the accepted range of Indiana bats; therefore Indiana bats were not included in the BCID model.

RESULTS

AnaBat and SM2 detectors were used to survey 20 acoustic survey locations, consisting of two detector stations per site, from July 21 – August 10, 2015. UTM coordinates and brief site descriptions for each site are listed in Table 1. Pictures and datasheets with site descriptions are found in Appendices A and B. WEST checked weather at the Hajek Farms, Tyndall, SD (KSDTYNDA2) weather station, which can be found on Weather Underground's Wundermap (<http://www.wunderground.com/wundermap/>). Weather conditions at sites 1, 2, 3, 4, 5, 6a, and 8 did not meet the standards for acoustic monitoring set by USFWS (2014a) on July 25 and at sites 6, 9, 10, and 11 on July 27 due to wind speeds sustaining greater than 9 miles per hour during the first five hours of survey on both nights. However, data on these nights were still included in the analysis because, while not ideal, conditions could still be suitable during a portion of the night and NLEB and other bats might still be detected. Weather conditions at all 20 locations for all other survey nights met the criteria established by the USFWS (2014a), and each detector location had at least two detector nights with good weather conditions (Table 2). Acoustic surveys were completed at 20 locations (two detector stations per site) for a total of 104 detector nights (Tables 1 and 2). BCID identified a total of 6,478 bat call files and identified 6,323 files (98%) to species, with an average of 62.3 bat calls per detector night (Table 2). Table 2 summarizes the number of detector nights, number of bat call files, and number of bat calls identified to species at each site. Table 3 provides information on species identifications for each site.

Based on the BCID analysis, nine stations (locations), recorded potential NLEB calls with a p-value less than 0.05 for the maximum-likelihood estimation (Table 4); therefore data from the nine stations were included in qualitative analysis (USFWS 2014a). Six stations (PW1, PW6a, PW8a, PW11, PW14, and PW16) recorded probable (i.e., p-value <0.05) NLEB calls on a single night only; stations PW9a and PW17 recorded probable NLEB calls on two and three nights, respectively; and station PW13 recorded probable NLEB calls on six nights (Table 4). Qualitative identification verified the presence of NLEB at stations PW9a (on a single night only) and PW13 (on six nights); however, qualitative analysis did not verify the presence of NLEB at the remaining seven stations with probable NLEB calls (Table 4).

DISCUSSIONS/CONCLUSIONS

Limited information is available on NLEB migratory pathways and behaviors. While there is some information suggesting this species tends to follow forested areas and avoid open areas if possible, these bats may occasionally move through non-forested areas.

The habitat assessment conducted by WEST at the Study Area provides information on potential NLEB habitat that might be found within the Study Area and nearby areas. If these bats occur in the area during the summer months, they will likely occur within or near (within

1,000 feet) of these habitat patches. Given its association with forest habitat (Henderson and Broders 2008; Foster and Kurta 1999), WEST anticipates that the larger and more contiguous blocks of forested areas would be more likely to be used by these species compared to the smaller forested blocks and/or tree lines and shelterbelts.

The NLEB was qualitatively verified as occurring at two acoustical stations surveyed within the Study Area (stations PW9a and PW13). Though not documented during this survey effort, there is potential for NLEB to be present within other suitable habitat within the Study Area during the summer months, particularly in the west/southwest portions of the Study Area, given the density and distribution of potential NLEB habitat; and the connectivity to larger forested and/or forested riparian habitats just outside of the Study Area boundary (i.e., forested/semi-forested corridors of Choteau Creek and Dry Choteau Creek and tributaries thereof).

Surveys are considered complete for all 20 stations at the Study Area and no further action is recommended to confirm NLEB presence within the current boundary (Table 5); however, acoustic data is probabilistic and presence determinations can be error prone. For a more detailed assessment of NLEB occurrence in the area, the USFWS guidelines (USFWS 2014a, 2015) recommend mist-netting in combination with radio-telemetry and emergence counts to confirm roost tree locations and roost size (Phase 3 and 4). Though the possibility exists for mist-netting results to contradict the acoustic results, it is unlikely for the USFWS to overturn acoustic evidence with mist-net evidence.

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Table 1. Location and site description of the 20 acoustic survey stations at the Prevailing Winds Study Area.

Station ID	Zone	Easting†	Northing†	Site Description
PW1	14	0569563	4776786	Edge of shelterbelts, adjacent to agricultural fields
PW2	14	0568133	4774899	Open woodlot adjacent to pasture
PW3	14	0568878	4775146	Edge of shrubby grove, adjacent to pond and pasture
PW4	14	0572800	4773535	Edge of shelterbelt and creek bed, adjacent to hay fields
PW5	14	0570321	4772303	Edge of small forest patch, adjacent to pasture
PW6	14	0579638	4770270	Edge of shelterbelt and grassy area, adjacent to pasture
PW6a	14	0574168	4770744	Grassy path adjacent to forest
PW7	14	0572985	4766554	Edge of forest in pasture
PW8	14	0575714	4766373	Edge of forest in grassy area, adjacent to pasture
PW8a	14	0575652	4768628	Grassy area adjacent to forest
PW9	14	0580064	4765600	Grassy path adjacent to forest edge and cornfield
PW9a	14	0569742	4766932	Pasture adjacent to forest edge
PW10	14	0578533	4763193	Grassy area adjacent to shelterbelt
PW11	14	0576700	4763072	Grassy area adjacent to forest edge and cropland
PW12	14	0575445	4762139	Grassy area adjacent to forest edge
PW13	14	0574443	4759581	Grassy/shrubby area adjacent to forest edges
PW14	14	0574925	4758670	Grassy/shrubby area adjacent to cedar/juniper
PW15	14	0575580	4758206	Grassy area adjacent to forest edge
PW16	14	0576680	4757714	Grassy area adjacent to forest edge
PW17	14	0578987	4756031	Grassy area adjacent to forest edge and cropland

Table 2. Number of bat calls recorded at each acoustic survey station determined by BCID for the Prevailing Winds Study Area.

Acoustic Survey Station	Total Bat Calls	Calls Identified	Detector Nights	Bat Calls/ Detector Night
PW1	248	241 (97%)	6	41.3
PW2	406	390 (96%)	6	67.7
PW3	104	100 (96%)	6	17.3
PW4	42	42 (100%)	6	7
PW5	137	135 (96%)	6	22.8
PW6a	1,309	1,296 (99%)	5	261.8
PW6	185	183 (99%)	9	20.6
PW7	379	372 (98%)	3	126.3
PW8	279	271 (97%)	5	55.8
PW8a	530	520 (98%)	4	132.5
PW9	325	320 (98%)	5	65
PW9a	203	194 (96%)	4	50.8
PW10	209	207 (99%)	5	41.8
PW11	458	450 (98%)	5	91.6
PW12	53	53 (100%)	3	17.7
PW13	699	674 (96%)	6	116.5
PW14	36	36 (100%)	6	6
PW15	29	28 (97%)	2	14.5
PW16	192	188 (98%)	6	32
PW17	655	623 (95%)	6	109.2
Total	6,478	6,323 (98%)	104	62.3

Table 3. Summary of BCID echolocation call identifications for the Prevailing Winds Study Area¹.

Station ID	EPFU	LABO	LACI	LANO	MYLU	MYSE	NYHU	PESU	UNK	Total
PW1	42	24	71	89	2	1	3	9	7	248
PW2	137	137	11	39	1	0	14	51	16	406
PW3	19	35	2	13	2	0	8	21	4	104
PW4	21	0	1	19	0	0	0	1	0	42
PW5	72	4	9	48	0	0	1	1	2	137
PW6	100	4	9	62	1	0	0	7	2	185
PW6a	626	176	22	425	1	1	29	16	13	1,309
PW7	234	36	6	60	25	0	4	7	7	379
PW8	40	181	0	2	5	0	36	7	8	279
PW8a	113	316	7	30	4	1	31	18	10	530
PW9	47	14	35	213	0	0	4	7	5	325
PW9a	51	55	9	32	4	5	5	33	9	203
PW10	97	10	16	76	2	0	0	6	2	209
PW11	115	59	48	182	2	1	3	40	8	458
PW12	24	7	0	16	0	0	1	5	0	53
PW13	123	223	8	56	15	195	28	26	25	699
PW14	14	3	1	16	0	2	0	0	0	36
PW15	16	0	1	8	0	0	2	1	1	29
PW16	45	63	2	32	9	1	14	22	4	192
PW17	138	218	3	62	8	3	17	174	32	655

¹ EPFU = Big Brown Bat; LABO = Eastern Red Bat; LACI = Hoary Bat; LANO = Silver-haired Bat; MYLU = Little Brown Bat; MYSE = Northern Long-eared Bat; NYHU = Evening Bat; PESU = Tri-colored bat; UNK = Unknown

Table 4. Summary of Myotis call identifications by BCID and qualitative analysis¹ for stations with potential Northern long-eared bat calls at the Prevailing Winds Study Area.

Station ID	Date	Identification Method	MYSE (NLEB)
PW1	July 24	BCID	1
		Qualitative	0
PW6a	July 31	BCID	1
		Qualitative	0
PW8a	July 30	BCID	1
		Qualitative	0
PW9a	August 9	BCID	1
		Qualitative	0

Table 4. Summary of Myotis call identifications by BCID and qualitative analysis¹ for stations with potential Northern long-eared bat calls at the Prevailing Winds Study Area.

Station ID	Date	Identification Method	MYSE (NLEB)
PW9a	August 10	BCID	4
		Qualitative	1
PW11	July 29	BCID	1
		Qualitative	0
PW13	August 1	BCID	39
		Qualitative	25
PW13	August 2	BCID	41
		Qualitative	21
PW13	August 3	BCID	33
		Qualitative	23
PW13	August 4	BCID	29
		Qualitative	19
PW13	August 5	BCID	19
		Qualitative	9
PW13	August 6	BCID	34
		Qualitative	16
PW14	August 1	BCID	2
		Qualitative	0
PW16	August 1	BCID	1
		Qualitative	0
PW17	August 1	BCID	1
		Qualitative	0
PW17	August 4	BCID	1
		Qualitative	0
PW17	August 5	BCID	1
		Qualitative	0

¹ Only calls with p-values < 0.05 for the maximum-likelihood estimation were included in qualitative analysis (USFWS 2014a).

Table 5. Summary of actions at each acoustic survey site for the Prevailing Winds Study Area.

Station ID	BCID NLEB Calls	Probable NLEB Calls (P < 0.05)	NLEB Qualitatively Verified	Presence/Absence Determination
PW1	Yes	Yes	No	NLEB absent
PW2	No	No	No	NLEB absent
PW3	No	No	No	NLEB absent
PW4	No	No	No	NLEB absent
PW5	No	No	No	NLEB absent
PW6	No	No	No	NLEB absent
PW6a	Yes	Yes	No	NLEB absent
PW7	No	No	No	NLEB absent
PW8	No	No	No	NLEB absent
PW8a	Yes	Yes	No	NLEB absent
PW9	No	No	No	NLEB absent
PW9a	Yes	Yes	Yes	NLEB present
PW10	No	No	No	NLEB absent
PW11	Yes	Yes	No	NLEB absent
PW12	No	No	No	NLEB absent
PW13	Yes	Yes	Yes	NLEB present
PW14	Yes	Yes	No	NLEB absent
PW15	No	No	No	NLEB absent
PW16	Yes	Yes	No	NLEB absent
PW17	Yes	Yes	No	NLEB absent

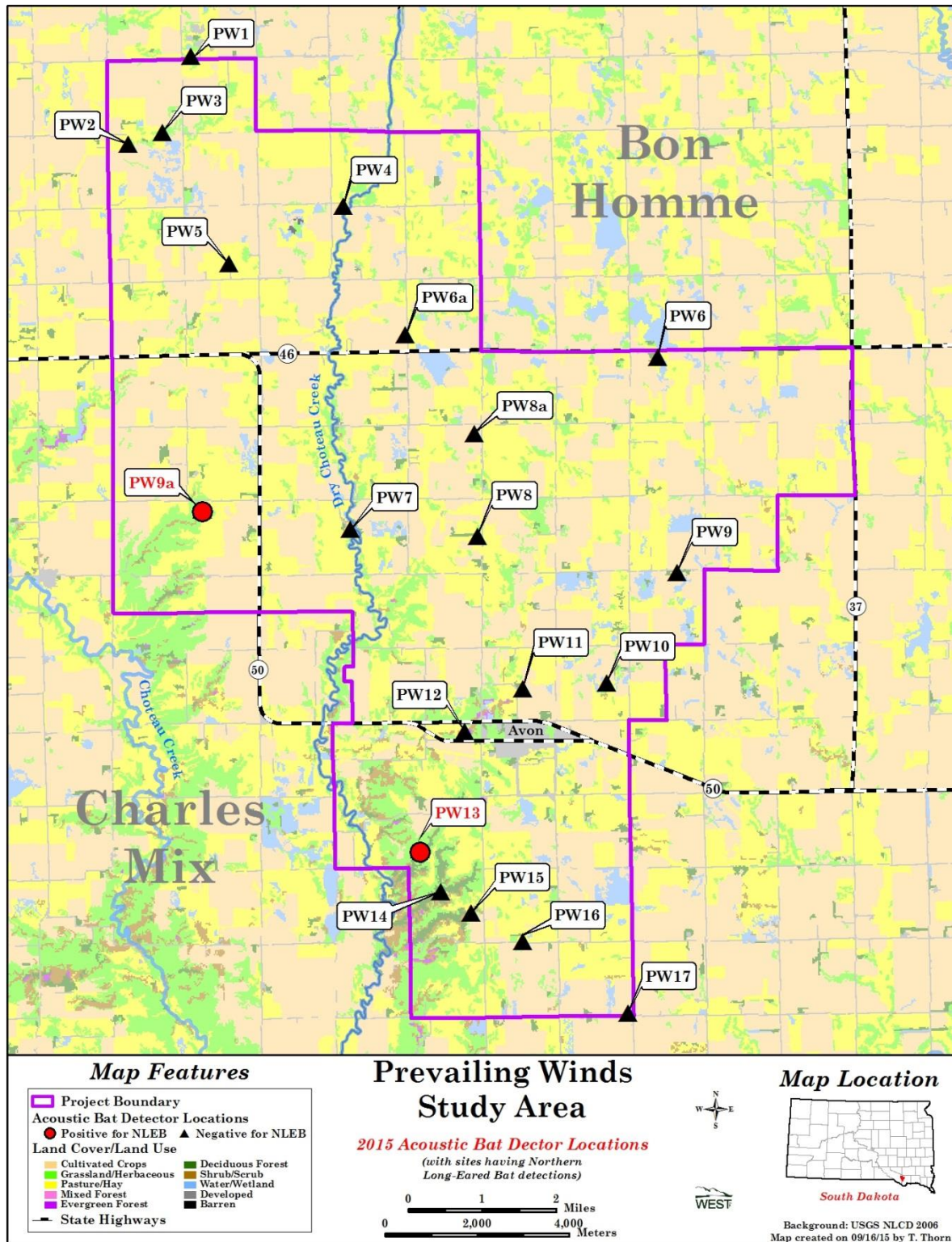


Figure 1. Locations of acoustic bat detectors and those confirmed positive for NLEB at the Prevailing Winds Study Area from July 21 through August 10, 2015.

Appendix A. Pictures of Acoustic Survey Sites



Photo 1. Bat habitat surveyed by AnaBat detector at station PW1.



Photo 2. Bat habitat surveyed by AnaBat detector at site PW2.



Photo 3. Bat habitat surveyed by AnaBat detector at station PW3.



Photo 4. Bat habitat surveyed by AnaBat detector at site PW4.



Photo 5. Bat habitat surveyed by AnaBat detector at station PW5.



Photo 6 . Bat habitat surveyed by AnaBat detector at site PW6.



Photo 7. Bat habitat surveyed by AnaBat detector at station PW6a.



Photo 8. Bat habitat surveyed by AnaBat detector at site PW7.



Photo 9. Bat habitat surveyed by AnaBat detector at station PW8.



Photo 10. Bat habitat surveyed by AnaBat detector at site PW8a.



Photo 11. Bat habitat surveyed by AnaBat detector at station PW9.



Photo 12. Bat habitat surveyed by AnaBat detector at site PW9a.



Photo 13. Bat habitat surveyed by AnaBat detector at station PW10.



Photo 14. Bat habitat surveyed by AnaBat detector at site PW11.



Photo 15. Bat habitat surveyed by AnaBat detector at station PW12.



Photo 16. Bat habitat surveyed by AnaBat detector at site PW13.



Photo 17. Bat habitat surveyed by AnaBat detector at station PW14.



Photo 18. Bat habitat surveyed by AnaBat detector at site PW15.



Photo 19. Bat habitat surveyed by AnaBat detector at station PW16.



Photo 20. Bat habitat surveyed by AnaBat detector at site PW17.

Appendix B. Datasheets from Acoustic Survey Sites

Acoustic Monitoring STATION

2011 Data Form

Station #: PW-1Observer: RSDate: 7-21-15Project: Prevailing winds

Station Information

Datum: NAD27 or NAD83 Zone: 14 Easting: 0569503 Northing: 4776786Detector Type: SD2 SD1 Anabat II Serial Number(s): 80814 (microphone)
SM2 Pettersson B.A.T. (recorder, if applicable)Placement: Ground Raised Raised System: N/A Pulley FixedStation Type: Fixed Temporary Microphone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes No Sound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 1.5
(Height from ground to detector/microphone)Aspect: E
(Bearing or Cardinal Direction of Ark)Power Supply: 12V
(e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

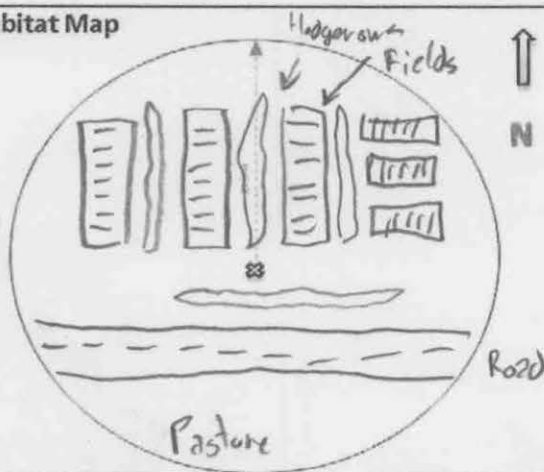
Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe		Deciduous Forest		Grassland		Other (describe)	
Crop/Agriculture	1	Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

Topography: Flat Slope High Point Low Point Other: _____Was this station chosen to sample a bat feature? Yes NoPhotos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.N, E, S, W, Unit, Core

General Remarks: _____

Habitat Map



Codes Bat Features

Description

- AS=anthropogenic structure : _____
- CV=cave : _____
- MN=mine : _____
- RO=rocky outcrop : _____
- CF=coniferous forest stand : _____
- DF=deciduous forest stand : _____
- WA=water : _____
- Other: _____

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: PW-2Observer: RSDate: 7-21-15Project: Prevailing Wind

Station Information

Datum: NAD27 or NAD83 Zone: 14 Easting: 0568133 Northing: 4774899Detector Type: SD2 SD1 Anabat II Serial Number(s): 80966 (microphone)
SM2 Pettersson B.A.T. (recorder, if applicable)Placement: Ground Raised Raised System: N/A Pulley FixedStation Type: Fixed Temporary Microphone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes No Sound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2m Aspect: 5 Power Supply: 12V
(height from ground to detector/microphone) (bearing or cardinal direction of mk) (e.g., voltage and amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe	<u>2</u>	Deciduous Forest		Grassland		Other (describe)	<u>3</u>
Crop/Agriculture	<u>1</u>	Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

-Pasture

Topography: Flat Slope High Point Low Point Other: _____Was this station chosen to sample a bat feature? Yes NoPhotos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.General Remarks: N, E, S, W, Unit, Core

Habitat Map	Codes	Bat Features	Description
	AS=	anthropogenic structure	_____
	CV=	cave	_____
	MN=	mine	_____
	RO=	rocky outcrop	_____
	CF=	coniferous forest stand	_____
	DF=	deciduous forest stand	_____
	WA=	water	_____
Other=			_____
Map out bat and habitat features within 100 m radius of detector (X). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.			

Acoustic Monitoring STATION

2011 Data Form

Station #: Ph-3Observer: RSDate: 7-21-15Project: Prevailing Wind

Station Information

Datum: NAD27 or NAD83 Zone: 14 Easting: 0568878 Northing: 4775146Detector Type: SD2 SD1 Anabat II Serial Number(s): 03697 (microphone)
SM2 Pettersson B.A.T. (recorder, if applicable)Placement: Ground Raised Raised System: N/A Pulley FixedStation Type: Fixed Temporary Microphone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes No Sound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2m Aspect: NE Power Supply: 12V
(Height from ground to detector/microphone) (Bearing or Cardinal Direction of mk) (e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

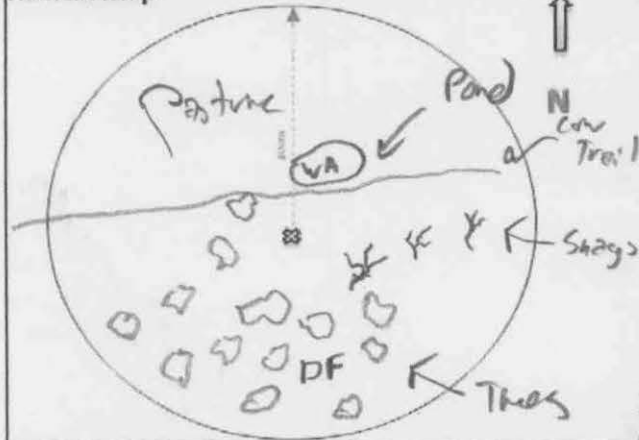
Rank by abundance within 100 m of detector. 1 = most abundant, etc.

Shrub/Steppe	<u>2</u>	Deciduous Forest		Grassland		Other (describe)	<u>1</u>
Crop/Agriculture		Coniferous Forest		Desert			
Riparian/Wetland	<u>3</u>	Pinyon-Juniper		Water (lake, etc.)			

PastureTopography: Flat Slope High Point Low Point Other: _____Was this station chosen to sample a bat feature? Yes NoPhotos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.N, E, S, W, unit 1, Cone

General Remarks: _____

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure	:	
CV=cave	:	
MN=mine	:	
RO=rocky outcrop	:	
CF=coniferous forest stand	:	
DF=deciduous forest stand	:	
WA=water	:	

Other: _____

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: PW-4Observer: RSDate: 7-21-15Project: Prevailing winds

Station Information

Datum: NAD27 or NAD83 Zone: 14 Easting: 0572800 Northing: 4773535Detector Type: SD2 (SD1) Anabat II Serial Number(s): 03483 (microphone)
SM2 Pettersson B.A.T. (recorder, if applicable)Placement: Ground Raised Raised System: N/A Pulley FixedStation Type: Fixed Temporary Microphone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes No Sound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2 Aspect: E Power Supply: 12V
(height from ground to detector/microphone) (bearing or cardinal direction of mic) (e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

Rank by abundance within 100 m of detector. 1 = most abundant, etc.

Shrub/Steppe	<u>1</u>	Deciduous Forest		Grassland		Other (describe)	
Crop/Agriculture	<u>2</u>	Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

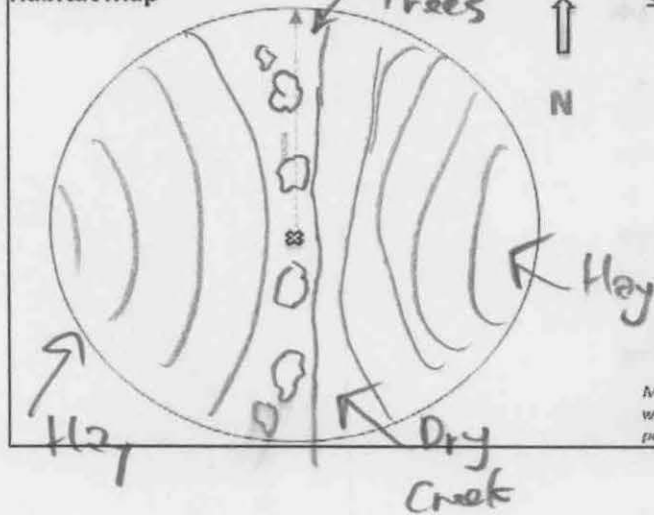
Topography: Flat Slope High Point Low Point Other: _____Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the

detector set up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.

General Remarks: _____

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure	:	
CV=cave	:	
MN=mine	:	
RO=rocky outcrop	:	
CF=coniferous forest stand	:	
DF=deciduous forest stand	:	
WA=water	:	
Other=:	:	

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Observer: RSDate: 7-21-15Station #: PH-5
Project: Prevailing winds

Station Information

Datum: NAD27 or NAD83 Zone: 14 Easting: 0570321 Northing: 4772303Detector Type: SD2 SD1 Anabat II Serial Number(s): 80917 (microphone)
SM2 Pettersson B.A.T. (recorder, if applicable)Placement: Ground Raised Raised System: N/A Pulley FixedStation Type: Fixed Temporary Microphone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes No Sound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2 Aspect: E Power Supply: 12V
(height from ground to detector/microphone) (Bearing or Cardinal Direction of mic) (e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

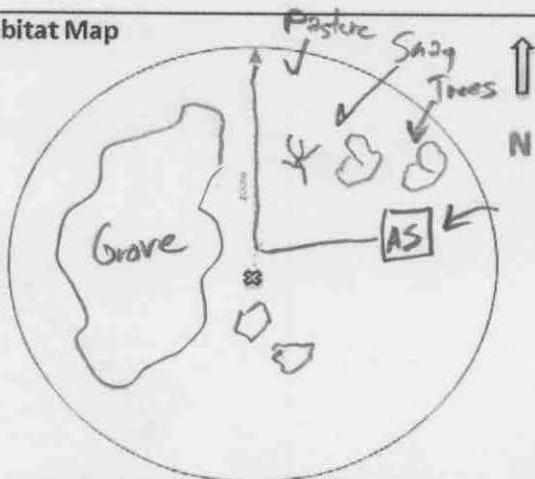
Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe	<u>1</u>	Deciduous Forest	<u>3</u>	Grassland		Other (describe)	<u>2</u>
Crop/Agriculture		Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

PastureTopography: Flat Slope High Point Low Point Other: _____Was this station chosen to sample a bat feature? Yes NoPhotos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.N, E, S, W, center, cone

General Remarks: _____

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure	:	
CV=cave	:	
MN=mine	:	
RO=rocky outcrop	:	
CF=coniferous forest stand	:	
DF=deciduous forest stand	:	
WA=water	:	
Other=:	:	

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cliff, toad, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: Ph-6Observer: RSDate: 7-21-15Project: Prevailing Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14 Easting: 0579638 Northing: 4770270Detector Type: SD2 SD1 Anabat II Serial Number(s): 80482 (microphone)
SM2 Pettersson B.A.T. (recorder, if applicable)Placement: Ground Raised Raised System: N/A Pulley FixedStation Type: Fixed Temporary Microphone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes No Sound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2 Aspect: NE Power Supply: 12v
(Height from ground to detector/microphone) (Bearing or Cardinal Direction of mic) (e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

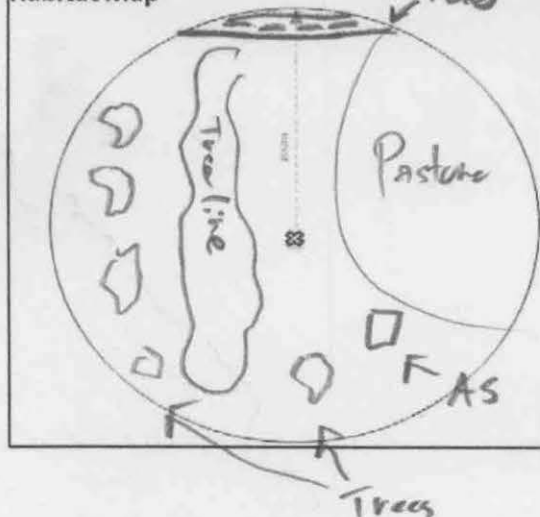
Rank by abundance within 100 m of detector. 1 = most abundant, etc.

Shrub/Steppe	<u>1</u>	Deciduous Forest		Grassland		Other (describe)	<u>2</u>
Crop/Agriculture		Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

PastureTopography: Flat Slope High Point Low Point Other: _____Was this station chosen to sample a bat feature? Yes NoPhotos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.N, E, S, W, 1/4, Cone

General Remarks: _____

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure	:	
CV=cave	:	
MN=mine	:	
RO=rocky outcrop	:	
CF=coniferous forest stand	:	
pf=deciduous forest stand	:	
WA=water	:	
Other=:	:	

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: PW-6AObserver: Ryan McDonaldDate: 7/28/2015Project: Prevailing Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14 T Easting: 57 4168 Northing: 47 70744Detector Type: SD2 SD1 Anabat II
SM2 Pettersson B.A.T.Serial Number(s): 80966 (microphone)
(recorder, if applicable)Placement: Ground RaisedRaised System: N/A Pulley FixedStation Type: Fixed TemporaryMicrophone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes NoSound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2
(height from ground to detector/microphone)Aspect: 350°
(bearing or cardinal direction of mic)Power Supply: 12V
(e.g., voltage and amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:
Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe		Deciduous Forest	<u>1</u>	Grassland	<u>2</u>	Other (describe)	<u>4</u>
Crop/Agriculture	<u>3</u>	Coniferous Forest		Desert		<u>road</u>	
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

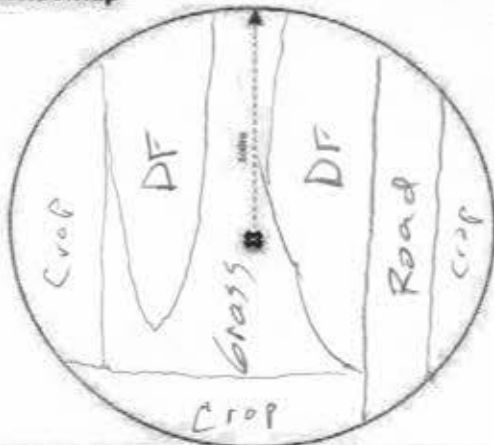
Topography: Flat Slope High Point Low Point Other: _____

Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set-up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.

General Remarks: grassy road leads directly to point

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure

CV=cave

MN=mine

RO=rocky outcrop

CF=coniferous forest stand

DF=deciduous forest stand

WA=water

Other: _____

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: PLW-7Observer: RSDate: 7-21-15Project: Prevailing Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14 Easting: 0572985 Northing: 4766554Detector Type: SD2 SD1 Anabat II Serial Number(s): 015567 (microphone)
SM2 Pettersson B.A.T. (recorder, if applicable)Placement: Ground Raised Raised System: N/A Pulley FixedStation Type: Fixed Temporary Microphone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes No Sound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2Aspect: NEPower Supply: 6V

(Height from ground to detector/microphone)

(Bearing or Cardinal Direction of mic)

(e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

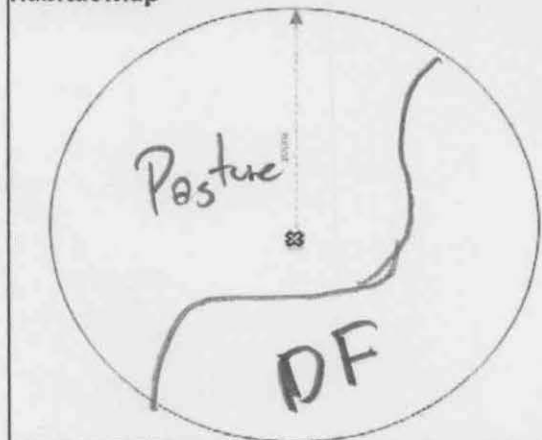
Rank by abundance within 100 m of detector. 1 = most abundant, etc.

Shrub/Steppe		Deciduous Forest	<u>1</u>	Grassland		Other (describe)	<u>2</u>
Crop/Agriculture		Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

PastureTopography: Flat Slope High Point Low Point Other: _____Was this station chosen to sample a bat feature? Yes NoPhotos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set-up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.N, E, S, W, Unit, Core

General Remarks: _____

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure	:	
CV=cave	:	
MN=mine	:	
RO=rocky outcrop	:	
CF=coniferous forest stand	:	
DF=deciduous forest stand	:	
WA=water	:	
Other=:	:	

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #:

Observer:

RS

Date:

7-21-15

Project:

Pw-8
Prevailing W. winds

Station Information

Datum: NAD27 or NAD83 Zone:

14

Easting:

0575714

Northing:

4766373

Detector Type: SD2 SD1 Anabat II

Serial Number(s):

015653

(microphone)

SM2

Pettersson B.A.T.

(recorder, if applicable)

Placement:

Ground

Raised

Raised System:

N/A

Pulley

Fixed

Station Type:

Fixed

Temporary

Microphone Protection:

Plastic Bin

Bat Hat

None

Met Tower Present?

Yes

No

Sound Reception:

PVC Elbow

Reflector Plate

None

Microphone Ht (m):

2

Aspect:

E

Power Supply:

GV

(Height from ground to detector/microphone)

(Bearing or Cardinal Direction of mic)

(e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe	1	Deciduous Forest	2	Grassland	3	Other (describe)	
Crop/Agriculture		Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

Topography:

Flat

Slope

High Point

Low Point

Other:

Was this station chosen to sample a bat feature?

Yes

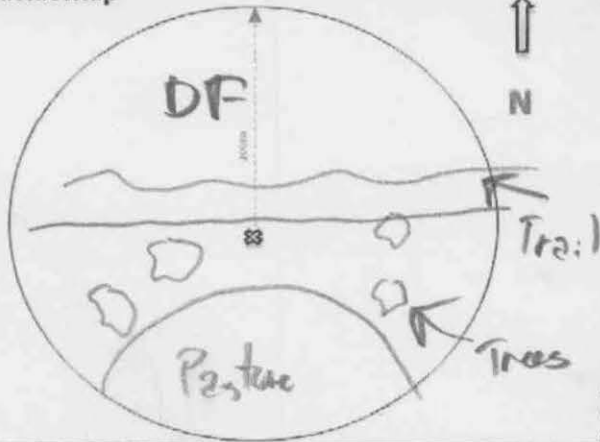
No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the

detector set up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.

General Remarks:

Habitat Map



Codes Bat Features

Description

AS=anthropogenic
structure

:

CV=cave

:

MN=mine

:

RO=rocky outcrop

:

CF=coniferous forest
stand

:

DF=deciduous forest
stand

:

WA=water

:

Other:

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: PW 8 AObserver: Ryan McDonaldDate: 7/28/2015Project: Prevailing Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14 T Easting: 575652 Northing: 4768628Detector Type: SD2 SD1 Anabat II
SM2 Pettersson B.A.T.Serial Number(s): 80917 (microphone)
(recorder, if applicable)Placement: Ground RaisedRaised System: N/A Pulley FixedStation Type: Fixed TemporaryMicrophone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes NoSound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2
(Height from ground to detector/microphone)Aspect: 120 (Bearing or Cardinal Direction of m)
Power Supply: 12 V (e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe		Deciduous Forest	<u>1</u>	Grassland	<u>2</u>	Other (describe)	
Crop/Agriculture	<u>3</u>	Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

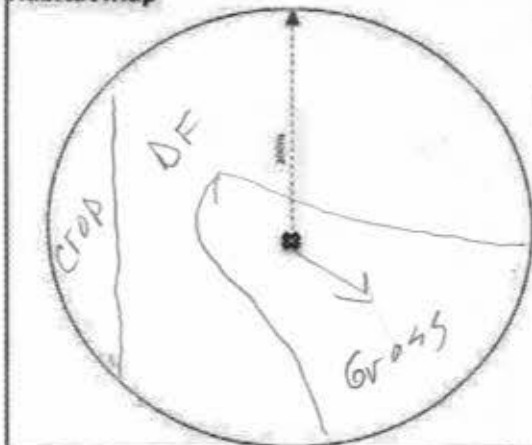
Topography: Flat Slope High Point Low Point Other: _____

Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.

General Remarks: follow driveway to point

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure

CV=cave

MN=mine

RO=rocky outcrop

CF=coniferous forest stand

DF=deciduous forest stand

WA=water

Other: _____

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: PW-9Observer: Ryan M. DonaldDate: 7/27/2015Project: Prevailing Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14T Easting: 580064 Northing: 4765600Detector Type: SD2 SD1 Anabat II
SM2 Pettersson B.A.T.Serial Number(s): 034835 (microphone)
(recorder, if applicable)Placement: Ground RaisedRaised System: N/A Pulley FixedStation Type: Fixed TemporaryMicrophone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes NoSound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2
(Height from ground to detector/microphone)Aspect: 270°
(Bearing, or Cardinal Direction of mtg)Power Supply: 12 V battery
(e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

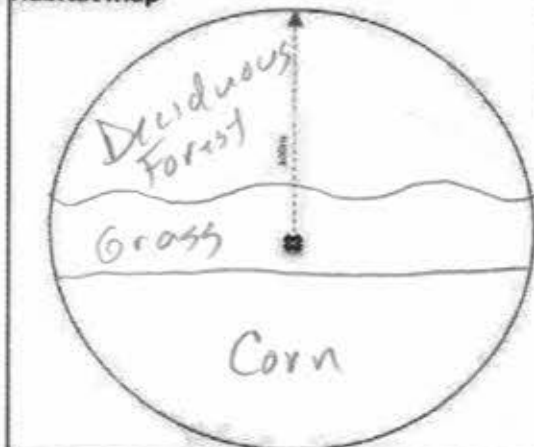
Shrub/Steppe		Deciduous Forest	<u>2</u>	Grassland	<u>4</u>	Other (describe)	
Crop/Agriculture	<u>1</u>	Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper	<u>3</u>	Water (lake, etc.)			

Topography: Flat Slope High Point Low Point Other: _____Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.

General Remarks: _____

Habitat Map



Codes Bat Features

Description

AS=anthropogenic
structure

CV=cave

MN=mine

RO=rocky outcrop

CF=coniferous forest
standDF=deciduous forest
stand

WA=water

Other: _____

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cave, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: PW 9AObserver: Kyle McDonaldDate: 8/7/2015Project: Prevailing Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14T Easting: 569742 Northing: 4766932Detector Type: SD2 SD1 Anabat II Serial Number(s): 80917 (microphone)
SM2 Pettersson B.A.T. (recorder, if applicable)Placement: Ground Raised Raised System: N/A Pulley FixedStation Type: Fixed Temporary Microphone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes No Sound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 1.5 Aspect: 80° Power Supply: 12 V
(height from ground to detector/microphone) (bearing or cardinal direction of mic) (e.g., voltage and amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:
Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe		Deciduous Forest	<u>2</u>	Grassland	<u>1</u>	Other (describe)	
Crop/Agriculture		Coniferous Forest	<u>3</u>	Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)	<u>4</u>		

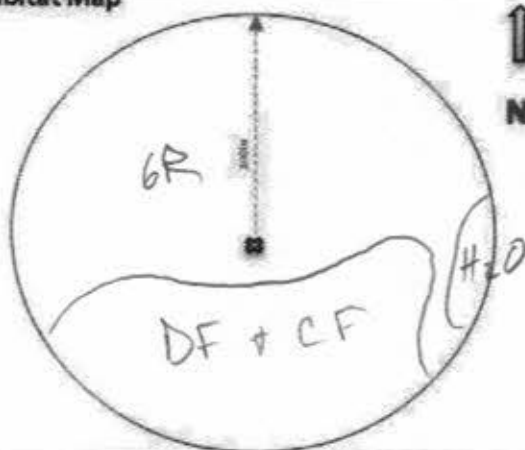
Topography: Flat Slope High Point Low Point Other: _____

Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set-up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat lab on your thumb drive.

General Remarks: _____

Habitat Map



Codes Bat Features

AS=anthropogenic structure

CV=cave

MN=mine

RO=rocky outcrop

CF=coniferous forest stand

DF=deciduous forest stand

WA=water

Other: _____

Description

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cave, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: DW10Observer: Ryan McDonaldDate: 7/27/2015Project: Promising Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14T Easting: 578533 Northing: 4763193Detector Type: SD2 SD1 Anabat II
SM2 Pettersson B.A.T.Serial Number(s): 80814 (microphone)
(recorder, if applicable)Placement: Ground RaisedRaised System: N/A Pulley FixedStation Type: Fixed TemporaryMicrophone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes NoSound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2
(height from ground to detector/microphone)Aspect: 15° (bearing or cardinal direction of mic)
Power Supply: 12 V (e.g., voltage and amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:
Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe		Deciduous Forest	<u>2</u>	Grassland	<u>1</u>	Other (describe)	
Crop/Agriculture	<u>3</u>	Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

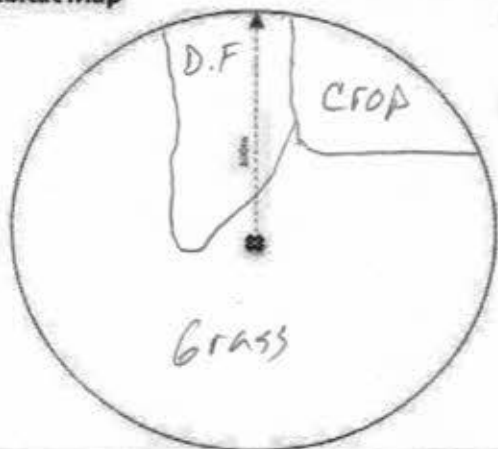
Topography: Flat Slope High Point Low Point Other: _____

Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set-up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellers, etc.). Label and mail to your bat lab on your thumb drive.

General Remarks: _____

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure

CV=cave

MN=mine

RO=rocky outcrop

CF=coniferous forest stand

DF=deciduous forest stand

WA=water

Other: _____

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (e.g., road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: DW-11Observer: Ryan McDonaldDate: 7/27/2015Project: Prevailing Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14T Easting: 576700 Northing: 4763072Detector Type: SD2 SD1 Anabat II
SM2 Pettersson B.A.T.Serial Number(s): 03697 (microphone)
(recorder, if applicable)Placement: Ground RaisedRaised System: N/A Pulley FixedStation Type: Fixed TemporaryMicrophone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes NoSound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2
(height from ground to detector/microphone)Aspect: 5° (bearing or cardinal direction of mic)
Power Supply: 12 V (e.g., voltage and amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe		Deciduous Forest	<u>1</u>	Grassland	<u>3</u>	Other (describe)	
Crop/Agriculture	<u>2</u>	Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

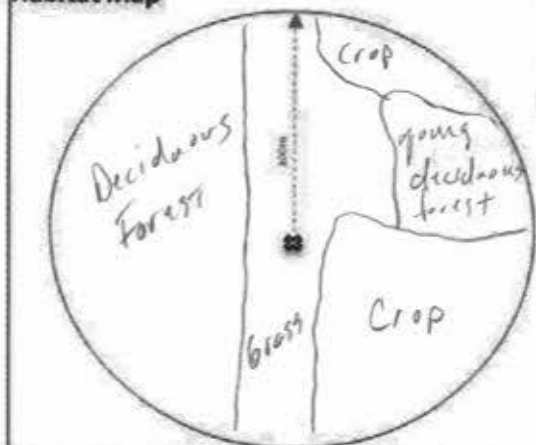
Topography: Flat Slope High Point Low Point Other: _____

Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat lab on your thumb drive.

General Remarks: _____

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure

CV=cave

MN=mine

RO=rocky outcrop

CF=coniferous forest stand

DF=deciduous forest stand

WA=water

Other: _____

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cave, mine, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Observer: Ryan McDonaldDate: 7/28/2015Station #: PW12Project: Prevailing Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14 T Easting: 575445 Northing: 4762139Detector Type: SD2 SD1 Anabat II
SM2 Pettersson B.A.T.Serial Number(s): 80482 (microphone)
____ (recorder, if applicable)Placement: Ground RaisedRaised System: N/A Pulley FixedStation Type: Fixed TemporaryMicrophone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes NoSound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2
(Height from ground to detector/microphone)Aspect: 200° (Bearing or Cardinal Direction of mk)
Power Supply: 12 ✓ (e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe		Deciduous Forest	<u>2</u>	Grassland	<u>1</u>	Other (describe)	
Crop/Agriculture		Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

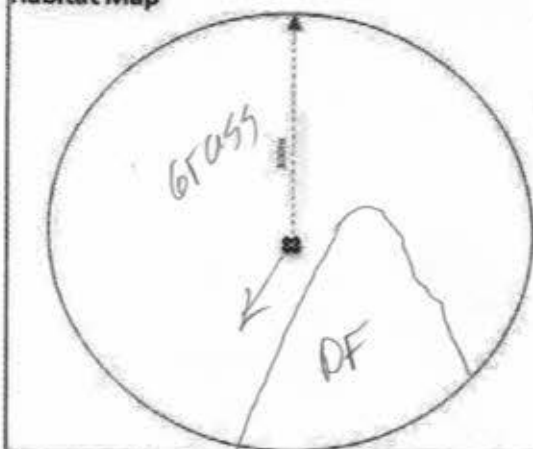
Topography: Flat Slope High Point Low Point Other: _____

Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.

General Remarks: _____

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure

CV=cave

MN=mine

RO=rocky outcrop

CF=coniferous forest stand

DF=deciduous forest stand

WA=water

Other: _____

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: DW13Observer: Ryan McDonaldDate: 8/1/2015Project: Prevailing Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14T Easting: 574443 Northing: 4759581Detector Type: SD2 SD1 Anabat II
SM2 Pettersson B.A.T.Serial Number(s): 03483 (microphone)
(recorder, if applicable)Placement: Ground RaisedRaised System: N/A Pulley FixedStation Type: Fixed TemporaryMicrophone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes NoSound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 1.5
(Height from ground to detector/microphone)Aspect: 90
(Bearing, or Cardinal Direction of mic)Power Supply: 12 ✓
(e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe		Deciduous Forest	<u>1</u>	Grassland	<u>2</u>	Other (describe)	
Crop/Agriculture		Coniferous Forest	<u>3</u>	Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

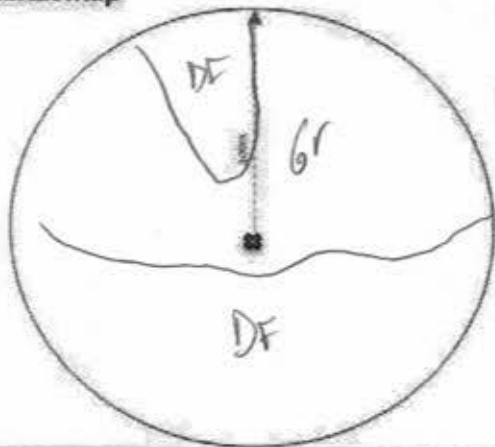
Topography: Flat Slope High Point Low Point Other: _____

Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.

General Remarks: _____

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure	:	
CV=cave	:	
MN=mine	:	
RO=rocky outcrop	:	
CF=coniferous forest stand	:	
DF=deciduous forest stand	:	
WA=water	:	

Other: _____

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: PW-14Observer: Ryan McDonaldDate: 8/1/2015Project: Dreaming Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14T Easting: 574925 Northing: 4758670Detector Type: SD2 SD1 Anabat II Serial Number(s): 03697 (microphone)
SM2 Pettersson B.A.T. (recorder, if applicable)Placement: Ground Raised Raised System: N/A Pulley FixedStation Type: Fixed Temporary Microphone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes No Sound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 2 Aspect: 30 Power Supply: 12V
(Height from ground to detector/microphone) (Bearing or Cardinal Direction of mic) (e.g., voltage and amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

Rank by abundance within 100 m of detector. 1 = most abundant, etc.

Shrub/Steppe	<u>3</u>	Deciduous Forest	<u>2</u>	Grassland	<u>4</u>	Other (describe)	
Crop/Agriculture		Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper	<u>1</u>	Water (lake, etc.)			

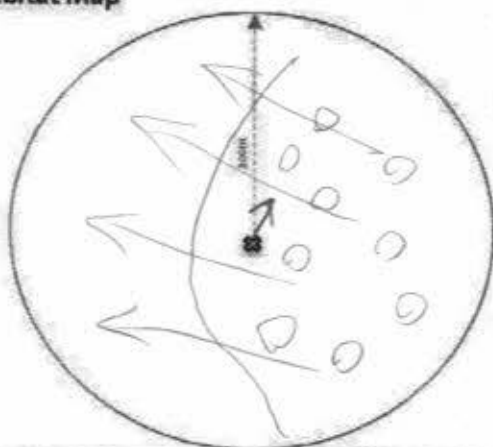
Topography: Flat Slope High Point Low Point Other: _____

Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set-up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat liaison on your thumb drive.

General Remarks: _____

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure

CV=cave

MN=mine

RO=rocky outcrop

CF=coniferous forest stand

DF=deciduous forest stand

WA=water

Others:

Map out bat and habitat features within 100 m radius of detector (s). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: PW-15

Observer: Ryan McDonald

Date: 8/1/2015

Project: Prevailing winds

Station Information

Datum: NAD27 or NAD83 Zone: 14T Easting: 575580 Northing: 4758206

Detector Type: SD2 SD1 Anabat II Serial Number(s): 80966 (microphone)
SM2 Pettersson B.A.T. (recorder, if applicable)

Placement: Ground Raised Raised System: N/A Pulley Fixed

Station Type: Fixed Temporary Microphone Protection: Plastic Bin Bat Hat None

Met Tower Present? Yes No Sound Reception: PVC Elbow Reflector Plate None

Microphone Ht (m): 1.5 Aspect: 0° Power Supply: 12 V
(height from ground to detector/microphone) (bearing or cardinal direction of ark) (e.g., voltage and amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe		Deciduous Forest	2	Grassland	1	Other (describe)	
Crop/Agriculture		Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)	3		

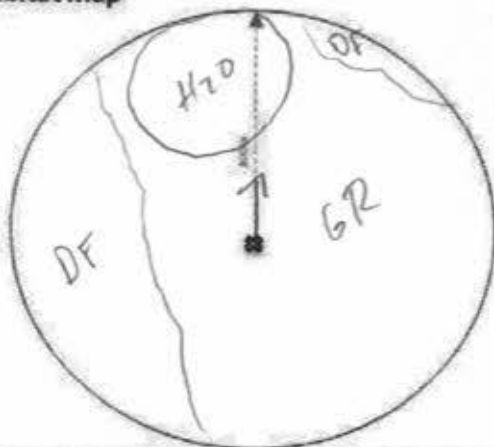
Topography: Flat Slope High Point Low Point Other:

Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set-up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat lab on your thumb drive.

General Remarks:

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure

CV=cave

MN=mine

RO=rocky outcrop

CF=coniferous forest stand

DF=deciduous forest stand

WA=water

Other=:

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cliff, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: PW 16

Observer: Ryan M. S. and d

Date: 8/11/2015

Project: Prevailing Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14T Easting: 576680 Northing: 4757714

Detector Type: SD2 SD1 Anabat II
SM2 Pettersson B.A.T.Serial Number(s): 80482 (microphone)
(recorder, if applicable)

Placement: Ground Raised

Raised System: N/A Pulley: Fixed

Station Type: Fixed Temporary

Microphone Protection: Plastic Bin Bat Hat None

Met Tower Present? Yes No

Sound Reception: PVC Elbow Reflector Plate None

Microphone Ht (m): 2
(height from ground to detector/microphone)Aspect: 0
(bearing or Cardinal Direction of mic)Power Supply: 12 V
(e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:
Rank by abundance
within 100 m of
detector. 1 = most
abundant, etc.

Shrub/Steppe		Deciduous Forest	2	Grassland	1	Other (describe)	
Crop/Agriculture		Coniferous Forest		Desert			
Riparian/Wetland		Pinon-Juniper		Water (lake, etc.)			

Topography: Flat Slope High Point Low Point Other: _____

Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set-up itself. Also take photos of any bat features present and anything else of interest (e.g., sage grouse pellets, etc.). Label and mail to your bat lab on your thumb drive.

General Remarks: _____

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure

CV=cave

MN=mine

RO=rocky outcrop

CF=coniferous forest stand

DF=deciduous forest stand

WA=water

Other: _____

Map out bat and habitat features within 100 m radius of detector (x). Label using codes provided, and write in any other features of interest (cave, road, etc.). Provide descriptions for bat features in spaces provided.

Acoustic Monitoring STATION

2011 Data Form

Station #: DW-17Observer: Ryan McDonaldDate: 8/1/2015Project: Prevailing Winds

Station Information

Datum: NAD27 or NAD83 Zone: 14T Easting: 578987 Northing: 4756031Detector Type: SD2 SD1 Anabat II Serial Number(s): 80917 (microphone)
SM2 Pettersson B.A.T. (recorder, if applicable)Placement: Ground Raised Raised System: N/A Pulley FixedStation Type: Fixed Temporary Microphone Protection: Plastic Bin Bat Hat NoneMet Tower Present? Yes No Sound Reception: PVC Elbow Reflector Plate NoneMicrophone Ht (m): 1.5 Aspect: 280° Power Supply: 12 V
(Height from ground to detector/microphone) (Bearing, or Cardinal Direction of mic) (e.g., voltage and Amp-hours of battery, solar panel, etc.)

Habitat Information

Habitat:

Rank by abundance within 100 m of detector. 1 = most abundant, etc.

Shrub/Steppe		Deciduous Forest	<u>1</u>	Grassland	<u>2</u>	Other (describe)	
Crop/Agriculture	<u>3</u>	Coniferous Forest		Desert			
Riparian/Wetland		Pinyon-Juniper		Water (lake, etc.)			

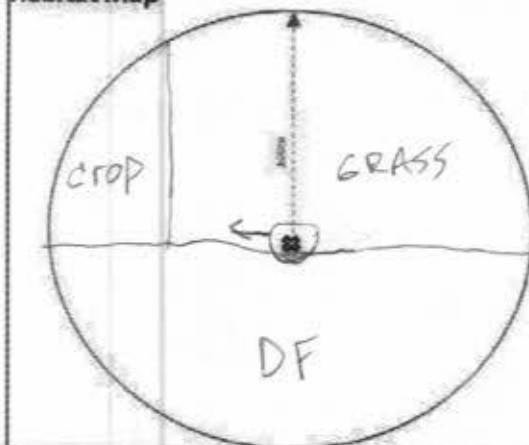
Topography: Flat Slope High Point Low Point Other: _____

Was this station chosen to sample a bat feature? Yes No

Photos: Take photos of the area from each cardinal direction (facing away from the detector), as well as from the direction the microphone is pointing, and one of the detector set-up itself. Also take photos of any bat features present and anything else of interest (e.g., sage-grouse pellets, etc.). Label and mail to your bat lab on your thumb drive.

General Remarks: There

Habitat Map



Codes Bat Features

Description

AS=anthropogenic structure

CV=cave

MN=mine

RO=rocky outcrop

CF=coniferous forest stand

DF=deciduous forest stand

WA=water

Others:

Map out bat and habitat features within 100 m radius of detector (s). Label using codes provided, and write in any other features of interest (cave, road, etc.). Provide descriptions for bat features in spaces provided.