Mist Netting Data Form Site No. 4 Project No./Name 5/3 /_ Site Location Worker of TROIGY REPUBLIC Date 7-21-16 State Of Time Up 8:58 Time Down 2:00 County SELECA Lat/Lon; UTM: N/E 41.22067 W/N -83.10469 Zone Datum NAD83 Observers MTM, MGG Height Band# Mass FA (mm) G/H/B/T Time Species Age Sex Repr. Net WDI Moon Phase Wax / Wane (g) (m) Type_ 44 10,40 EPFU 4.5 0 M S 17 B _ Rise Set KAPTLINE 12:30 EPFU 44 Sun M S 0 17 A 6,5 6:17 2058 3 Moon 2703 4080 4 5 Time Temp (F) Sky Wind No. Bats 6 9:00 740 0 8 10:00 77 0 9 75 0 11:00 0 10 73 12:00 11 0 1100 0 12 2:00 13 14 15 16 Sky Code 17 Clear 0 18 1 Few Clouds 19 2 Partly Cloudy 20 Cloudy or overcast 21 Fog or smoke 22 5 Drizzle or light rain 23 Heavy rain - thunder storm 24 **Beaufort Wind Scale** 25 26 Calm: <1 mph 0 27 Light air: 1-3 mph 1 Light breeze: 4-6 mph 28 2 29 Gentle breeze: 7-10 mph 3 Moderate breeze: 11-16 mph Acoustic Survey: Unit type_____ Unit# Date Start time Stop time_ Start time_____ Stop time_ Please Return to: Date P.O. Box 73, Paint Lick, KY, 40461. Stop time_ Date Start time (859) 925-9012 Weatherproofing Coordinates Comments: p. 2

Lat/Lon : U	TM: N/E 41.27	2067	W/N - 83.1046		ect No./N	Zone -		Observers	TODO ME	Danier		Date 7		
Datum:		nty SENECA		te OH	Ouad	WATER	٦	0 030.70.5_	MTM		MJ			
Site Diagra	m:	1	1			Length				Domin	ant Veg	etation		
	14	4	M BOAN	Net	4	(m)	Dates	1. MAPLE			4. RE0			
SOYZEM	4	+1		A	7.8	9	7/19 € 7/21	2. AMBRICA	r ELM		5			
		1	7	В	(0	6	7/19 8 7/21	3.5 HAGE	er Heron	4	6			
) /	1 (C	4	6	7/19			-	13.00			
			1.1	D	4	6	7/19 8 7/21	1.8 (Net S	Set by H	abitat		
		1 1	11	E	6	6	T/19 = 7/21	Habitat	Α	В	С	D	E	F
Je-D		1)	· NET A	F	ù	6	7/19 5 7/21	River					- 1	Į 😑
NET S	X	LV	NE NE	TC	W 2 1			Stream						1
	•	(4)				C = C		Pond					1	1
11		A)			Photogr	aphs		Corridor	1	/	~		-	V
1.7		/ /		1000	nera:			Cave		3 14 16				
11		NEB		Pho	to Log:_			Mine		4				
) \	-				Forest				100 1		
	IETE /		/	-				Gap						_
Y	1		()	-				Other		-				
100)	1		-				1 1						
10 P		100		X 2 X		1 1 20 .	A section of the sect	11	_					
	t Habitat Charac								Carle Co.					
	Moderate: Snags w									etc)				
	Optimal: Snags wi													
	ater Resources: 1.													
	Moderate: Epheme						luttered to allow	many bats to	drink eas	sily or simu	ltaneous	ly. No co	rridors,	
op	enings or canopy g	aps allow bats	easy access to the	resource.										
	Optimal: Streams of	or ponds (inclu	iding road ruts) pro	sent that	appear to	o offer dr	inking resource	throughout th	ne majority	of the sun	nmer. Fly	ways to	resource	s are
-	ailable.													
	rest Structure: (if													
	Poor: Habitat even Moderate: some di										ie Trooc	greater t	han 15" I	ORH
	ay be present but ra		of frees in the stand	i. Trees 5	10.15 1110	nes prese	att. Officerstory	ciutter donin	iain out in	n ubiquitot	as. Trees	greater t	nan 15	7011
	Optimal: Mature for		age classes of trees	present.	Trees > 1	15 inch D	BH frequent. Va	rying tree he	ight and to	eefalls allo	w for free	quent sm	all openi	ngs ar
	ps that facilitate ba		200000000000000000000000000000000000000											
2 La	nd Cover: 1. Poor:	Square kilom	eter surrounding s	ite predo	minantly	un-fores	ted. Few mature	trees presen	t not conn	ected to oth	ner areas	of trees.		
2.	Marginal: Trees p	resent in the fo	orm of small woodl	ots and w	rooded fe	nce rows	. Little connection	on to adjacen	forested a	areas.	V 6/2			
3.	Optimal: Area is la	argely forested	Wooded stands :	are conne	cted to of	ther woo	ded stands via w	ooded stream	n, fence ro	w, or other	wooded	corridor.	500	
7 Tota	al Habitat Score (S	hould be betw	een 4 & 12)					Please retu	n to:			- 4	2	
	Total Habitat Score (Should be between 4 & 12)							P.O. Box 73,		KV ADAG	1		5	•
Comments	•0									, ICI. 4040		COPI	PERH	EA
								859-925-901	2			4 m V 1 8 Q 41 5	12121 - 61	

ount	v Se N	Nide Cor	ndor	State	()H	to ag	Time Un	210) Tir	ne Dowi	020	- 67	Date		016		Sheet /	of
at/L	on ; UTN	1: N/E	. 20	100	_W/N_	85	.0509	6	Zone		Datum_	IAD 85	Observe	rs G + Jan	05 K 1	PBCK CO	PPE	RHEAD
#	Time	Species	Age	Sex	Repr.	Mass (g)	FA (mm)	Net	Height (m)	WDI	G/H/B/T	Band# Type	Freq.	Moon Phase	e 100%		1	Wax / Wan
1	2130	EPFU	A	M	5	150	47.0	A	4.0	0		-	_			Rise		Set
2	2145	LABO	A	M	S	3.0	42.0	F	6.5	0	-	-		Sun		06015	2	2101
3	2145	EPFU	0	M	NR	11.25	43.0	Α	4.0	0	-	_	-	Moon		704	11	06003
4	2130	EPFU	0	E	NB	13.5	50.0	C	4.0	0	1	-	-					
5	2130	EPFU.	0	14	IVK	9.25	44.0	Č	4.0	0-P	_			Time	Temp (F)	Sky	Wind	No. Bats
6	2200	EPTU	A	F	PL	17.5	47.0	B	30	0-P		- /		Time	remp (r)	JRy	TT III C	TVO. Data
7	2225	EPFU	U	M	NR	17.0	44.0	A	5.0	0		- 11	-	2100	69	0	2	5
8	2240	EPFU	J	W	NR	13.25	44.0	B	1.5	0	-			2200	69	0	2	5
9	2725	EPTU	1	M	NR	13.25	45.0	A	5.0	0	-	-		2300	66	0	1	6
0	2225	EPFU	0	M	NR	150	46.0	A	5.0	0	_		-	0000	63	0	1	2
1	2305	EPFU	J	M	NR	17.0	47.0	A	5.0	0			-	0.00	62	0	1	1
2	2315	EPFU	J	F	NR	16.25	549.0	B	1.0	0	-	1-	-	0200	60	0	1	
3	2345	LABO	J	M	NK	8.5	39.0	A	4.0	0-F	_	_	1-1					
4	2345	FPF()	A	F	PL	21.75	46.0	A	5.0	0	-			11				
5	2345	EPFU	A	F	PL.	22.25	.47.0	D	3.0	0	-	-	-					
6	2350	EPFU	A	F	PL	20.5	47.0	D	4.0	0	-					Sky Code		
7	0030	LECTU	U	F	NR	14.25	47.0	C	5.0	0	_	_	_	0	Clear			
8	0045	LABO	A	M	S	11.25	39,0	C	7.0	0	-		-	1	Few Cloud	ls		
9	0125	EPFU	A	F	L	7.5	45.0	6	2.5	0	-	-	-	2	Partly Clo	udy		
0	2340	ERFU	A	F	PL	19.25	47.0	E	Oil	0	-		-	3	Cloudy or	overcast		
1														4	Fog or sme	oke		
2				F 1 4										5	Drizzle or	light rain		
3						4 = 4								6	Heavy rain	n - thunde	r storm	
4																		
5																fort Wind	l Scale	
6														0	Calm: <1 r			
7									1					1	Light air: 1			
8														2	Light bree			
9									-					3	Gentle bre			
0	· ·					X III								4	Moderate	breeze: 11	-16 mph	
orea MY/	lis (LABC	viations: Coryn)); Lasiurus cine is grisescens (M ceius humeralis	reus (LAC YGR); M	CI); Lasi yotis leil	urus sem bii (MYLI	inolus (L E); Myoti	ASE); Las s lucifugu	ionycter s (MYLU	is noctivag J); Myotis	ans (LAN septentric	IO); Myotis	austroripariu	15	Please Re P.O. Box 7 (859) 925-	73, Paint l	Lick, KY	, 40461.	

* Possible broken ulna before capture,

Site 1	Vo.	Data Form	Projec	No./N	Jame 5	13.01	1 Ro	ouh1	. c				Date 2	1 3.14	2016	_		38.
Site I	ocation	Wide coor	idors	lead	ing t	0 29	Fields	2000					Date_&	, Jary o	.07.0	_	10	
Cour	ty Seno	eca		State	OH		Time Up	210	O Tin	ne Dowi	0200)						25
at/l	Lon; UTN	Wide coor eca M: NYE 41.	2076	6	$_{W/N}$	-83.	05096		Zone		Datum_	NAD 83	Observe	rs G. Jai	105, M.	Gooden		•
															,	CC	PPEF	HEA
#	Time	Species	Ama	Sex	Para	Mass	EA ()	Mar	Height	TATIOT	Carma	Band#	Freq.	Moon Phas	05.			
n	Time	Species	Age	Sex	Repr.	(g)	FA (mm)	Net	(m)	WDI	G/H/B/T	Type		Moon Phas	e 70 %		V	Vax / War
1	2130	EPFU	J	F	NR	11.5	46.5	B	3,0	0	-	-	-			Rise		Set
2	2145	EPFU	J	F	NR	11.0	46.0	A	4.0	0	-	1	-	Sun		06	17	2100
3	2150	LABO	A	F	NR	14.25	44.0	E	2.0	0	Ĺ	1	-	Moon		220	24	0806
4	2200	EPFU	J	M	NR	13.75	44.0	A	3.5	0	-	-	-					
5	2200	EPFU	J	F	NR	14.75	45.0	A	3.0	0	1			Time	Tamm (E)	Cl	TATE A	NT- Date
6	2200	EPFU	J	F	NR	12.25	45.0	B	4.0	0-P	-	-	-1.1	Time	Temp (F)	Sky	Wind	No. Bats
7	2230	EPFU	4	M	S	17.00	43.0	E	1.5	0	-	-	-	2100	76	3	0	3
8		EPFU	A	F	PL	17.50	48.0	(2.0	0	_		-	2200	70	2	0	6
9		EPFU	A	F	PL	20.50	47.0	A	1,5	a	-	_	-	2300	68	1	2	3
10	2310	EPFU	T	F	NR		43.0	B	40	OP	-	_	-	0000	71	3	1	1
11	2320	EPFU	7	M	NR	15.25		C	3.0	0		1-		0100	70	2	1	0
12	2340	LABO	A	M	5	9.5	34.0	C	3.0	0	-	-	-	0200	69	2	1	1
13	0050	LACI	IA	F	PL	30.25	57.0	E	0.5	0	-	_	_					
14	0220	EPFU	A	F	L	21.75		A	4.5	0	-	_	-					
15									1		1 6 9							
16																Sky Code	2	
17				T.E.										0	Clear			
18					4 7 7									1	Few Cloud	ls		
19														2	Partly Clou	ıdy		+
20														3	Cloudy or	overcast		
21				1							1			4	Fog or smo			
22					1			1	71					5	Drizzle or			
23					1									6	Heavy rain	- thunde	er storm	
24									1									
25							1 3				1				Beau	fort Wine	d Scale	
26					7						1			0	Calm: <1 n	nph		
27	1		7	7		1			1					1	Light air: 1	-3 mph		
28				1	7	1 61								2	Light breez	ze: 4-6 mp	h	
29				7	7						1			3	Gentle bree			6
30	200		1 - 5 - 5	8	1				(3.25)		1-1		l'Esti	4	Moderate l			-
cou	stic Surv	vey: Unit typ	e		Unit #		Date_		Start tin	ne		Stop time					•	
							Date		Start tin			Stop time		Please Re	turn to:	97.75		
							Date		Start tin			Stop time		P.O. Box		ick, KY	, 40461.	
eat	herproo	fing			-		Coordin	ates	COLCO III			110	7-11	(859) 925-				
	ments:						Several Services											p. 2

Lat/Lon; UTM: N/E 4/. 20766 W	IN- 83,05096	ect No./Na	one	01 /	· Vano	A - 17	Do Inc	Date	7 July	20.0
Datum: NAV83 County Serent	State H	200	latson	Observers_	5-30-M	22116	DEST	- 6-		-
Site Diagram:		Height L				Domi	nant Veg	rotation	_	
	Net	(m)	(m) Dates	1. Pruotos	Sent			lands .		
	A	5.7	17 7/19 7/21	2. 10 1100			5.	LOCATES A	2000	
101	В	5.2	2 7/19 7/21	3. Acev			6.			
SR 10	C	5.7	(n 7/19 -/21				-			
11 /	Steam D	7.8	9 7/19			Net S	Set by H	abitat		_
se ioi	E	2,6	1 7/19 7/21	Habitat	A	В	Č	D	E	F
29 E	F	12.3		River						
00 70 1	177	100		Stream					V	
	/. / 6	4.21		Pond	- 7					
Migo	Site 1	Photograp	ohs	Corridor		V	V	V		
1511		era: Fugi	h (m	Cave		1				
1571 1 0x	Phot	o Log:		Mine			7 30			
Twoods / 1th				Forest						
	ag field -			Gap				-		
Woods	AQ			Other						1 11
ag field										
Indiana Bat Habitat Characterization (Cho Roost habitat: 1. Poor: No or few sna 2. Moderate: Snags with sloughing ba	igs >= 5" DBH with slough rk or other roost features p	ning bark o present 5-1	r other usable roost fe 5 inch DBH within 10	eatures (cracks, 00 feet of forest	ed areas.	etc)				
Indiana Bat Habitat Characterization (Chools Roost habitat: 1. Poor: No or few sna 2. Moderate: Snags with sloughing bat 3. Optimal: Snags with sloughing bat Water Resources: 1. Poor: bat drinking 2. Moderate: Ephemeral or intermitten openings or canopy gaps allow bats eat 3. Optimal: Streams or ponds (including available. Forest Structure: (if hardwoods are ald 1. Poor: Habitat even aged and young. 2. Moderate: some diversity in age of may be present but rare. 3. Optimal: Mature forest. Diverse age gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer.	ags >= 5" DBH with slough rk or other roost features p k or other roost features produced areas at streams or ponded areas asy access to the resource. and road ruts) present that a besent or nearly absent or if a Trees smaller than 5 inch trees in the stand. Trees 5 in the classes of trees present. The	ning bark of present 5-15 in the site. In present but appear to of stand is many DBH. Unto 15 inches in the site of the site o	r other usable roost fe inch DBH within 100 nch DBH within 1000 at too cluttered to allo ffer drinking resource onoculture, area auto derstory growth clutt is present. Understory inch DBH frequent. Va-forested. Few matu	eatures (cracks, 200 feet of forested feet of forested with many bats to matically qualifiered and restrict clutter dominarying tree herested feet trees present	ed areas. I areas. I drink eas The majority	sily or simuly of the sun poor). foraging of ubiquitoureefalls allo	nmer. Fly us. Trees	yways to greater t quent sm	resource	ОВН
Roost habitat: 1. Poor: No or few sna 2. Moderate: Snags with sloughing bar 3. Optimal: Snags with sloughing bar Water Resources: 1. Poor: bat drinking 2. Moderate: Ephemeral or intermitten openings or canopy gaps allow bats ea 3. Optimal: Streams or ponds (including available. Forest Structure: (if hardwoods are all 1. Poor: Habitat even aged and young. 2. Moderate: some diversity in age of may be present but rare. 3. Optimal: Mature forest. Diverse age gaps that facilitate bat foraging.	ags >= 5" DBH with slough rk or other roost features per k or other roost features per k or other roost features per ing resources not present at at streams or ponded areas asy access to the resource. In groad ruts) present that a seem or nearly absent or if a trees smaller than 5 inch trees in the stand. Trees 5 is a classes of trees present. The surrounding site predom of small woodlots and wo wooded stands are connected.	ning bark of present 5-15 in the site. In present but appear to of the stand is many to 15 inches a stand is included frees 5-15 inches animantly unpoded fences.	r other usable roost fe inch DBH within 100 nch DBH within 1000 at too cluttered to allo ffer drinking resource onoculture, area auto derstory growth clutt is present. Understory inch DBH frequent. Va- torested. Few mature rows. Little connection	eatures (cracks, 200 feet of forested feet of forested with many bats to the throughout the matically qualifiered and restrict clutter dominarying tree here trees presention to adjacent	ed areas. I areas. I drink eas ne majority ifies as a 1 cts flying/ ant but no ight and tr t not conne t forested a n, fence roo	sily or simuly of the sundates to complete the sundates of the	nmer. Fly us. Trees w for free ner areas	greater t quent sm of trees.	resource	ОВН
Indiana Bat Habitat Characterization (Chools Roost habitat: 1. Poor: No or few sna 2. Moderate: Snags with sloughing bar 3. Optimal: Snags with sloughing bark Water Resources: 1. Poor: bat drinking 2. Moderate: Ephemeral or intermitten openings or canopy gaps allow bats ea 3. Optimal: Streams or ponds (including available. Forest Structure: (if hardwoods are ald 1. Poor: Habitat even aged and young. 2. Moderate: some diversity in age of may be present but rare. 3. Optimal: Mature forest. Diverse age gaps that facilitate bat foraging. I Land Cover: 1. Poor: Square kilomete 2. Marginal: Trees present in the form 3. Optimal: Area is largely forested.	ags >= 5" DBH with slough rk or other roost features per k or other roost features per k or other roost features per ing resources not present at at streams or ponded areas asy access to the resource. In groad ruts) present that a seem or nearly absent or if a trees smaller than 5 inch trees in the stand. Trees 5 is a classes of trees present. The surrounding site predom of small woodlots and wo wooded stands are connected.	ning bark of present 5-15 in the site. In present but appear to of the stand is many to 15 inches a stand is included frees 5-15 inches animantly unpoded fences.	r other usable roost fe inch DBH within 100 nch DBH within 1000 at too cluttered to allo ffer drinking resource onoculture, area auto derstory growth clutt is present. Understory inch DBH frequent. Va- torested. Few mature rows. Little connection	eatures (cracks, 200 feet of forested feet of forested with many bats to be throughout the matically qualifiered and restrict clutter dominary arying tree here trees presention to adjacent wooded stream	ed areas. I areas. I areas. I drink eas The majority Ifies as a 1 The cts flying/ The and the The connection of the conn	sily or simuly of the sun epoor). foraging of ubiquitor reefalls allo ected to other areas. w, or other	nmer. Fly us. Trees w for free ner areas wooded	greater t quent sm of trees.	resource	ОВН



APPENDIX B

Mist-Net Site Photographs



Site 1 Net A



Site 1 Net C



Site 1 Net E



Site 1 Net B



Site 1 Net D







Site 2 Net A Site 2 Net B Site 2 Net C





Site 2 Net D Site 2 Net E



Site 3 Net A



Site 3 Net C



Site 3 Net E



Site 3 Net B



Site 3 Net D







Site 4 Net A Site 4 Net B Site 4 Net C





Site 4 Net D Site 4 Net E







Site 5 Net A Site 5 Net B Site 5 Net C





Site 5 Net D Site 5 Net E



APPENDIX C

Bat Capture Photographs

Representative photos bat species captured



Lasiurus cinerus



Eptesicus fuscus



Lasiurus borealis



Summer 2015 and 2016 Bat Surveys for the Proposed Emerson West Wind Project, Seneca County, Ohio

USFWS No. 16-014



Completed by:

Theresa Wetzel, Piper Roby, Chris McNees, and Chris Leftwich

12 April 2017

P.O. BOX 73 11641 RICHMOND RD. PAINT LICK, KENTUCKY, 40461
(859) 925-9012 OFFICE (859) 925-9816 FAX
mwgumbert@copperheadconsulting.com

Business Confidential - Not for Public Disclosure



TABLE OF CONTENTS

PROJECT BACKGROUND	.1
METHODOLOGY	
Level of Effort/Site Selection	
Mist-Net Surveys	
White-Nose Syndrome Protocol	
Radio Telemetry	
RESULTS AND DISCUSSION	
Mist-Net Survey	
Diurnal Radio Telemetry	.9
Emergence Counts	15
Foraging Telemetry	16
CONCLUSIONS	23
LITERATURE CITED	24
LIST OF TABLES	
Table 1. Mist-net site locations, Emerson West Wind Project, Ohio, 2015 and 2016	. 7
Table 2. Total bat captures by species, age, sex, and reproductive status, Emerson West Wind	
Project, Ohio, 2015 and 2016.	
Table 3. Northern long-eared bats captured and radio-tagged during the mist-net survey,	
Emerson West Wind Project, Ohio, 2015 and 2016	10
Table 4. Northern long-eared bat roost trees located during radio telemetry efforts, Emerson	
West Wind Project, Ohio, 2015 and 2016.	10
Table 5. Roost tree (RT) use by radio-tagged northern long-eared bat, MYSE 205, Emerson We	
Wind Project, Ohio, 2015.	
Table 6. Roost tree (RT) use by radio-tagged northern long-eared bat, MYSE 387, Emerson Wes	st
Wind Project, Ohio, 2016.	
Table 7. Roost tree (RT) use by radio-tagged northern long-eared bat, MYSE 267, Emerson We	st
Wind Project, Ohio, 2016	
Table 8. Number of emerging bats from roosts used by northern long-eared bat, MYSE 205,	
Emerson West Wind Project, Ohio, 2015.	15
Table 9. Number of emerging bats from roosts used by northern long-eared bat, MYSE 387,	
Emerson West Wind Project, Ohio, 2016.	15
Table 10. Number of emerging bats from roosts used by northern long-eared bat, MYSE 267,	
Emerson West Wind Project, Ohio, 2016.	
Table 11. Number of nights tracked and number of foraging location points collected for three	
adult northern long-eared bats, Emerson West Wind Project, Ohio, 2015 and 2016	16
Table 12. Mean foraging area sizes for three adult northern long-eared bats, Emerson West	
Wind Project, Ohio, 2015 and 2016.	20
Table 13. Foraging area sizes for adult northern long-eared bats, Emerson West Wind Project,	
Ohio, 2015 and 2016	20

Table 14. Foraging habitat use by number of location points of three northern long-eared bats,
Emerson West Wind Project, 2015 and 2016.
LIST OF FIGURES
Figure 1. Proposed Emerson West Wind Project and bat study area overview, Seneca County,
Ohio, 2016
Figure 2. Mist-net site locations, Emerson West Wind Project study area, Seneca County, Ohio,
2015 and 2016
Figure 3. Roost trees used by northern long-eared bat, MYSE 205, Emerson West Wind Project,
Ohio, 2015
Figure 4. Roost trees used by northern long-eared bat, MYSE 387, Emerson West Wind Project,
Ohio, 2016
Figure 5. Roost trees used by northern long-eared bat, MYSE 267, Emerson West Wind Project,
Ohio, 2016
Figure 6. Foraging area utilized by female northern long-eared bat, MYSE 205, Emerson West
Wind Project, Ohio, 2015
Figure 7. Foraging area utilized by female northern long-eared bat, MYSE 387, Emerson West
Wind Project, Ohio, 2016.
Figure 8. Foraging areas utilized by male northern long-eared bat, MYSE 276, Emerson West
Wind Project, Ohio, 2016.
Figure 9. Foraging areas of three adult northern long-eared bats, Emerson West Wind Project,
2015 and 2016
Figure 10. All foraging location points collected on three adult northern long-eared bats,
Emerson West Wind Project Ohio 2015 and 2016

APPENDICES

Appendix A: Mist-Net Data Sheets Appendix B: Mist-Net Photographs Appendix C: Bat Capture Photographs Appendix D: Roost Tree Data Sheets Appendix E: Roost Tree Photographs



PROJECT BACKGROUND

Copperhead Environmental Consulting, Inc. (Copperhead) conducted a bat mist-net and telemetry survey for the proposed Emerson West Wind Project (Project) in Seneca County in 2015 and 2016 (Figure 1). Sites surveyed in 2015 were originally surveyed as part of another project (USFWS No. 15-045), but due to changes in project boundaries now fall within the Emerson West Wind Project. The goals of this survey were to document bat species diversity and abundance within the Project boundary, and inform understanding of roosting habitat, foraging range, and spatial distribution of federally listed Indiana bats (*Myotis sodalis*) and northern long-eared bats (*Myotis septentrionalis*), and state listed Rafinesque's big-eared bats (*Corynorhinus rafinesquii*) and eastern small-footed bats (*Myotis leibii*), if captured. Both 2015 and 2016 survey efforts are included in this report.

METHODOLOGY

Level of Effort/Site Selection

Mist-net surveys were implemented in accordance with guidelines outlined in the 2015 and 2016 Range-wide Indiana Bat Summer Survey Guidelines (USFWS 2015, 2016), 2009 Ohio Department of Natural Resources (ODNR) On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio (ODNR 2009), and the most recent Ohio Division of Wildlife Guidance for Bat Permitted Biologist (ODNR-DOW 2015). The 2015 study plan was submitted to USWFS and ODNR on 7 July 2015; concurrence was received on 13 July 2015 (USFWS) and 22 July 2015 (ODNR). The 2016 study plan was submitted to USFWS and ODNR on 25 May 2016 and concurrence was received on 27 May 2016 (USFWS) and 3 June 2016 (ODNR).

The level of effort outlined in the study plan was based on the estimated amount of forested habitat within the Study Area (~5,133 ac) resulting in 42 mist-net sites (Figure 2). Thirteen of the sites were surveyed in July 2015 and 29 sites were surveyed in July 2016. Locations of mist-net sites were chosen based on the best available habitat present within parcels where landowner access was granted, and deemed most likely to yield Indiana and northern long-eared bat captures.

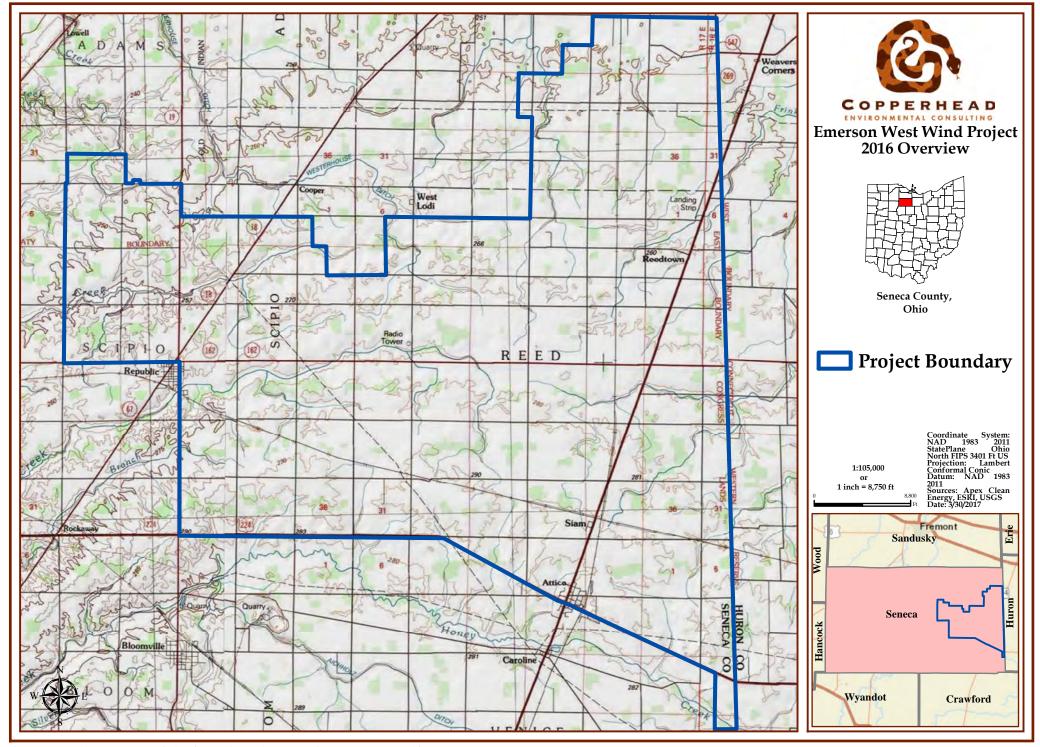


Figure 1. Proposed Emerson West Wind Project and bat study area overview, Seneca County, Ohio, 2016

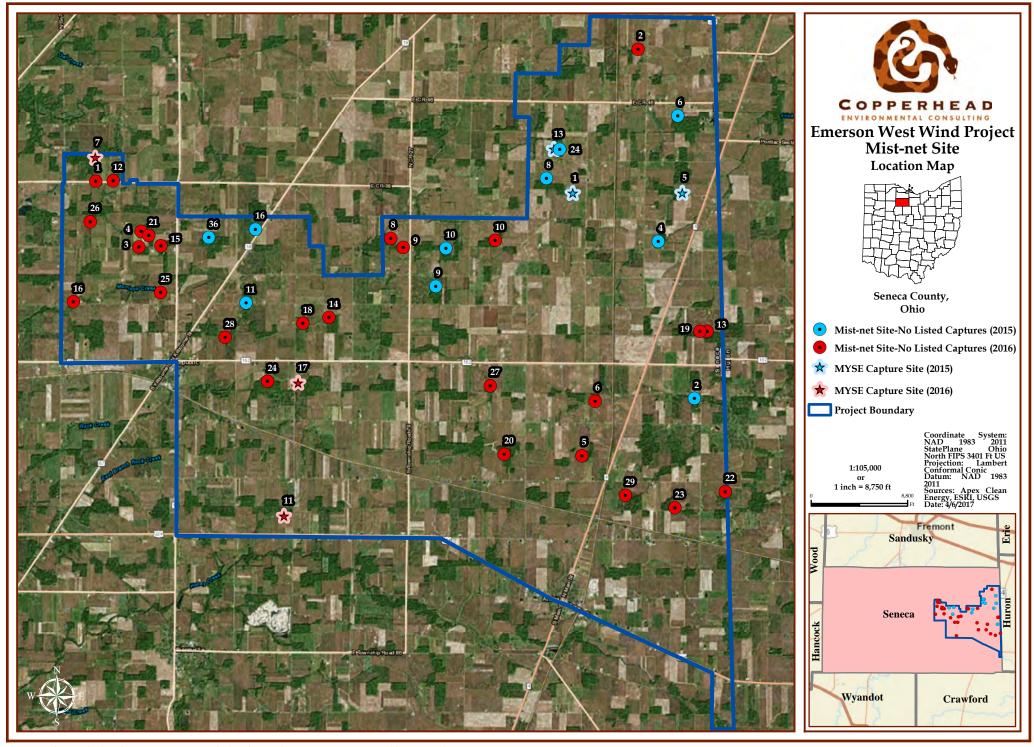


Figure 2. Mist-net site locations, Emerson West Wind Project study area, Seneca County, Ohio, 2015 and 2016.



Mist-Net Surveys

Mist-nets were set-up to maximize coverage of flight paths used by bats along suitable travel corridors, foraging areas, or drinking areas. Placement of mist-nets was based on the extent of canopy cover, presence of an open flyway, and forest conditions near the site. Actual location and orientation of each net was determined in the field by permitted biologists and mapped with ArcGIS (v. 10.3.1 ESRI, Redlands, CA).

Each mist-net site consisted of three to four double high net sets (two nets stacked; 5.2 m tall) and one high net set (three mist-nets stacked; 7.5 m tall). Mist-net sites were surveyed for two nonconsecutive nights (due to an access issue, site 3 in 2015 was surveyed for only one night).

Low visibility, high-quality, nylon nets, 4 to 12 meters (\sim 13 - 42 ft.) in length (depending upon the width of the corridor) were used for each net set. Nets were deployed at sunset each night, left open for at least five hours, and checked every 10 minutes. Disturbance near the nets was kept to a minimum between checks. Weather data, including temperature, wind speed, and cloud cover, were recorded for each site on an hourly basis to ensure compliance with the mist-netting guidelines (e.g., temperature during survey > 50°F).

Bats were live-caught in mist-nets and released unharmed near the point of capture. Biological and morphometric data, i.e., species, sex, age class, reproductive condition, mass, and forearm length were recorded on data sheets for each bat captured. In addition, the height and the specific net set of each bat capture was recorded. Processing of bats was completed within 30 minutes from the time the bat was removed from the net. All captured northern long-eared bats were banded utilizing ODNR, Division of Wildlife (DOW) bands as required by ODNR and OH USFWS.

White-Nose Syndrome Protocol

In an effort to minimize the transmission of White-Nose Syndrome (WNS) between captured bats, all netting and field activities followed the most up-to-date guidelines established by USFWS. All hard, non-porous netting equipment was sanitized with a Lysol® IC solution [2015] or Isopropyl alcohol wipes (70%) [2016] prior to arrival at the project site and after each survey night; all other equipment was submersed in hot water (140°F) for a minimum of 20 minutes. Disposable latex gloves were worn over sanitized handling gloves and changed following the handling of each bat. All non-disposable equipment, e.g., PESOLA® scales, rulers, calipers, etc., coming into contact with bats was sanitized immediately following the handling of each bat. Bats were



evaluated for potential WNS infection through wing scoring following the Wing-Damage Index (Reichard and Kunz 2009).

Radio Telemetry

Radio Transmitter Attachment

Captured northern long-eared bats were radio-tagged to locate diurnal roosts and to collect foraging data. Radio transmitters (Holohil Systems Ltd. LB-2X, frequency 172 kHz, 0.30 g and Lotek PicoPip Ag337, 172 kHz, <0.32g) were tested before being attached between the scapulae of the bat with Permatype, a nontoxic surgical adhesive that degrades over time allowing the transmitter to fall off the bat. Each transmitter had a unique frequency, which was used to identify individual bats during radio-tracking.

Diurnal Radio Telemetry & Emergence Counts

Model TRX-1000S (Wildlife Materials Inc., Carbondale, Illinois, USA) tracking receivers and 172-3 FB 3- and 5-element Yagi directional antennas were used to track radio-tagged bats to day roosts. Once located, each roost tree was photographed and coordinates were obtained using a handheld GPS unit. In addition, a variable radius plot was established around each roost tree using a 10-factor English prism (Cruise Master Prisms, Inc.) to determine stand characteristics and basal density. Data recorded for each tree within the plot included species, diameter at breast height (dbh), tree height, roost height, canopy cover, and bark condition. Roost tree locations were mapped with ArcGIS (v. 10.3.1 ESRI, Redlands, CA).

Emergence counts were conducted on each roost tree located during telemetry efforts. The number of roost trees monitored on a given evening was determined by availability of personnel and access to roost trees, with priority given to roost trees that were occupied by a radio-tagged bat. Emergence counts were conducted by a biologist and/or recorded with a night vision video camera allowing emergence counts to be conducted on several trees concurrently each night. Observers arrived at roosts before sunset and positioned themselves so that the roost was backlit by the evening sky and remained at the roost until darkness inhibited further counts. Video cameras were positioned at a roost tree before sunset and retrieved after emergence was finished for the night. Videos were watched the next day by biologists and the number of bats emerging was counted. Emergence data were recorded on roost tree data sheets.



Foraging Telemetry

Foraging telemetry was conducted using a Cessna Sky Hawk 172 fitted with aircraft strut mount assemblies (Advanced Telemetry Systems Inc., [ATS] 1997, Isanti, MN) with two 172-3FB 4-element ATS Yagi directional antennas (ATS model #13886). The use of fixed-winged aircraft to collect foraging data allowed for the collection of data on multiple bats each night, and the ability to move long distances between multiple foraging areas in one night. The aerial crew consisted of a pilot and a navigator/copilot. The pilot maintained an elevation of approximately 455 meters (1500 ft.) above ground level. The navigator monitored the transmitter signal through the receiver estimating bat location on mapping software (DeLorme Topo North America 9.0, Yarmouth, ME).

Two strategies were employed for determining a bat's location. For one method, the pilot flew the airplane in tight circles above the bat with the airplane positioned so the inside antenna was always pointed toward the bat. The other method utilized multiple crosses over the bat, listening to signal strength, switching antennas, and viewing the airplane's GPS location on the laptop. When enough information was gathered and the navigator felt confident with the bat's approximate location, a foraging point was plotted on the electronic map and labeled with a bat frequency and time. To estimate error associated with location data collected from the airplane, the aerial crew estimated locations of stationary bats in their roosts during the day (n=3) and compared them to the actual locations of those roosts as documented via ground telemetry. The aerial crew also estimated locations of test transmitters that were activated in the field and placed in a location unknown to the aerial crew (n=4). The mean error was 151.7±44.4 (SE) meters (range: 47.8.0 – 392.1 m).

Locations of foraging bats and capture locations were pooled and examined using fixed kernel density estimates and isopleth surface proportions conducted with Geospatial Modeling Environment version 0.7.4.0 Beyer, H.L (Spatial Ecology LLC 2015) and Statistical Software R version 3.2.2 (R Core Team 2016) to determine foraging area for each individual. The foraging areas were imported into ArcGIS to calculate the 50%, 75%, and 95% probability contour for each individual bat and for all bats combined. Foraging areas were defined based on the area of use within these probability contours. Most of the foraging area with outlier locations eliminated was defined by the 95% probability contours (majority foraging area), areas within the 75% probability contours were considered intermediate foraging usage areas, and 50% probability contours were considered core foraging areas. Probability contours were imported into ArcGIS for additional analysis using aerial photography, USGS spatial analysis, and GIS layers



provided by Apex to characterize foraging areas. Analysis of foraging area size was conducted in ANOVA and results were evaluated at the alpha = 0.05 level.

RESULTS AND DISCUSSION

Mist-Net Survey

Mist-net surveys were conducted at 42 sites: 13 sites from 23 – 31 July 2015 and 29 sites from 11-22 July 2016 (Table 1, Figure 2). A total of 438 bats of four species were captured, including eight (6 female, 2 male) northern long-eared bats (Table 2). Big brown bats (*Eptesicus fuscus*) comprised 79 percent of total captures (n=344) and eastern red bats (*Lasiurus borealis*) comprised 19 percent of total captures (n=82). Completed bat capture data sheets are provided in Appendix A, photographs of mist-net sites are provided in Appendix B, and representative photographs of each bat species captured are provided in Appendix C.

Table 1. Mist-net site locations, Emerson West Wind Project, Ohio, 2015 and 2016.

Site No. (2015)	Latitude	Longitude	Site Location
1	41.16711	-82.88433	N. County Rd. 29, Schriner Prop., Woodlot Near Pond
2	41.11582	-82.84374	Stream Corridor SE of Township Rd. And Trail 0197
4	41.15500	-82.85590	Woodlot off Reedtown Rd.
5	41.16730	-82.84803	Woodlot W of CR 4 With Intermittent Stream
6	41.18653	-82.84962	Woodlot S of CR 46
8	41.17072	-82.89307	Stream off CR 136
9	41.14356	-82.92948	Woodlot S of E Township Rd. 124
10	41.15312	-82.92621	Forest Gap; Logging Road; Pond in Forest
11	41.13920	-82.99223	CR 122
13	41.17809	-82.89062	Woodlot Logging Road off Stream
16	41.15765	-82.98926	Pond in Woodlot W of CR 28 and S Of East CR 24
24	41.17804	-82.88861	Logging Rd. Through Woodlot; Open Water of Emergent Wetland
36	41.15548	-83.00470	Woodlot S of County Rd. 24

Site No. (2016)	Latitude	Longitude	Site Location
1	41.16944	-83.04229	Sugar Creek and Adjacent Ag. Field North of CR38
2	41.20319	-82.86285	Narrow Wood Lot Between Cornfields
3	41.15308	-83.02780	Small Woodlot South of E Township Rd. 130
4	41.15697	-83.02715	Open Woodlot Between Ag. Fields
5	41.10144	-82.88085	Woodlot and Ag. Field
6	41.11510	-82.87659	Woodlot N of Shrine Ditch
7	41.17536	-83.04250	Open Woodlot Adjoining Wheat Field
8	41.15554	-82.94446	Woodlot
9	41.15329	-82.94029	Inside Woodlot with Dry Stream Bed
10	41.15516	-82.90984	Woodlot W of Township Rd. 81
11	41.08601	-82.97935	Woodlot N of Hwy. and W of Cooper Rd.
12	41.16958	-83.03641	Small Woodlot off CR38
13	41.13262	-82.83958	Woodlot S of East Township Rd. 122
14	41.13567	-82.96475	Logged Woodlot Adjoining Corn Field
15	41.15335	-83.02054	Woodlot N of E Township Rd. 130
16	41.13923	-83.04941	Morrison Creek Near E Township Rd. 122
17	41.11934	-82.97486	Trails in Woodlot
18	41.13416	-82.97333	Nets in Open Areas and Dry Stream Bed in Woodlot and Edge
19	41.13266	-82.84191	Woodlot South of E Township Rd. 122
20	41.10168	-82.90656	Woodlot W of Center Heights Rd.
21	41.15591	-83.02460	Forested Area with Pond
22	41.09254	-82.83337	Woodlot Adjacent to County Line Rd. 10S
23	41.08845	-82.85002	Woodlot S of E Township Rd. 106
24	41.11955	-82.98499	Woodlot E of Powerline Cut S of 162
25	41.14166	-83.02054	Small Woodlot with Dry Creek, Surrounded by Bean
26	41.15928	-83.04395	Woodlot/Forest Edge
27	41.11877	-82.91131	Small Woodlot Surrounding Carpenter Ditch
28	41.13056	-82.99911	Woodlot W of N Township Rd. 181
29	41.09148	-82.86643	Woodlot South of Trail 0106

Table 2. Total bat captures by species, age, sex, and reproductive status, Emerson West Wind Project, Ohio, 2015 and 2016.

	Adult	Adult Male			Fema	ıle	Juve	nile		
Species	NR	S	P	L	PL	NR	Female	Male	Escaped	Total
Eptesicus fuscus	43	49	0	42	86	8	48	58	10	344
Lasiurus borealis	2	8	0	9	13	1	25	19	5	82
Lasiurus cinereus	0	0	0	0	0	0	1	3	0	4
Myotis septentrionalis	2	0	0	4	0	0	1	0	1	8

^{*} NR=non-reproductive, S=scrotal, P=pregnant, L=lactating, PL=post-lactating

Diurnal Radio Telemetry

In accordance with the ODNR/USFWS approved study plans, three northern long-eared bats were radio-tagged and tracked to locate diurnal roost trees (Table 3). The three northern long-eared bats from sites 13, 1, and 5 captured in 2015 were not tracked because the maximum number of northern long-eared bats to be tracked had been met prior to their capture. Those individuals are not included here because they are not located within this Project. The juvenile female captured in 2016 was not radio-tagged due to its low mass (5.75 g). One of the two MYSE captured on the same night at Site 7 (2016) was not radio-tagged because they were assumed to be part of the same colony and biologists wanted to spread the telemetry effort across the Project as much as possible.

Radio-tagged bats were tracked for at least seven days each, resulting in the identification of 10 roost trees (Table 4, Figures 3-5). If a bat was roosting within a parcel where access was not allowed, the roost tree was not located for that day. The most commonly used tree species were green ash (*Fraxinus pennsylvanica*; n=4) followed by American elm (*Ulmus americana*; n=2) (Table 4). Two of the roost trees were only identifiable to genus (*Fraxinus* and *Quercus* respectively). Completed roost tree data sheets are in Appendix D and roost tree photographs are in Appendix E.

Table 3. Northern long-eared bats captured and radio-tagged during the mist-net survey, Emerson West Wind Project, Ohio, 2015 and 2016.

	Site No.	Band Number			Reproductive		Transmitter Freq. (172.xxx)
Species ¹	(2015)	(ODNR)	Age ²	Sex ³	Status ⁴	Mass (g)	BAT ID
MYSE	13	17178	A	F	L	7.50	205
MYSE	13	17179	A	F	L	7.00	-
MYSE	1	17172	A	M	NR	7.00	-
MYSE	5	_5	J	F	NR	6.00	-

	Site						Transmitter Freq.
Species	No. (2016)	Band Number (ODNR)	Age	Sex	Reproductive Status	Mass (g)	(172.xxx) BAT ID
MYSE	7	23528	A	F	L	7.00	-
MYSE	7	23529	A	F	L	7.50	387
MYSE	17	23580	A	M	NR	7.00	267
MYSE	11	22705	J	F	NR	5.75	-

¹MYSE=northern long-eared bat

Table 4. Northern long-eared bat roost trees located during radio telemetry efforts, Emerson West Wind Project, Ohio, 2015 and 2016.

					mated tht (m)				
Roost Tree No.	Year	Tree Species	DBH (cm)	Tree	Roost	Condition ¹	Tree Ranking ²	Bat Species Use_BAT ID	No. Calendar Days Used
140	2015	Fraxinus sp.	48.5	25.0	20.0	S	С	MYSE_205	2
314	2015	Quercus sp.	91.0	18.5	-	S	С	MYSE_205	2
860	2016	Fraxinus pennsylvanica	45.5	12.0	6.0	S	С	MYSE_387	1
196	2016	Ulmus americana	19.9	16.0	5.0	S	S	MYSE_387	1
610	2016	Fraxinus pennsylvanica	29.5	7.0	6.5	S	S	MYSE_387	1
602	2016	Fraxinus pennsylvanica	40.5	18.0	9.0	S	С	MYSE_387	1
603	2016	Fraxinus pennsylvanica	44.5	17.0	5.0	S	С	MYSE_387	1
309	2016	Populus deltoides	35.0	12.0	ı	S	С	MYSE_267	1
258	2016	Carya ovata	28.1	18.0	ı	S	С	MYSE_267	2
251	2016	Ulmus americana	23.7	12.0	9.0	S	S	MYSE_267	1

¹ S = snag; ² C= canopy, S = sub canopy

 $^{^2}$ A=adult, J=juvenile

³F=female, M=male

⁴ NR=non-reproductive, L=lactating

⁵Escaped before band could be fitted

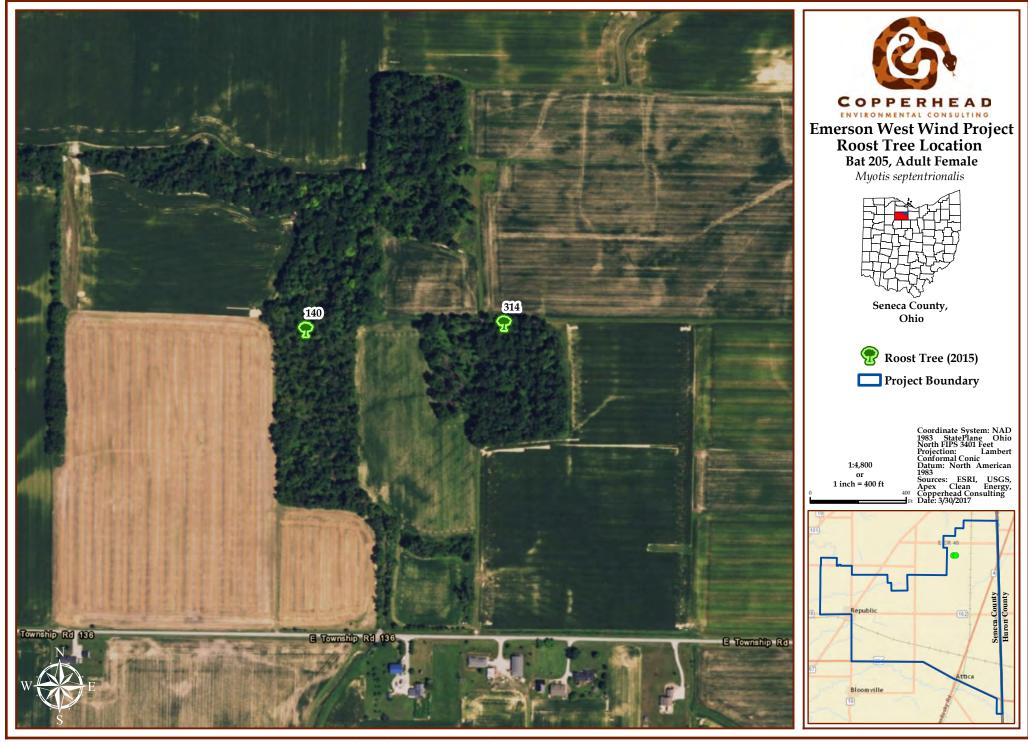


Figure 3. Roost trees used by northern long-eared bat, MYSE 205, Emerson West Wind Project, Seneca County, Ohio, 2015.

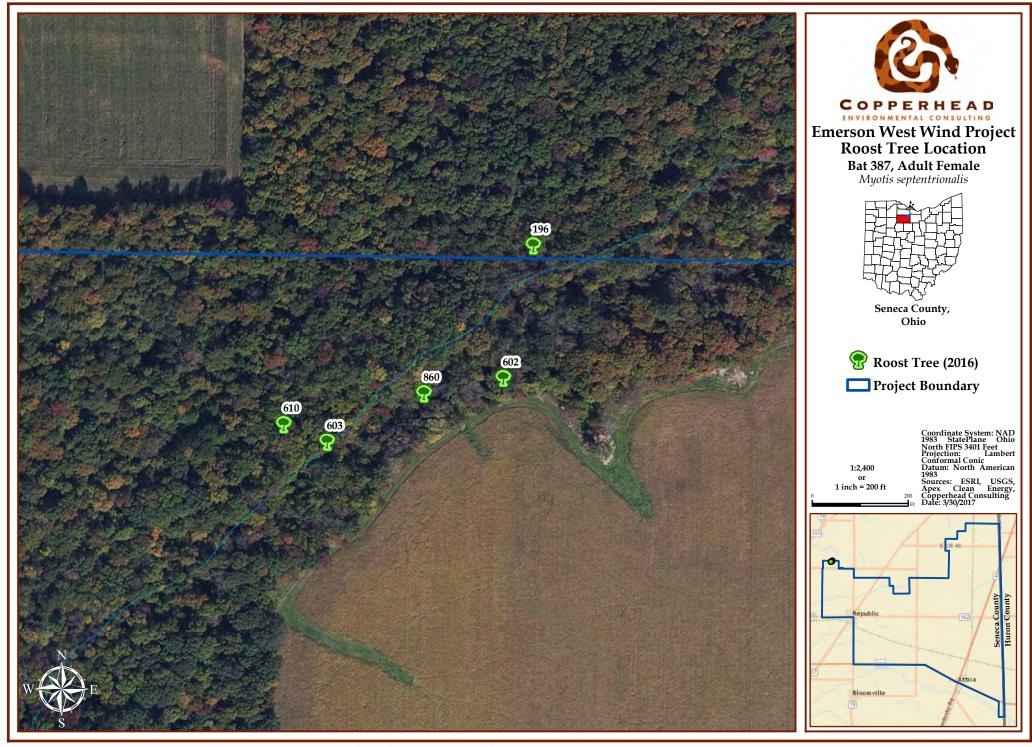


Figure 4. Roost trees used by northern long-eared bat, MYSE 387, Emerson West Wind Project, Seneca County, Ohio, 2016.

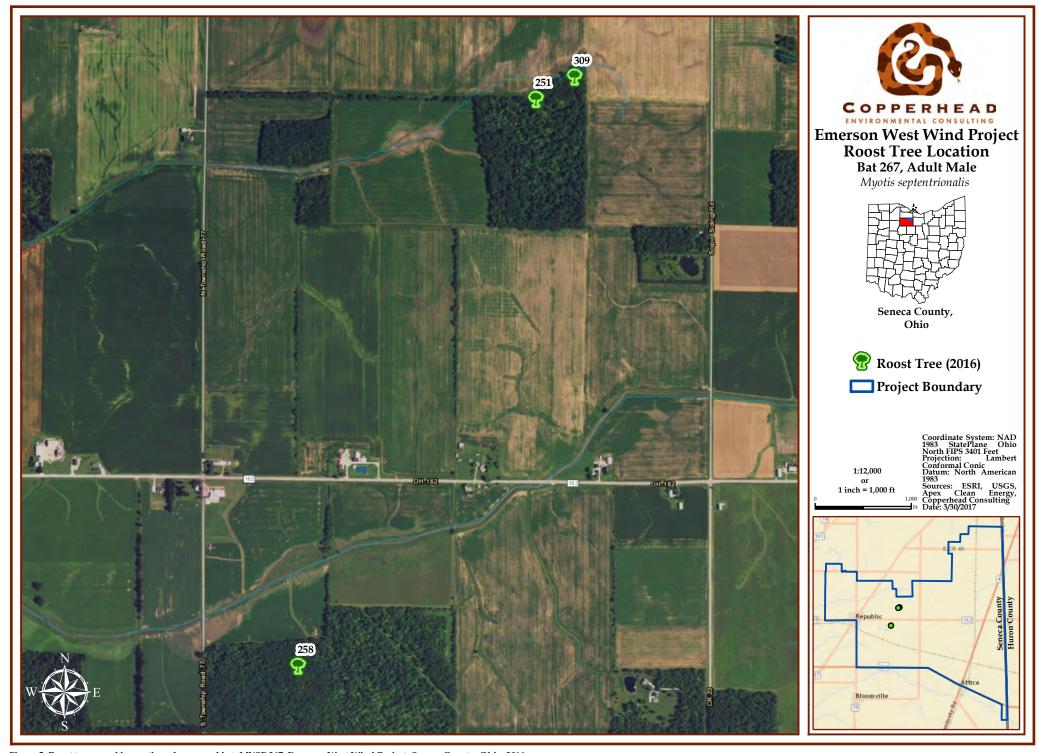


Figure 5. Roost trees used by northern long-eared bat, MYSE 267, Emerson West Wind Project, Seneca County, Ohio, 2016.

COPPERHEAD

Radio-tagged bat(s) not located by ground crew(s) after a few hours of searching were located by an aerial telemetry crew the same day. In these cases, the aerial crew provided coordinates of the bat's estimated location to the ground crew, allowing them to quickly pick up the transmitter signal and locate the roost tree. All radio-tagged bats were accounted for during each day of tracking, except for MYSE 205, which could not be located by either the ground or aerial crew on 29 July 2015. However, MYSE 205 was heard again on 30 July 2015 where it was found in roost tree 314 (Table 5).

During tracking, all northern long-eared bats switched roost trees at least three times (Tables 5-7). The greatest number of roost tree switches (n = 8) was done by an adult female northern long-eared bat (MYSE 387) that used at least seven different roost trees over nine days (Table 6).

Table 5. Roost tree (RT) use by radio-tagged northern long-eared bat, MYSE 205, Emerson West Wind Project, Ohio, 2015.

Bat ID	Bat ¹	27-Jul	28-Jul	29-Jul	30-Jul	31-Jul	1-Aug	2-Aug
205	AF-MYSE	RT140	RT140	no signal	RT314	RT314	off parcel	off parcel

¹ AF = adult female, MYSE=northern long-eared bat

Table 6. Roost tree (RT) use by radio-tagged northern long-eared bat, MYSE 387, Emerson West Wind Project, Ohio, 2016.

Bat ID	Bat ¹	12-Jul	13-Jul	14-Jul	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul
					off		off		off	RT30
387	AF-MYSE	RT860	RT196	RT610	parcel	RT602	parcel	RT603	parcel	9

¹ AF = adult female, MYSE=northern long-eared bat

Table 7. Roost tree (RT) use by radio-tagged northern long-eared bat, MYSE 267, Emerson West Wind Project, Ohio, 2016.

Bat ID	Bat ¹	19-Jul	20-Jul	21-Jul	22-Jul	23-Jul	24-Jul	25-Jul
267	AM-MYSE	off parcel	off parcel	off parcel	RT258	RT251	RT258	off parcel

¹ AM = adult male, MYSE=northern long-eared bat

Emergence Counts

A total of 21 emergence counts were conducted in 2015 and 2016. The highest emergence count from a single roost tree was six bats, which occurred only once at RT603 on 18 July 2016 (Tables 8-10).

Table 8. Number of emerging bats from roosts used by northern long-eared bat, MYSE 205, Emerson West Wind Project, Ohio, 2015.

Roost No.	27-Jul	28-Jul	30-Jul
140	2	2	-
314	-	-	3
Total Bats	2	2	3

Table 9. Number of emerging bats from roosts used by northern long-eared bat, MYSE 387, Emerson West Wind Project, Ohio, 2016.

Roost No.	12-Jul	14-Jul	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul
860	3	0	-	-	-	_	-	-	-
196	-	0	0	-	-	-	-	-	-
610	-	4	0	-	-	-	-	-	-
602	-	-	-	2	1	-	-	-	-
603	-	-	-	-	-	6	0	-	-
309	-	-	-	_	-	_	-	1	0
Total Bats	3	4	0	2	1	6	0	1	0

Table 10. Number of emerging bats from roosts used by northern long-eared bat, MYSE 267, Emerson West Wind Project, Ohio, 2016.

Roost No.	22-Jul	23-Jul	24-Jul	25-Jul
258	1	2	3	1
251	-	1	1	-
Total Bats	1	3	4	1



Foraging Telemetry

Foraging data were collected for three radio-tagged northern long-eared bats within the project area: one in 2015 and two in 2016. MYSE 205 was tracked in 2015 from 28 July-1 August (Figure 6). MYSE 387 was tracked from 12-18 July, but no data were collected on 13 July due to inclement weather, resulting in six nights of foraging data (Figure 7). MYSE 267 was tracked for four nights from 19-22 July (Figure 8). The number of foraging location points collected for each bat ranged from 63 to 295 (Table 11).

Table 11. Number of nights tracked and number of foraging location points collected for three adult northern long-eared bats, Emerson West Wind Project, Ohio, 2015 and 2016.

Year	Dates	Bat ID	Sex	Repro. Status*	No. Nights Tracked	No. Points Collected
2015	28 July - 1 Aug	205	Female	L	5	63
2016	12 - 18 July	387	Female	L	6	295
2016	19 - 22 July	267	Male	NR	4	147

^{*} L = lactating, NR = non-reproductive

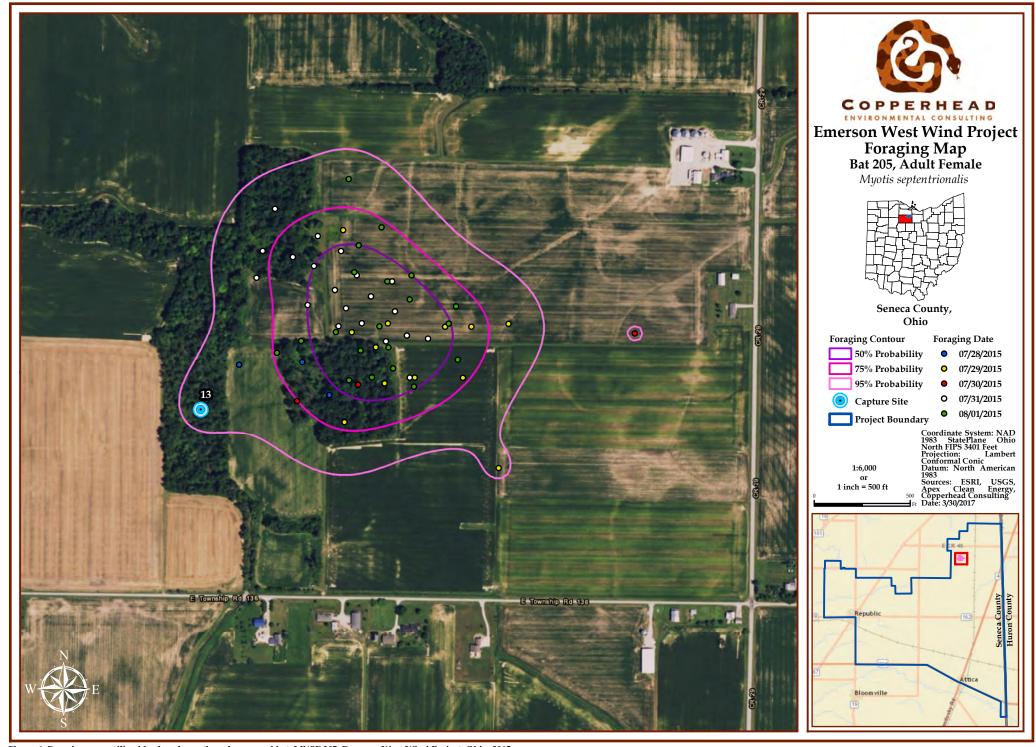


Figure 6. Foraging area utilized by female northern long-eared bat, MYSE 205, Emerson West Wind Project, Ohio, 2015.

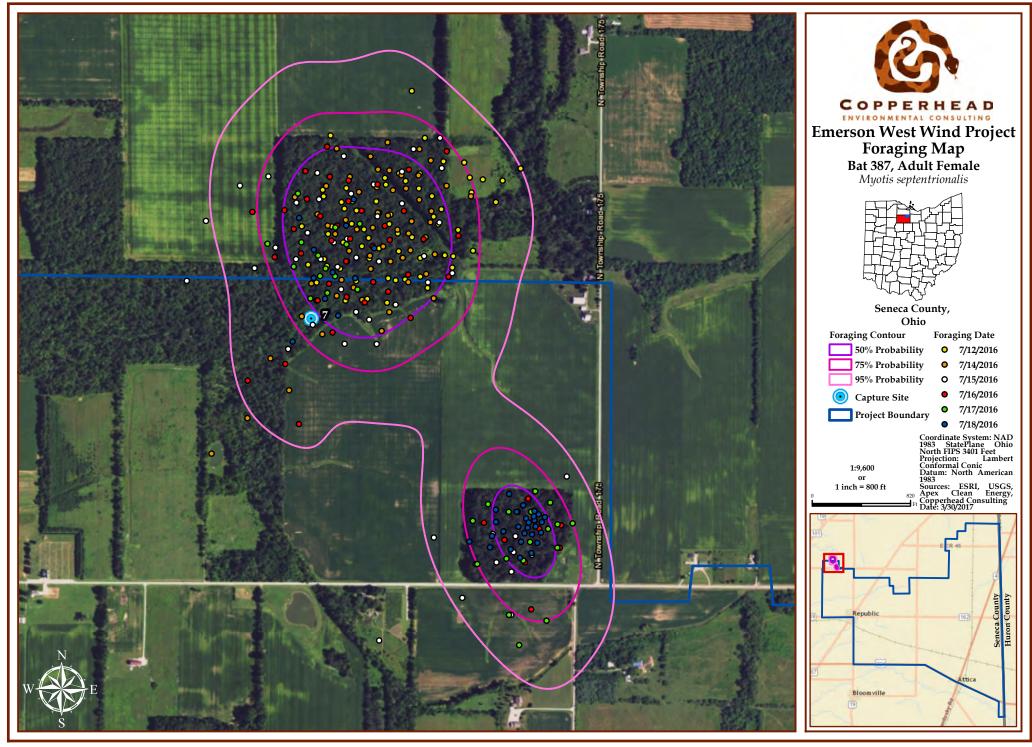


Figure 7. Foraging area utilized by female northern long-eared bat, MYSE 387, Emerson West Wind Project, Ohio, 2016.

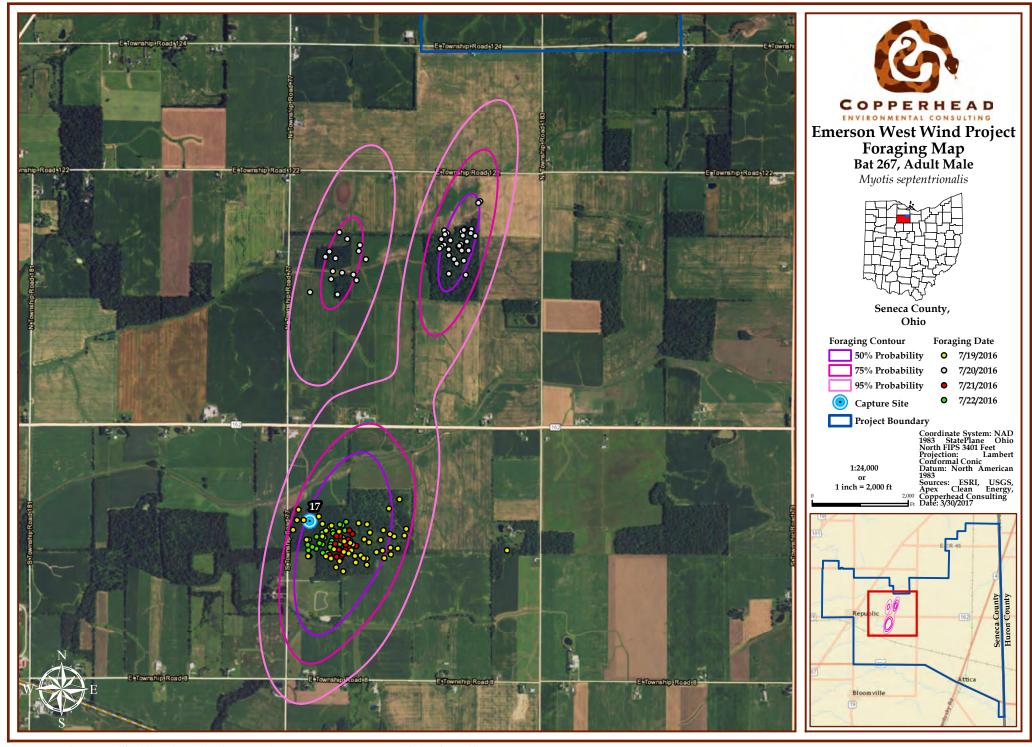


Figure 8. Foraging areas utilized by male northern long-eared bat, MYSE 267, Emerson West Wind Project, Ohio, 2016.

There was a large range in the size of foraging areas among bats within each foraging area contour (Table 12, Figure 9), but no difference in individual foraging area sizes ($F_{4,4}$ = 4.923, P = 0.076, Figure 13) within each foraging area contour (Table 13). The farthest foraging point from a known roost for MYSE 205 was 0.5 kilometers, 1.0 kilometers for MYSE 387, and 2.2 kilometers for MYSE 267.

Table 12. Mean foraging area sizes for three adult northern long-eared bats, Emerson West Wind Project, Ohio, 2015 and 2016.

Foraging Area (acres)										
mean 95% contour	range	mean 75% contour	range	mean 50% contour	range					
353.7	52.6 - 786.6	152.9	22.7 - 338.6	68.6	10.6 - 148.1					

Table 13. Foraging area sizes for adult northern long-eared bats, Emerson West Wind Project, Ohio, 2015 and 2016.

				Foraging Area (acres)			
Year	Dates	Bat ID	Sex	95% contour	75% contour	50% contour	
2015	28 July - 1 Aug	205	Female	52.6	22.7	10.6	
2016	12 - 18 July	387	Female	221.8	97.3	47.1	
2016	19 - 22 July	267	Male	786.6	338.6	148.1	

Most foraging location points of all bats were within forested habitat (81.4%), with some points within agricultural fields (16.6%) and some within forested fencerows (1.4%, Table 14, Fig 10). For those points outside forest or forested fencerows, the mean and median distance from forest edge for all bats were 58.2 meters and 41.5 meters, respectively.

Table 14. Foraging habitat use by number of location points of three northern long-eared bats, Emerson West Wind Project, 2015 and 2016.

Habitat	Female Bat 387	Male Bat 267	Female Bat 205	Total
Forest	259	130	22	411
Fence Row	4	3	0	7
Field	32	14	38	84
Total No. points	295	147	60	502

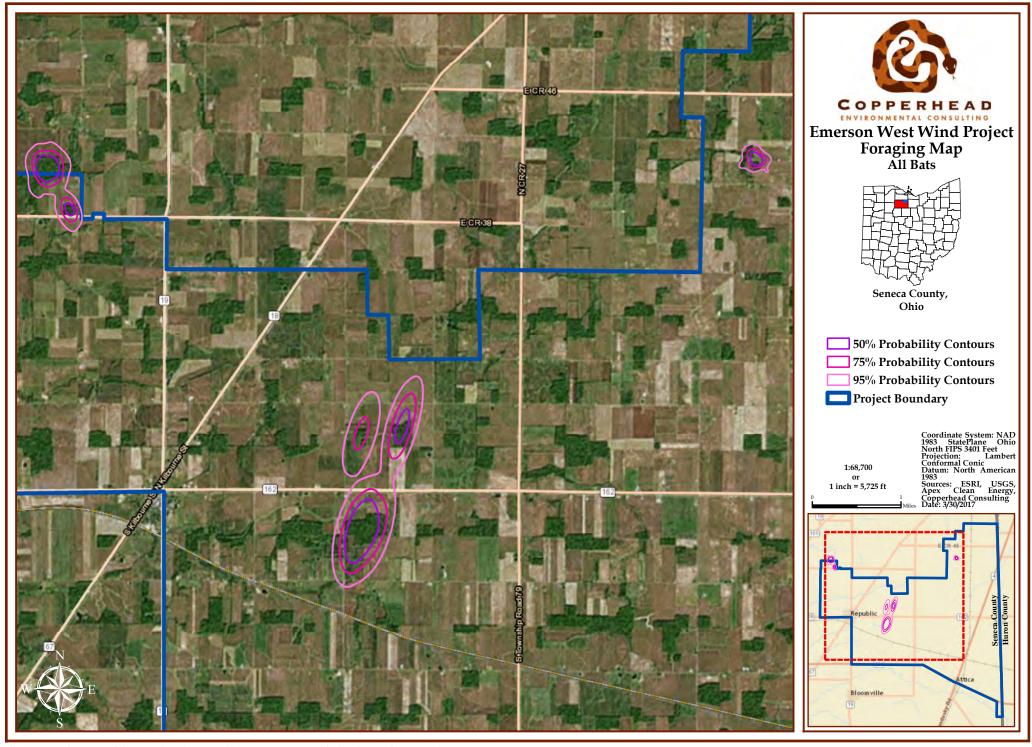


Figure 9. Foraging areas of three northern long-eared bats, Emerson West Wind Project, Ohio, 2015 and 2016.

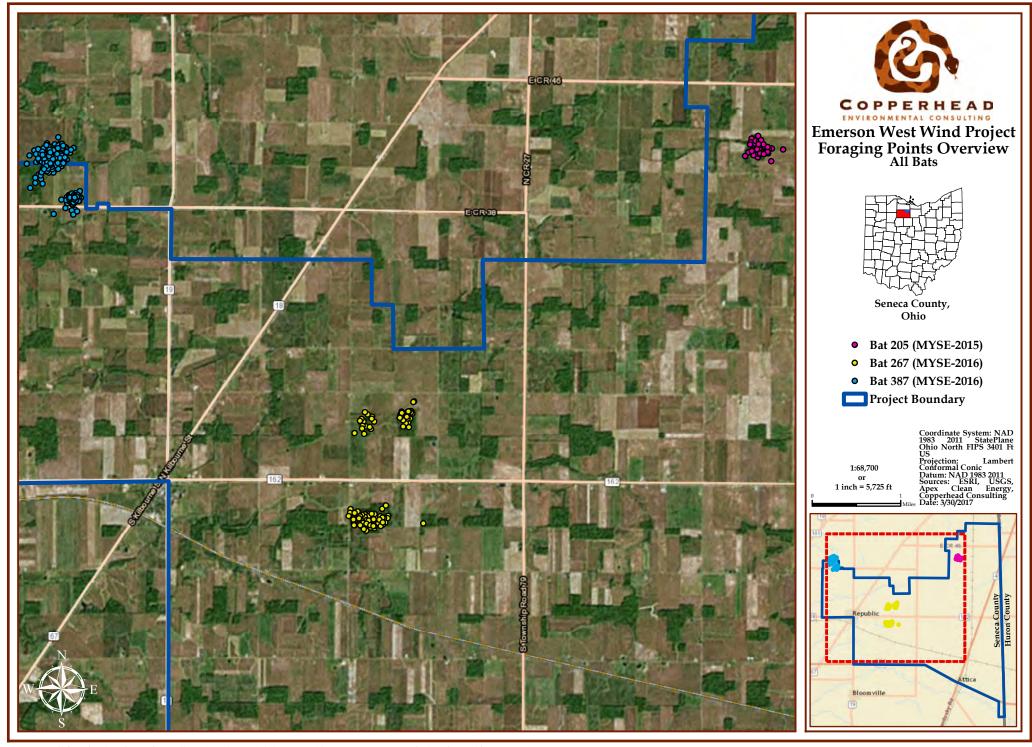


Figure 10. All foraging location points collected on three adult long-eared bats, Emerson West Wind Project, Ohio, 2015 and 2016.



CONCLUSIONS

No Indiana bats were captured within the Project area in 2015 or 2016. Eight northern long-eared bats were captured. No other state-listed bats were captured.

Foraging areas of northern long-eared bats were primarily restricted to forest and forest edges, with individual foraging location points well clustered. All northern-long eared bats were captured within their respective estimated foraging areas. On average, bats located foraging or commuting in open areas were within 58 meters of forest habitat, suggesting that northern long-eared bats in this area show a preference for foraging and commuting within forests, forested fence rows, and forested waterways.

The range of foraging area sizes identified during this study was consistent with the foraging telemetry study conducted on Myotid bats in 2015 (Wetzel et al. 2016). The male northern long-eared bat had the largest foraging area of the three bats analyzed in this study, utilizing a greater number of woodlots than the other bats during the time they were tracked. The 2015 female bat had the smallest home range, but also appeared to be using an area with less available forested habitat based on the aerial imagery, which was the preferred habitat for the three bats overall.

Results of this study suggest that siting of turbines away from forested habitat should greatly reduce the risk of turbine collision during summer for female northern long-eared bats and to a lesser extent for males.



LITERATURE CITED

- Brack Jr., V. and Whitaker. 2001. Foods of the northern myotis, *Myotis septentrionalis*, from Missouri and Indiana, with notes on foraging. Acta Chiropterologica 3(2): 230-210.
- Hall, E. R. 1981. The Mammals of North America. Volume I. John Wiley & Sons, New York, NewYork
- Ohio Division of Natural Resources (ODNR). 2009. On-Shore Bird and Bat Pre- and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio: An Addendum to the Ohio Department of Natural Resource's Voluntary Cooperative Agreement.
- Ohio Division of Natural Resources Division of Wildlife. 2015. Ohio Division of Wildlife and USFWS (OH Field Office) Guidance for Bat Permitted Biologist.
- R Core Team (2016). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.
- Reichard, J. D. and T. H. Kunz. 2009. White-nose syndrome inflicts lasting injuries to the wings of little brown myotis (*Myotis lucifugus*). Acta Chiropterologica, 11(2) 457-464.
- United States Fish and Wildlife Service (USFWS). 2015. Range-wide Indiana Bat Summer Survey Guidelines.
- United States Fish and Wildlife Service (USFWS). 2016. Range-wide Indiana Bat Summer Survey Guidelines.
- Wetzel, T.A.N., P.L. Roby, S.T. Samoray, S. Burke, and C.A. Leftwich. 2016. Revised: Summer 2015 Bat Survey for the Proposed Republic Wind Project, Seneca and Sandusky Counties, Ohio. Business Confidential Not for Public Disclosure. 251 pp.



APPENDIX A

Mist-Net Data Sheets

at/L	on; UTM	N CR 10 Meca 1: Ny E 41	167111	State_	W)N_	-87.	8842,	34	Zone	me Dowi	Datum_	JAP83	Observe	rs Ram	Storra	tic o	PPER	THEAL
#	Time	Species	Age	Sex	Repr.	Magg	FA (mm)		Height (m)	WDI	G/H/B/T	Band# Type	Freq.		se 100 %			Vax / Wan
1		10.00		JT I												Rise		Set
2	No	10175		L 2				1		-	1			Sun		6:20	nam	8:51 pv
3											/			Moon		9:23	pm	9:10 an
4																		
5														Time	Temp (F)	Sky	Wind	No. Bats
7	8			1										9:00	68	1	7	0
8														10/61	63.5		D	0
9														2:00	58,1	1	n	1)
10															1		1	
11										-								
12							I -											
13					1.	1		-		1 3								
14			-			7 - 4												
15							7 1			1 - 1								
16															DOMESTIC STATE	Sky Code		
17					150					1	-			0	Clear			
18	_													1	Few Cloud			
19													-	2	Partly Clou			
20 21						- 1								3	Cloudy or			
_														4	Fog or smo			
22													/	5	Drizzle or	-		
24							-		-				11	6	Heavy rain	- thunde	r storm	
25			-		-													
26										_						fort Wind	Scale	
27							-	-					_	0	Calm: <1 m			
28					7				-		-			1	Light air: 1			
29														3	Light breez Gentle bree			
30														4	Moderate b			
MYA MYS	lis (LABO U); Myoti O); Nyctic	viations: Coryno); Lasiurus cine is grisescens (M reius humeralis tions: Male: M;	reus (LAC YGR); My (NYHU);	CI); Lasiu otis leib Perimy	irus semi ii (MYLE otis subfl	nolus (L); Myotis avus (PE	ASE); Lasio s lucifugus SU); Tadai	nycteris (MYLU ida bras	s noctivaga); Myotis se siliensis (TA	ns (LANe eptentrion ABR)	O); Myotis a nalis (MYSE	ustrorinario	is .	Please Re P.O. Box 2 (859) 925-	turn to: 73, Paint L		, 40461.	p. 1

Site No	n N Count	Projec	t No./N	Name	12.01	30 - 1	152d	ht n	Gu.	ODVICE		Date	7/27/2	015	- 1	15	-
County	evieca	- NO.	State_	DH		Time Up	9:1	Tir.	ne Down	n 2 00			Rai	n Shi	752		96
at/Lon; I	on N Count	16711		W/N_	-8/1	88423	514	Zone	-	Datum_	JAD83	Observe	rs By	indon S	# C 0	PPE	RHEAD
# Tir	7 - 39	Age	Sex	Repr.	Mass (g)	FA (mm)		Height (m)	WDI	G/H/B/T	Band# Type <u>ObN</u> R	Freq.	Moon Phas				Vax / Wan
1 11:	25 MYSE	A	M	NR	7	36	1	2.6	0	0	17172	_			Rise		Set
2	-		7 =							in the			Sun		6:2	Zam	8.550n
3			7 = 0	E					5			1	Moon		5.51	own -	Dillean
4			-									1 =					
5													Time	Temp (F)	Sky	Wind	No. Bats
7	-		-										9130	108	1	0	
8		-						-		1			11:13	610	4	10	()
9		-											2 10/2	102	-1-	0	
10													7-00	00		12	-
11																	
12												-					
13																	
14																	
15				-		1		(T_ 1)									
16	-				1-0	-									Sky Code	2	
17													0	Clear			
18	1			(i)					1				1	Few Cloud	ls		
19				1	2								. 2	Partly Clo			
20													3	Cloudy or			
21													4	Fog or smo			
22	No.												.5	Drizzle or			
23	-							1		1			6	Heavy rain	ı - thunde	er storm	
24							_										
25 26		_							_						fort Wind	d Scale	
27	-	-											0	Calm: <1 r			
28													1	Light air: 1			
29		-											2	Light bree			
30		-					-						3	Gentle bre			
	urvey: Unit t	vpe		Unit #	_	Date		Start tin	ne .	l	Stop time_		4	Moderate	oreeze: 11	-16 mph	
		F		Jint "		Date		Start tin	10		Stop time_		Please Re	turn to:		_	
						Date		Start tin			Stop time_		P.O. Box		ick KV	40461	
Veatherp	roofing					Coordin					otop time_		(859) 925-		ick, KI	, 40401.	
omment													(00)				16-16
munent	o																p. 2

Lat/Lon	; UTM: NYE 41 16711 WYN - 27-2841	531	Zone_	-10	Observers_	Ran	Stev	- Br	and	DV DV	w
Datum:_ Site Diag	NAOS3 County Seveca State		Length	100	1		Domi	nant Ve	notation		
Ditte Diag	2 (Net (m)	(m)	Dates	1 1064	Mapl			sum 2	vada	_
	3 (A Cost	(om	7127 12015		Hicker		5 6	hasi		بال
	β λ	B Post	lom	76717015		TOU WIT		6.	12		-
	1) Court	2 C 7018	low	777106							
Ti	The same of the sa	D 3084	am	7 27 2015			Net :	Set by H	labitat		
The		E			Habitat	A	В	C	D	E	5
2 An	Water &	F	F 1		River	1					
. ,	16 min				Stream						
	the true	/ Oi. Ti	1		Pond				1		
	some browning	Site Photogr			Corridor	X	X	X	X		
	ALIA C	Camera: Photo Log:		10.10	Cave			/ -			
	7 C Hores	Photo Log:_	INC. INC.	The state of	Mine Forest						
	- www	A 1			Gap						
-					Other			-		-	-
					Cuici						l
		(1)									
	Bat Habitat Characterization (Choose appropriate Roost habitat: 1. Poor: No or few snags >= 5" DBH with				ures (cracks	crevices	atc)				
3 3 2	Bat Habitat Characterization (Choose appropriate Roost habitat: 1. Poor: No or few snags >= 5" DBH wit 2. Moderate: Snags with sloughing bark or other roost fea 3. Optimal: Snags with sloughing bark or other roost fea Water Resources: 1. Poor: bat drinking resources not proposed to the season of	th sloughing bark eatures present 5-th tures present > 10 present at the site, led areas present esource, ent that appear to sent or if stand is an 5 inch DBH. Untrees 5 to 15 inch present. Trees > 1 present. Trees > 1 predominantly	or other -15 inch I 5 inch DB but too cl o offer dri monocul Juderstor hes preser 5 inch DE	usable roost feat DBH within 1000 EH within 1000 fe luttered to allow nking resource to ture, area autom y growth clutterent. Understory co BH frequent. Varied. Few mature	feet of forestee eet of forestee many bats to hroughout th atically quali ed and restri- clutter domin rying tree hei trees present	ted areas. d areas. d drink ear ne majority ifies as a 1 cts flying/ iant but no	sily or simuly of the sur poor). foraging of ubiquitoureefalls allo	nmer. Fly us. Trees	greater the	resource	овн
3 3 2	Bat Habitat Characterization (Choose appropriate Roost habitat: 1. Poor: No or few snags >= 5" DBH wit 2. Moderate: Snags with sloughing bark or other roost fea 3. Optimal: Snags with sloughing bark or other roost fea Water Resources: 1. Poor: bat drinking resources not proposed to penings or canopy gaps allow bats easy access to the resultable. Streams or ponds (including road ruts) presuvailable. Forest Structure: (if hardwoods are absent or nearly absent to the stand of the sta	th sloughing bark eatures present 5-1 tures present > 1 treesent at the site, led areas present esource, ent that appear to sent or if stand is an 5 inch DBH. U Trees 5 to 15 inch present. Trees > 1 the predominantly is and wooded fer	or other -15 inch IB 5 inch DB but too cl o offer dri monocul Juderstor hes preser 5 inch DE un-forestance rows.	usable roost feat DBH within 1000 BH within 1000 fe luttered to allow nking resource to ture, area automy growth clutterent. Understory of BH frequent. Varied. Few mature Little connectioned stands via wo	feet of foresteet of foresteet of foresteet of foresteet many bats to hroughout the atically qualitied and restrictutter dominarying tree heitrees present to adiacent to adiacent	d areas. d area	sily or simuly of the sur poor). foraging of ubiquitoureefalls allo	nmer. Fly us. Trees ow for free ner areas	greater the quent smale	resource	овн
3 3 2	Bat Habitat Characterization (Choose appropriate Roost habitat: 1. Poor: No or few snags >= 5" DBH wit 2. Moderate: Snags with sloughing bark or other roost fea 3. Optimal: Snags with sloughing bark or other roost fea Water Resources: 1. Poor: bat drinking resources not p. 2. Moderate: Ephemeral or intermittent streams or pond openings or canopy gaps allow bats easy access to the resultable. Streams or ponds (including road ruts) presuvailable. Forest Structure: (if hardwoods are absent or nearly abstance of the structure of the resultable of the structure of the resultable of the structure of	th sloughing bark eatures present 5-1 tures present > 1 treesent at the site, led areas present esource, ent that appear to sent or if stand is an 5 inch DBH. U Trees 5 to 15 inch present. Trees > 1 the predominantly is and wooded fer	or other -15 inch IB 5 inch DB but too cl o offer dri monocul Juderstor hes preser 5 inch DE un-forestance rows.	usable roost feat DBH within 1000 EH within 1000 fe luttered to allow nking resource to ture, area autom y growth clutterent. Understory co BH frequent. Varied. Few mature Little connectioned stands via wo	feet of forested many bats to hroughout the atically qualified and restrict clutter dominarying tree heit trees present to adjacent poded stream	ted areas. d areas. d areas. d drink ear me majority ifies as a 1 cts flying/ ant but no ight and to t not connict forested a n, fence roo n to:	sily or simuly of the sur epoor). foraging of ubiquitor reefalls allo ected to other areas. w, or other	us. Trees ow for free mer areas	greater the quent smale	resource	овн

Site L Coun Lat/L	ocation ty 500 on; UTM	Stream (ne CQ MOVE 4/-)	orrid 1758	State_	W/N	-82	Time Up	whsh 205 74	P Rd Tin Zone	ne Dowr	Datum 1	1 019 8-0155 VAD83	Observe	rs K. Pear	man, A	Trousd	<u>e</u>	
#	Time	Species	Age	Sex	Repr.	Mass (g)	FA (mm)	Net	Height (m)	WDI	G/H/B/T	Band# Type	Freq.	Moon Phas	e 60%		(v	Was
1	2340	EPFU	A	M	NR	17.0	45	A	25	6		-	_			Rise		Τ
2	0015	EPFU	A	M	MR	16.25		C	0,5	0	_	1	~	Sun		06	20	6
3	0110	LABO	J	F	NR	10.5	40	C	3.5	0	-	1	-	Moon		1600		1
4	1		1						2				-					
5								7						Time	Temp (F)	Sky	Wind	Τ
6			1	F .	1			1	1			Takes and				Sky	wind	
7														2100	68.9	2	0	
8)					2209	65.1	.3	1	
9											-			2367	66.4	2	1	
10														0.007		.3	0	
11	1								100					0140	62.8	2		
12															= 4			
13						-								14-4			/ -	L
14																	Con at	
15 16																		
17																Sky Code		
18								-						0	Clear			_
19														1	Few Cloud			_
20					-									2	Partly Clo			_
21						-								3	Cloudy or			_
22														5	Fog or sme Drizzle or		_	_
23						70-5					_			6	Heavy rain		e etoes	_
24			-			-									I leavy rain	- uiunde	storm	_
25									21	-					Beau	fort Wind	Scale	_
26	1									-				0	Calm: <1 r		Jenie	_
27			-	-											Light air: 1			_
28			3	4										2	Light bree		h	_
29													-	3	Gentle bre			_
30				1			-							4	Moderate		_	_
borea (MYA	alis (LABO AU); Myot	viations: Coryno); Lasiurus ciner is grisescens (M) ceius humeralis (eus (LA0 YGR); M	CI); Lasi: votis leil	urus sem	inolus (L E); Myoti	ASE); Lasi s lucifugus	onycteri (MYLL	is noctivaga I): Myotis s	ns (LAN	O): Myotis	ustroripari	IS.	Please Rep.O. Box 7 (859) 925-	turn to: 73, Paint I			

Mist Netting Data Form Site No. 2 Project No./Name 4/2 / APEX Emelson Creek Wind Site Location Stream Corridor SE of CR9 & Trail 0/97 County Schera State OH Time Up 2048 Time Down 0148
Lat/Lon; UTM: N/E 41.11 582 W/N - 82.84374 Zone Datum NAD 83 Observers K. Pearman Freq. Band# Moon Phase 97 % Height G/H/B/T FA (mm) Wax / Wane WDI Time Species Age Sex Repr. Net (g) (m) Type_ MR B 5 0 2135 EPFU 46 Rise Set F 12.25 EPFU 50 0 0625 2218 PL 20.0 B 6 Sun 1050 2245 EPFV F PL 21.0 49 B 0 0642 6 Moon 0155 LABO 107 41 0 5 Time Temp (F) Sky Wind No. Bats 6 7 72100 74.1 8 2200 69.6 9 2300 65,4 0000 10 0100 60.6 11 12 0100 592 13 6/13/50 14 15 16 Sky Code 17 Clear 0 18 Few Clouds 1 19 2 Partly Cloudy 20 3 Cloudy or overcast 21 4 Fog or smoke 22 Drizzle or light rain 23 Heavy rain - thunder storm 24 25 **Beaufort Wind Scale** 26 Calm: <1 mph 27 Light air: 1-3 mph 28 Light breeze: 4-6 mph 2 29 Gentle breeze: 7-10 mph 3 Moderate breeze: 11-16 mph Acoustic Survey: Unit type_ Stop time_ Unit# Date Start time Date Start time Please Return to: Stop time_ Date Start time Stop time_ P.O. Box 73, Paint Lick, KY, 40461. Weatherproofing (859) 925-9012 Coordinates Comments: p. 2

Lat/Lor	; UTM: N/E 41. 11582 W/N -82. Qu	1374	1	Zone_	_	Observers	7 7 1	Lina n	- X-1	0 5 5 4	don	
	NAO 83 County Severa State	2H 0			rton							
	ngram:			Length				Domin	ant Veg	etation		
	TWORD 9		(m)	(m)	Dates	*********	es Belty		4. Acr	V.502	char	win
1	~ 100	A	5.2	9	31 Tules	2. Colod	fsia	traca	5.400			
	(contrad Gar	В	5.2	9	31 July	3. Burr	45.774	Luctus	6			
	A FORMAND *	C	7.8	12	31 July	1.		****				
0.	11 6 115		5,2	9	3/ July	** **			et by H		F	17
47	1	E			-0	Habitat	A	В	С	D	Е	F
-		F				River						
	7		-			Stream Pond			-			
	torostat	Site Pl	hotogr	aphs -	^	Corridor	V	1	1	~		
	N	Camer		KK	1	Cave						
17	18	Photo	Log:_	4		Mine						
1	Matied	11,000	100			Forest						
89	N.J. 11	-				Gap						
Ī						Other						
liana	a Bat Habitat Characterization (Choose appropriate s Roost habitat: 1. Poor: No or few snags >= 5" DBH with	sloughir	ng bark	or other	usable roost feat			etc)				
ndian	Roost habitat: 1. Poor: No or few snags >= 5" DBH with 2. Moderate: Snags with sloughing bark or other roost feat 3. Optimal: Snags with sloughing bark or other roost feat: Water Resources: 1. Poor: bat drinking resources not pre 2. Moderate: Ephemeral or intermittent streams or ponded openings or canopy gaps allow bats easy access to the reso 3. Optimal: Streams or ponds (including road ruts) present available. Forest Structure: (if hardwoods are absent or nearly absendance). Poor: Habitat even aged and young. Trees smaller than 2. Moderate: some diversity in age of trees in the stand. To may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees pregaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site pages.	sloughir tures pro ures pres sent at t I areas p purce. t that ap nt or if si 5 inch I rees 5 to	ng bark esent 5-15 sent > 15 sent > 15 ihe site. oresent opear to tand is OBH. Up 15 incl rees > 1	or other -15 inch D 5 inch D but too c o offer dr monocu Judersto hes prese 5 inch D un-fores	usable roost feat DBH within 1000 BH within 1000 for fluttered to allow inking resource to lture, area autom ry growth clutter ent. Understory of BH frequent. Va ted. Few mature	feet of forested many bats to hroughout th attically quali ed and restric clutter domin rying tree hei	ed areas. I areas. I drink eas the majority fies as a 1: cts flying/ ant but no	of the sun poor). foraging at ubiquitou eefalls allo	nmer. Fly us. Trees w for free	yways to greater t quent sm	resources han 15″ [рвн
1 2 2 2	Roost habitat: 1. Poor: No or few snags >= 5" DBH with 2. Moderate: Snags with sloughing bark or other roost feat. 3. Optimal: Snags with sloughing bark or other roost feat. Water Resources: 1. Poor: bat drinking resources not pre 2. Moderate: Ephemeral or intermittent streams or ponded openings or canopy gaps allow bats easy access to the reso 3. Optimal: Streams or ponds (including road ruts) present available. Forest Structure: (if hardwoods are absent or nearly absendance). Poor: Habitat even aged and young. Trees smaller than 2. Moderate: some diversity in age of trees in the stand. The may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees pregaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site process. Optimal: Area is largely forested. Wooded stands are constituted.	sloughir tures pro- tures pres- sent at t d areas pource. t that ap ant or if si 5 inch E rees 5 to sent. Tr	ng bark esent 5-15 sent >15 iche site. oresent opear to tand is o 15 incl rees > 1 nantly oded fer	or other -15 inch D 5 inch D but too c o offer dr monocu Understo hes prese 5 inch D un-fores nce rows	usable roost feat DBH within 1000 BH within 1000 for fluttered to allow inking resource to lture, area autom ry growth clutter ent. Understory of BH frequent. Va ted. Few mature Little connection	feet of forested many bats to hroughout th attically quali- ed and restric- clutter domin- rying tree hei- trees present on to adjacent boded stream	ed areas. I areas. I drink eas the majority fies as a 1: cts flying/ ant but no ight and tr i not conne forested a i, fence rov	of the sun poor). foraging at ubiquitou eefalls allo	nmer. Fly us. Trees w for free ner areas o	greater t quent sm of trees.	resources han 15″ [all openii	рвн
1 2 2 2	Roost habitat: 1. Poor: No or few snags >= 5" DBH with 2. Moderate: Snags with sloughing bark or other roost feat 3. Optimal: Snags with sloughing bark or other roost feat: Water Resources: 1. Poor: bat drinking resources not pre 2. Moderate: Ephemeral or intermittent streams or ponded openings or canopy gaps allow bats easy access to the reso 3. Optimal: Streams or ponds (including road ruts) present available. Forest Structure: (if hardwoods are absent or nearly absendance) 1. Poor: Habitat even aged and young. Trees smaller than 2. Moderate: some diversity in age of trees in the stand. To may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees pregaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site parallel in the form of small woodlots are 3. Optimal: Area is largely forested. Wooded stands are controlled the stands are controlled to t	sloughir tures pro- tures pres- sent at t d areas pource. t that ap ant or if si 5 inch E rees 5 to sent. Tr	ng bark esent 5-15 sent >15 iche site. oresent opear to tand is o 15 incl rees > 1 nantly oded fer	or other -15 inch D 5 inch D but too c o offer dr monocu Understo hes prese 5 inch D un-fores nce rows	usable roost feat DBH within 1000 BH within 1000 for fluttered to allow inking resource to lture, area autom ry growth clutter ent. Understory of BH frequent. Va ted. Few mature Little connection	feet of forested many bats to hroughout th attically quali ed and restric clutter domin. rying tree hei trees present on to adjacent	ed areas. I areas. I drink eas the majority fies as a 1: cts flying/ ant but no ght and tr mot conner forested a figence roy n to:	of the sun poor). foraging it ubiquitor eefalls allo ected to other exercises.	us. Trees w for free ner areas o	greater t quent sm of trees.	resources han 15″ [all openii	рвн

+

Lat/Lo	n, UTM: N/E 9/-1/582 (W)N -80.8-	1374	Zone_		Observers_	K. Pe	armar	. A. T.	rouse	le	
Datum	: NADOS County Serveca State	OH Qu	iad Cent	erton	1 1 1						
Site Di	agram: 1 4 4 4 4 1	He	eight Length	(-)	The state of		Domir	ant Veg	etation		- 1
	ared road Bridge	Net (m) (m)	Dates	1. Popu		repider	1,	OK JE	celan	nev
7	LINNE BOT	_ A 5	24	26 July	2. Gledi						
1	Macon come # A/S	B 7.	8 12		3. Quer	رط جين	METAN	6		-	-
1.1	W W W W W	C 5.	2 9			المهد عهد ا	Not 6	at her II	hites		
1	E feel on B. M. J.	5	29		Habitat	A	B	et by H	D	E	E
15	01 18 00 00 00	E			100000000000000000000000000000000000000	A	D	C	D	E	r
1 1	The state of the s	2 -			River Stream	- /					
1 1	163- 1 mm C 1/ / 1	1	_		Pond	V					
1	The Same of the same	Site Pho	otographs		Corridor			1/	V		
1	- Co	Camera	: Kelsey	5	Cave			V	-		
	5) AND . ON 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		og: Kot		Mine						
-	- 1 +/ () The - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -)	0		Forest		1				
3	M MOOG 101/ 4 M D M				Gap		~				
Tr	se cover forest in the	3			Other						
2 +	all grass souper It I let to										
1	Last of Colors	-									
1 1	a Bat Habitat Characterization (Choose appropriate									•	
rr	a Bat Habitat Characterization (Choose appropriate Roost habitat: 1. Poor: No or few snags >= 5" DBH wit: 2. Moderate: Snags with sloughing bark or other roost fea 3. Optimal: Snags with sloughing bark or other roost fea Water Resources: 1. Poor: bat drinking resources not p 2. Moderate: Ephemeral or intermittent streams or pondo openings or canopy gaps allow bats easy access to the res 3. Optimal: Streams or ponds (including road ruts) prese	n sloughing atures prese tures present resent at the ed areas pre source.	g bark or other ent 5-15 inch I nt >15 inch DI e site. esent but too c	usable roost fea DBH within 100 BH within 1000 luttered to allow	atures (cracks, 0 feet of forest feet of forested w many bats to	ed areas. d areas. o drink eas	sily or simu				s are
2	a Bat Habitat Characterization (Choose appropriate Roost habitat: 1. Poor: No or few snags >= 5" DBH with Moderate: Snags with sloughing bark or other roost fea Optimal: Snags with sloughing bark or other roost fea Water Resources: 1. Poor: bat drinking resources not p Moderate: Ephemeral or intermittent streams or pondo openings or canopy gaps allow bats easy access to the re-	a sloughing atures present resent at the ed areas pre- source, int that appeared or if star in 5 inch DB Trees 5 to 1	g bark or other sent 5-15 inch I nt >15 inch DI e site. esent but too cear to offer drand is monocula H. Understor 5 inches prese	usable roost fer DBH within 100 BH within 1000 luttered to allow inking resource lture, area autor ry growth clutternt. Understory	atures (cracks, 0 feet of forest feet of forested w many bats to throughout the matically quali- ered and restri- clutter domin	ted areas. d areas. o drink eas ne majority ifies as a 1: cts flying/ ant but no	of the sun poor). foraging tubiquitor	nmer. Fly	ways to r	esources an 15" [овн
dian 2	a Bat Habitat Characterization (Choose appropriate Roost habitat: 1. Poor: No or few snags >= 5" DBH with Moderate: Snags with sloughing bark or other roost fea Water Resources: 1. Poor: bat drinking resources not p Moderate: Ephemeral or intermittent streams or pondopenings or canopy gaps allow bats easy access to the resources. Optimal: Streams or ponds (including road ruts) preseavailable. Forest Structure: (if hardwoods are absent or nearly abs Poor: Habitat even aged and young. Trees smaller that Moderate: some diversity in age of trees in the stand, may be present but rare. Optimal: Mature forest. Diverse age classes of trees present but rare.	a sloughing atures present at the ed areas presource. In that appears to 1 frees 5 to 1 frees 5 to 1 freedominal and woods	g bark or other sent 5-15 inch I nt >15 inch II e site. esent but too cear to offer drud is monoculation of inches present by un-forested fence rows	usable roost fer DBH within 1000 BH within 1000 luttered to allow inking resource ture, area autor ry growth clutte ent. Understory BH frequent. Voted. Few matur Little connection	atures (cracks, 0 feet of forest of forest of forest of forest ow many bats to throughout the matically qualicated and restriculter dominarying tree here trees present to adjacent of adjacent of forest of f	ed areas. d areas. d areas. d drink eas ne majority ifies as a 1: cts flying/ iant but no ight and tr t not conne	of the sun poor). foraging of ubiquitou eefalls allowereas.	nmer. Fly us. Trees w for frequer areas o	greater th quent sma	esources an 15" [ОВН
adian 2	a Bat Habitat Characterization (Choose appropriate Roost habitat: 1. Poor: No or few snags >= 5" DBH with 2. Moderate: Snags with sloughing bark or other roost fea Water Resources: 1. Poor: bat drinking resources not p 2. Moderate: Ephemeral or intermittent streams or pondo openings or canopy gaps allow bats easy access to the result of 3. Optimal: Streams or ponds (including road ruts) preseavailable. Forest Structure: (if hardwoods are absent or nearly abs 1. Poor: Habitat even aged and young. Trees smaller tha 2. Moderate: some diversity in age of trees in the stand, may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees present that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site 2. Marginal: Trees present in the form of small woodlots 3. Optimal: Area is largely forested. Wooded stands are	a sloughing atures present at the ed areas presource. In that appears to 1 frees 5 to 1 frees 5 to 1 freedominal and woods	g bark or other sent 5-15 inch I nt >15 inch II e site. esent but too cear to offer drud is monoculation of inches present by un-forested fence rows	usable roost fer DBH within 1000 BH within 1000 luttered to allow inking resource ture, area autor ry growth clutte ent. Understory BH frequent. Voted. Few matur Little connection	atures (cracks, 0 feet of forest of forest of forest of forest of feet of forest of throughout the matically qualified and restrictly clutter dominarying tree here trees present on to adjacent wooded stream	ted areas. d areas. o drink eas ne majority ifies as a 1: cts flying/ hant but no ight and tr t not conne t forested a n, fence rov	of the sun poor). foraging of ubiquitou eefalls allowereas.	nmer. Fly us. Trees w for frequer areas o	greater th quent sma	esources an 15" [овн
ndian	a Bat Habitat Characterization (Choose appropriate Roost habitat: 1. Poor: No or few snags >= 5" DBH with 2. Moderate: Snags with sloughing bark or other roost fea Water Resources: 1. Poor: bat drinking resources not p 2. Moderate: Ephemeral or intermittent streams or pondo openings or canopy gaps allow bats easy access to the resultable. Streams or ponds (including road ruts) preseavailable. Forest Structure: (if hardwoods are absent or nearly abs 1. Poor: Habitat even aged and young. Trees smaller tha 2. Moderate: some diversity in age of trees in the stand, may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees presents that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site 2. Marginal: Trees present in the form of small woodlots 3. Optimal: Area is largely forested. Wooded stands are Total Habitat Score (Should be between 4 & 12)	a sloughing atures present at the ed areas presource. In that appears to 1 frees 5 to 1 frees 5 to 1 freedominal and woods	g bark or other sent 5-15 inch I nt >15 inch II e site. esent but too cear to offer drud is monoculation of inches present by un-forested fence rows	usable roost fer DBH within 1000 BH within 1000 luttered to allow inking resource ture, area autor ry growth clutte ent. Understory BH frequent. Voted. Few matur Little connection	atures (cracks, 0 feet of forest of forest of forest of forest ow many bats to throughout the matically qualicated and restriculter dominarying tree here trees present to adjacent of adjacent of forest of f	ted areas. If ar	poor). foraging the ubiquitous eefalls allowered to otherwood, or other	nmer. Fly as. Trees w for freq er areas o wooded o	greater th quent sma	esources an 15" [ОВН

0.4	30.500 N 3.5	Project	No./N	Jame_4	112		A ER SON	CREEK				Date_ 7	-25-14			1	_
ocation_	MOODER	off Ri	GE070:	AN KED)		100	·		21//				-		Ke.	-2
ty_5616	ea	1.00	State_	011		Time Up	00.0	Tin	ne Down	0155	I IIA V X	701				6	, ,
on; UTN	1: N/E	1.150		_W/N_		2.855		Zone	_	Datum_	MPAVO	Observe	rs M/M TV	115	Co	PPER	HEAL
Time	Species	Age	Sex	Repr.	Mass (g)	FA (mm)	Net	Height (m)	WDI	G/H/B/T	Band# Type	Freq.	Moon Phas	e 60%		(Vax Wan
10.00	EPFU	5	F	NR	17	45	D	4	0	-	-	4			Rise		Set
10:30	EPFU	A	M		17.5		C	2	0		~	J-K	Sun				2055
10.30	EPFU	T	F	MR	17	45	A	5	1	-	-	-	Moon				
		A	F	PL	20	47	A	2	0	-		_					
												-	Time	Temp (F)	Skv	Wind	No. Bats
														5.00		1000	
																	0 3
																_	
		-				1											0
		-														1	0
																	0
					-				-		-		4	1	- (2		0
							6		_ 1								
-																	
															Sky Code		
												1	0	Clear			
								-					1				
	£=====================================																
													1				
													6	Heavy rair	- thunde	er storm	
	o. 4 ocation ty State on; UTN Time 10:00 10:30	Time Species 10:00 EPFU 10:30 EPFU 10:30 EPFU	Time Species Age 10:30 EPFU A 10:30 EPFU J 10:30 EPFU J	Time Species Age Sex 10:30 EPFU J F 10:30 EPFU J F 10:30 EPFU J F	Time Species Age Sex Repr. O SO EPFU A M S Project No./Name of Rocord No./Name of Rocation Rock No./Name of Rocation Rocati	Time Species Age Sex Repr. Mass (g) 10:30 EPFU A M S 175 10:30 EPFU J F NR 17 10:30 EPFU J F NR 17	Time Species Age Sex Repr. Mass (g) FA (mm) 10:30 EPFU A M S 17.5 46 10:30 EPFU J F MR 17. 45	Time Species Age Sex Repr. Mass (g) FA (mm) Net 10:30 EPFU A M S 17,5 46 C 10:30 EPFU J F NR 17 45 A	Time Species Age Sex Repr. Mass (g) FA (mm) Net (m) 10:30 EPFU A M S 17:55 46 C 2 10:30 EPFU J F NR 17 45 D 4 10:30 EPFU J F NR 17 45 A 5	Time Species Age Sex Repr. Mass (g) FA (mm) Net (m) WDI (10:30 EPFU A M S 17.5 46 C 2 0 10.30 EPFU J F NR 17 45 A 5 1	Time Species Age Sex Repr. Mass (g) FA (mm) Net (m) WDI G/H/B/T (10:30 EPFU J F NR 17 45 D 4 0 - 10:30 EPFU J F NR 17 45 A 5 1 -	Time Species Age Sex Repr. Mass (g) FA (mm) Net Height (m) WDI G/H/B/T Type 10:30 EPFU A M S 17,5 46 C 2 0 - 10:30 EPFU J F MR 17 45 A 5 1	Time Species Age Sex Repr. Mass (g) FA (mm) Net Height (m) WDI G/H/B/T Type T	Project No./Name 412	Project No./Name	Date Project No./Name 1/2	Project No/Name 1/2

Species Abbreviations: Corynorhinus rafinesquii (CORA); Corynorhinus t. virginianus (COVI); Eptesicus fuscus (EPFU); Lasiurus borealis (LABO); Lasiurus cinereus (LACI); Lasiurus seminolus (LASE); Lasionycteris noctivagans (LANO); Myotis austroriparius (MYAU); Myotis grisescens (MYGR); Myotis leibii (MYLE); Myotis lucifugus (MYLU); Myotis septentrionalis (MYSE); Myotis sodalis (MYSO); Nycticeius humeralis (NYHU); Perimyotis subflavus (PESU); Tadarida brasiliensis (TABR)

Other Abbreviations: Male: M; Female: F; Pregnant: P; Lactating: L; Post Lactating: PL; Scrotal: S; Non Repro: NR

	Beaufort Wind Scale	
0	Calm: <1 mph	
1	Light air: 1-3 mph	
2	Light breeze: 4-6 mph	-3
3	Gentle breeze: 7-10 mph	-
4	Moderate breeze: 11-16 mph	

Please Return to: P.O. Box 73, Paint Lick, KY, 40461. (859) 925-9012

p. 1

		Data Form	Project	No./N	lame	412	1 6	MESES UN	CREEK				Date 7	30-15			-	
Site L	ocation_	WOODLOT	OFF 1	RELOTE	WA R	>										-	(2)	
Coun	ty	SELECA 1: N/E 41		State_	OH		Time Up	8	SO_Tin	ne Down	7:00						NO	7.
Lat/I	on; UTN	1: N/E 41	.155		$_{\rm W/N}$	-82	,8559		Zone	_	Datum_	NA83	Observe	rs MM	TUB	- 60	PPFF	RHEAL
																1999	OHERHIES	Tealer to
#	Time	Species	Age	Sex	Repr.	Mass (g)	FA (mm)	Net	Height (m)	WDI	G/H/B/T	Band# Type	Freq.	Moon Phas	e\00 %		v	Vax / Wan
1	10:45	LABO	A	F	PL	14.5	40	E	1	0		1				Rise		Set
2	10:45	EPFU	A	W	5	17	47	B	8	0	-	_	-	Sun				8:50
3					733									Moon				
4				5 - 1	1 = +				J 1									
5)				12-1					Time	Temp (F)	Sky	Wind	No. Bats
7											-		1	9 00	78	0		0
8						-	-							10.00	15	0	1	2
9											-			11.00	73	0	1	0
10											81			12.00	70	0	1	0
11														1:00	(00	D	1	6
12														2:00	64	0	1	0
13			-			-								7				
14				+														
15				-									7.					
16					-								-			Sky Code		
17									-		1			0	Clear			
18														1	Few Cloud	s		
19		3				L							1	2	Partly Clou	ıdy		
20													/ = 1	3	Cloudy or	overcast		
21														4	Fog or smo	ke		
22			1											5	Drizzle or	light rain		
23												i I		6	Heavy rain	- thunde	r storm	
24																		
25						-			1 1			/				fort Wind	Scale	
26	$\sigma = 4$													0	Calm: <1 n			
27														1	Light air: 1			
28										-			1	2	Light breez			
29														3	Gentle bree			
30	11.0	***			TT 11 11									-4	Moderate l	reeze: 11	-16 mph	
Acou	stic Surv	vey: Unit typ	e	-	Unit #		Date		Start tin			Stop time						
							Date	-	Start tin			Stop time		Please Re		. 6. 200		
A70-1	have	fina					Date	244-	Start tin	ne	_	Stop time		P.O. Box		ick, KY	, 40461.	
	herproo	ing					Coordin	ates					-	(859) 925-	9012			
Com	ments:																	p. 2

Datum: NAD63 County SENECA State OH Quad To Site Diagram: Height I Net (m) A 6 B	lone_=	Rock	Observers_	MTH,	EAT				
Datum: NAV63 County SENECA State OH Quad F Site Diagram: Height L Net (m) A 6 B		Rock							
Site Diagram: Height L Net (m) A 6 B	ength								
A G					Domin	ant Veg	etation		
DPJ B	(m)	Dates	1. RED DAK			4. ELM			
B B B	6	7-25	2. willow			5,			
7	6	7-25	3. CATELOP			6			
	12	7-25							
F D 6	9	7.25	4 300			et by H			
E			Habitat	A	В	С	D	E	F
F			River						
		-	Stream	~	V				1
	, 1		Pond						
Site Photograp	phs		Corridor						
Curreru.			Cave						
Photo Log:			Mine						
18			Forest			~	/		
T OPEN	_		Gap					-	
FIELD			Other	-					
0 1 0 A									
2. Moderate: Snags with sloughing bark or other roost features present 5-1: 3. Optimal: Snags with sloughing bark or other roost features present >15 is Water Resources: 1. Poor: bat drinking resources not present at the site. 2. Moderate: Ephemeral or intermittent streams or ponded areas present by openings or canopy gaps allow bats easy access to the resource. 3. Optimal: Streams or ponds (including road ruts) present that appear to cavailable. Forest Structure: (if hardwoods are absent or nearly absent or if stand is made and standards are standards.) 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Un 2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches	inch DE ut too cl offer dri nonocul nderstor	H within 1000 luttered to allo inking resource ture, area auto by growth clut	e throughout the matically qualities and restrict	l areas. drink eas majority fies as a 1: cts flying/	of the sun poor), foraging	nmer. Fly	ways to r	esource:	
may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees present. Trees > 15 gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site predominantly up 2. Marginal: Trees present in the form of small woodlots and wooded fence 3. Optimal: Area is largely forested. Wooded stands are connected to other	n-forest	ed. Few matu Little connec	re trees present	not conne	cted to oth	ier areas o	of trees.	ll openii	ngs and
7 Total Habitat Score (Should be between 4 & 12)			Please retur	n to:				2	
Comments:			P.O. Box 73,	Paint Lick	KY. 4046	1	- 0	3	•
			859-925-9012				COPP	ERH	EAD

Site L Count Lat/L	o5 ocation_ ySe on;UTN	Woodst Neca 1: N/E 41.11	5719	State_	OH _W/N_	82.	Time Up	815 -5	o_Tin	t 8	Datum_	VA583	Observer	s EC, (? R	Co	PPE	SHEAD
#	Time	Species	Age	Sex	Repr.	Mass (g)	FA (mm)	Net	Height (m)	WDI	G/H/B/T	Band# Type	Freq.	Moon Phas	e %		v	Vax / Wan
1	9:00	1 ABO ESC				26	1									Rise		Set
2	11:00	MYSE	5	F	NK	6	40	A	2	0	E	except Son	banding.	Sun				8.55
3							180.200							Moon				
4								-										
5 6					-									Time	Temp (F)	Sky	Wind	No. Bats
7														9:00	83	1	2	11
8														10 00	78	0	2	0
9												7.00		11:00	77	O	2	1
10														12:00		- 1	1	0
11								1		-		-		1:00	74		2	0
12														2:00	74	0	2	0
13									1 1									
14																		. —
15						-											-	
16																Sky Code		-
17														0	Clear			
18														1	Few Cloud	ls		
19						-	·						1000	2	Partly Clou	ady		
20					-									3	Cloudy or	overcast		
21														4	Fog or smo	ke		
22														5	Drizzle or	light rain		
23			+ '											6	Heavy rain	ı - thunde	r storm	
24																		
25																fort Wind	Scale	
26													1-	0	Calm: <1 n	-		
27			-											1	Light air: 1			
28 29						-								2	Light breez	1		
30														3	Gentle bree		-	
Spec Sorea MY MYS	dis (LABC AU); Myo 60); Nycti	eviations: Coryno D); Lasiurus cinere tis grisescens (MY iceius humeralis (I ations: Male: M; F	eus (LAC GR); My NYHU);	CI); Lasit otis leib Perimy	urus semi oii (MYLE otis subfl	nolus (L); Myoti avus (Pl	.ASE); Lasi is lucifugus ESU); Tada	onycteris (MYLU rida bras	noctivaga); Myotis s iliensis (T	ans (LAN eptentrio ABR)	O); Myotis malis (MYS	austroripariu	S	Please Re P.O. Box 7 (859) 925-	73, Paint I	12.1		p. 1

Mist Netting Data Form Date 7-30-15 Project No./Name 412 / Emerson Greek Site No. Site Location World west of Wintermittent stream State OH Time Up 20:50 Time Down 0 | 59 County Senaca Lat/Lon; UTM: 0/E 41,167295 W/N 82,848025 Zone Datum NAD83 Observers ES, RR Freq. Height Band# Mass G/H/B/T FA (mm) Moon Phase Species Repr. Net WDI Wax / Wane Time Sex Age (g) (m) Type_ LABO 2 0 1:30 D Rise Set 2 Sun 8:59 3 Moon 4 5 Time Temp (F) Sky Wind No. Bats 6 7 9:00 8 10:00 9 11:00 10 69 11 1:00 12 13 14 15 16 Sky Code 17 0 Clear 18 Few Clouds 1 19 2 Partly Cloudy 20 3 Cloudy or overcast 21 4 Fog or smoke 22 Drizzle or light rain 5 23 6 Heavy rain - thunder storm 24 25 **Beaufort Wind Scale** 26 Calm: <1 mph 27 Light air: 1-3 mph 28 Light breeze: 4-6 mph 29 Gentle breeze: 7-10 mph Moderate breeze: 11-16 mph Acoustic Survey: Unit type_ Unit# Date Start time Stop time Stop time Date Start time Please Return to: Stop time Date Start time P.O. Box 73, Paint Lick, KY, 40461. Weatherproofing_ Coordinates (859) 925-9012 Comments: p. 2

	1.1 1/ 70 = =	O DILVA 1 -		4			000	0				
Lat/Lon; UTM: N/E Datum: NAD 83				Zone	Rock	Observers_	L216	10				_
Site Diagram:	County Seneca	State OH				1		Domi	nant Va	getation		
Site Diagram:		Net	100 March 201	Length (m)	Dates	1. Lad	Made	Donn	4.	getation		
		A	9	6	Dates	2. Rel	napre		5			
		В	7-	9	1	3. Chan 4	~	Line	6.			
		C	6	6		U. Drong		19.007	-0,			
1	Lawords	D	6	17				Net :	Set by H	labitat		
101	way	E		12		Habitat	A	В	Č	D	E	F
18/		F		1		River						
trail	7	Page 1				Stream						
1						Pond						
1/	77	Site	Photogr	aphs		Corridor	X	×	X			
/			nera:			Cave				-1		
D		Pho	to Log:_			Mine			7.14			
	Juy Sear	-				Forest				x		
	,0)	-				Gap					-	
						Other						
1						Outer						
3 Roost habit 2. Moderate	at Characterization (Choose a) tat: 1. Poor: No or few snags >= e: Snags with sloughing bark or of	5" DBH with slough ther roost features p	hing bark present 5	or other -15 inch I	usable roost fo DBH within 10	c) eatures (cracks, 00 feet of forest	ed areas.	etc)				
Roost habit 2. Moderate 3. Optimal: Water Reso 2. Moderate openings or 3. Optimal: available: Forest Strue 1. Poor: Hal 2. Moderate may be pres	tat: 1. Poor: No or few snags >= e: Snags with sloughing bark or o : Snags with sloughing bark or ot burces: 1. Poor: bat drinking resc e: Ephemeral or intermittent strea r canopy gaps allow bats easy acc Streams or ponds (including roac cture: (if hardwoods are absent o bitat even aged and young. Trees e: some diversity in age of trees ir sent but rare.	5" DBH with sloughther roost features pare roost features are so to the resource. It ruts) present that are nearly absent or its smaller than 5 inches the stand. Trees 5	hing bark present 5 resent >1 at the site is present appear to f stand is in DBH. U	s or other 1-15 inch I 5 inch DE but too c o offer dri monocul Jnderstor hes prese	usable roost for DBH within 10 BH within 1000 luttered to allow inking resource liture, area autory growth clutters. Understor	c) eatures (cracks, 00 feet of forested ow many bats to e throughout the omatically qualities and restrict y clutter domini	ted areas. I areas. O drink ease The majority Ifies as a 1 Cots flying/ Thank but no	sily or simu of the sur poor). foraging of ubiquito	nmer. Fl	yways to	resource han 15″ I	овн
Roost habit 2. Moderate 3. Optimal: Water Reso 2. Moderate openings or 3. Optimal: available: Forest Struct 1. Poor: Hal 2. Moderate may be pres 3. Optimal: gaps that fa Land Cover 2. Marginal	tat: 1. Poor: No or few snags >= e: Snags with sloughing bark or o : Snags with sloughing bark or ot burces: 1. Poor: bat drinking resc e: Ephemeral or intermittent strea r canopy gaps allow bats easy acc Streams or ponds (including roac cture: (if hardwoods are absent o bitat even aged and young. Trees e: some diversity in age of trees ir	5" DBH with sloughther roost features proper roost features proper some proper	hing bark present 5 resent >1 at the site s present appear to f stand is a DBH. U to 15 inc Trees > 1 minantly coded fer	s or other 1-15 inch I 5 inch DE but too c o offer dri monocul Jnderstor hes prese 15 inch DI un-forest nce rows.	usable roost for DBH within 1000 BH within 1000 luttered to allow inking resource liture, area autory growth clutters. Understor BH frequent. Weed. Few matures. Little connections	eatures (cracks, 00 feet of forested of forested of forested ow many bats to be throughout the community qualities and restrictly clutter dominutes of the community clutter of the community clutter dominutes of the community clutter dominutes of the community clutter dominutes of the community clutter of the community clutter dominutes of the community clutter dom	ted areas. I areas. O drink ease The majority Ifies as a 1 Cts flying/ I ant but no Tight and to The troops of the connect of the con	of the sur poor). foraging tubiquito reefalls allo	nmer. Flous. Trees	yways to greater the quent smale	resource han 15″ I	овн
Roost habit 2. Moderate 3. Optimal: Water Reso 2. Moderate openings or 3. Optimal: available. Forest Struct 1. Poor: Hal 2. Moderate may be pres 3. Optimal: gaps that fa Land Cover 2. Marginal 3. Optimal:	tat: 1. Poor: No or few snags >= e: Snags with sloughing bark or or snags with sloughing bark or of burces: 1. Poor: bat drinking resc e: Ephemeral or intermittent streat r canopy gaps allow bats easy accommod streams or ponds (including road cture: (if hardwoods are absent of bitat even aged and young. Trees e: some diversity in age of trees in sent but rare. Mature forest. Diverse age class cilitate bat foraging. r: 1. Poor: Square kilometer surre l: Trees present in the form of sm	5" DBH with sloughther roost features proper roost features proper sor ponded areas ess to the resource. It ruts) present that are nearly absent or it is smaller than 5 inches the stand. Trees 5 es of trees present. Dounding site predorall woodlots and we destands are connected.	hing bark present 5 resent >1 at the site s present appear to f stand is a DBH. U to 15 inc Trees > 1 minantly coded fer	s or other 1-15 inch I 5 inch DE but too c o offer dri monocul Jnderstor hes prese 15 inch DI un-forest nce rows.	usable roost for DBH within 1000 BH within 1000 luttered to allow inking resource liture, area autory growth clutters. Understor BH frequent. Weed. Few matures. Little connections	eatures (cracks, 00 feet of forested of forested of forested ow many bats to be throughout the community qualities and restrictly clutter dominutes of the community clutter of the community clutter dominutes of the community clutter dominutes of the community clutter dominutes of the community clutter of the community clutter dominutes of the community clutter dom	ted areas. If ar	of the sur poor). foraging tubiquito reefalls allo	nmer. Flous. Trees	yways to greater the quent smale	resource han 15″ I	овн
Roost habit 2. Moderate 3. Optimal: Water Reso 2. Moderate openings or 3. Optimal: available. Forest Struct 1. Poor: Hal 2. Moderate may be pres 3. Optimal: gaps that fa Land Cover 2. Marginal 3. Optimal:	tat: 1. Poor: No or few snags >= e: Snags with sloughing bark or or snags with sloughing bark or of burces: 1. Poor: bat drinking resc e: Ephemeral or intermittent streat r canopy gaps allow bats easy acces Streams or ponds (including road cture: (if hardwoods are absent of bitat even aged and young. Trees e: some diversity in age of trees in sent but rare. Mature forest. Diverse age classe cilitate bat foraging. r: 1. Poor: Square kilometer surre l: Trees present in the form of sm Area is largely forested. Woode	5" DBH with sloughther roost features proper roost features proper sor ponded areas ess to the resource. It ruts) present that are nearly absent or it is smaller than 5 inches the stand. Trees 5 es of trees present. Dounding site predorall woodlots and we destands are connected.	hing bark present 5 resent >1 at the site s present appear to f stand is a DBH. U to 15 inc Trees > 1 minantly coded fer	s or other 1-15 inch I 5 inch DE but too c o offer dri monocul Jnderstor hes prese 15 inch DI un-forest nce rows.	usable roost for DBH within 1000 BH within 1000 luttered to allow inking resource liture, area autory growth clutters. Understor BH frequent. Weed. Few matures. Little connections	c) eatures (cracks, 00 feet of forested ow many bats to e throughout the matically qualities and restrict y clutter domin Varying tree heit are trees present tion to adjacent wooded stream	ted areas. If ar	of the sur y of the sur poor). foraging of ubiquito reefalls allo reeted to other	nmer. Flous. Trees ow for free her areas wooded	yways to greater the quent smale	resource han 15″ I	овн

	; UTM: NYE 41.167295 WN PZ	x48025	5_	Zone_		Observers_	ES, K	K				
	NAD83 County Seneca	State OH	Quad	Flat	Rock					11		
Site Dia	igram: S+rean			Length				Domir	nant Veg	getation		
		Net		(m)	Dates	1. lod	Maple	2	4			
,		A	9	6		2. Red 3. Shank		hickory	5		_	
	1 Goods	В	6	12		3. 14 66 6	WY K	norm	0			_
	1	D	5	9		+		Net 9	Set by H	abitat		
	23/	E	D	1		Habitat	A	В	C	D	Е	1
	C truit	F	-			River						
_						Stream				- 11	7	
	woods	$\overline{}$		10		Pond						
			Photog	raphs		Corridor	X	x	*	t		
		1.00	nera:			Cave			7	= 1		
1	Suybean	Pho	to Log:			Mine				= 11		
	7 - 201					Forest	2			T-11		
		-				Gap Other						
1						Other		- 1				
1												
Indiana	Bat Habitat Characterization (Choose appro	priate score	for each	n habitat d	haracteristic	c)						_
3	Roost habitat: 1. Poor: No or few snags >= 5" D	BH with slough	hing bar	k or other	usable roost fe	atures (cracks,		etc)				
	2. Moderate: Snags with sloughing bark or other	roost features p	present :	5-15 inch D	BH within 100	00 feet of forest	ted areas.					
7	3. Optimal: Snags with sloughing bark or other re Water Resources: 1. Poor: bat drinking resource				H within 1000	feet of foreste	d areas.					
	2. Moderate: Ephemeral or intermittent streams of	s not present a r ponded area	t the sit	e. t but too cl	uttered to allo	w many bats to	drink eas	silv or simi	iltaneous	ly No.co	rridors	
	a moderate. Epitement of atternation streams	the resource.	presen	i but too ci	ancreu to uno	w many bats to	J tilline cu.	ony or since	maneous	ly. 140 cc	rridors,	
	openings or canopy gaps allow bats easy access to		appear	to offer dri			a majarih	of the com	nmer Fly	ways to		
	openings or canopy gaps allow bats easy access to 3. Optimal: Streams or ponds (including road rut	s) present that	L. L.		nking resource	throughout the	ie majorny	y of the sui	micr. 11	waysto	resources	s ar
7	Optimal: Streams or ponds (including road rut available.								inici. 11	waysto	resources	s ar
3	 Optimal: Streams or ponds (including road rut available. Forest Structure: (if hardwoods are absent or nea 	arly absent or it	stand i	s monocult	ure, area auto	matically qual	ifies as a 1	: poor).	unce T	waysto	resources	s ar
3	3. Optimal: Streams or ponds (including road rut available. Forest Structure: (if hardwoods are absent or neal. Poor: Habitat even aged and young. Trees small.)	arly absent or it	f stand i	s monocult Understory	ure, area auto growth clutte	matically qual ered and restri	ifies as a 1 cts flying/	: poor).				
3	 Optimal: Streams or ponds (including road rut available. Forest Structure: (if hardwoods are absent or nea 	arly absent or it	f stand i	s monocult Understory	ure, area auto growth clutte	matically qual ered and restri	ifies as a 1 cts flying/	: poor).				
3	 Optimal: Streams or ponds (including road rut available. Forest Structure: (if hardwoods are absent or nead 1. Poor: Habitat even aged and young. Trees small 2. Moderate: some diversity in age of trees in the may be present but rare. Optimal: Mature forest. Diverse age classes of 	arly absent or if aller than 5 inch stand, Trees 5	f stand i n DBH. to 15 in	s monocult Understory ches preser	ure, area auto growth clutto t. Understory	matically qual ered and restri y clutter domir	ifies as a 1 cts flying/ aant but no	: poor). foraging ot ubiquitor	us. Trees	greater t	han 15″ I	OBI
3	 Optimal: Streams or ponds (including road rut available. Forest Structure: (if hardwoods are absent or nea Poor: Habitat even aged and young. Trees sma Moderate: some diversity in age of trees in the may be present but rare. Optimal: Mature forest. Diverse age classes of gaps that facilitate bat foraging. 	arly absent or it aller than 5 inch stand. Trees 5 trees present.	f stand i n DBH. to 15 in Trees >	s monocult Understory ches preser 15 inch DB	ure, area auto growth cluttont. Understory H frequent. V	matically qual ered and restri y clutter domir /arying tree he	ifies as a 1 cts flying/ nant but no	: poor). /foraging ot ubiquitor reefalls allo	us. Trees	greater t	han 15″ I	OBI
3	 Optimal: Streams or ponds (including road rut available. Forest Structure: (if hardwoods are absent or nea 1. Poor: Habitat even aged and young. Trees sma 2. Moderate: some diversity in age of trees in the may be present but rare. Optimal: Mature forest. Diverse age classes of gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surround 	arly absent or it aller than 5 inch stand. Trees 5 trees present. ling site predor	f stand in DBH. to 15 in Trees >	s monocult Understory ches preser 15 inch DB	ure, area auto growth cluttont. Understory H frequent. V	matically qual ered and restri clutter domir arying tree he re trees presen	ifies as a 1 cts flying/ nant but no ight and to	: poor). /foraging ot ubiquitor reefalls allo	us. Trees	greater t	han 15″ I	ЭВІ
<u></u>	 Optimal: Streams or ponds (including road rut available. Forest Structure: (if hardwoods are absent or nea 1. Poor: Habitat even aged and young. Trees sma 2. Moderate: some diversity in age of trees in the may be present but rare. Optimal: Mature forest. Diverse age classes of gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surround 2. Marginal: Trees present in the form of small w 	arly absent or it aller than 5 inch stand. Trees 5 trees present. ling site predor coodlots and w	f stand in DBH. to 15 in Trees > minantly ooded for	s monocult Understory ches preser 15 inch DB v un-foreste ence rows.	ure, area auto growth clutte at. Understory H frequent. V ed. Few matur Little connect	matically qual ered and restri clutter domir arying tree he re trees presen tion to adjacen	ifies as a 1 cts flying/ nant but no ight and tr	: poor). /foraging ot ubiquitor reefalls allo ected to oth	us. Trees w for free ner areas	greater to	han 15″ I	OBI
	 Optimal: Streams or ponds (including road rut available. Forest Structure: (if hardwoods are absent or nea 1. Poor: Habitat even aged and young. Trees sma 2. Moderate: some diversity in age of trees in the may be present but rare. Optimal: Mature forest. Diverse age classes of gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surround 	arly absent or it aller than 5 inch stand. Trees 5 trees present. ling site predor coodlots and w	f stand in DBH. to 15 in Trees > minantly ooded for	s monocult Understory ches preser 15 inch DB v un-foreste ence rows.	ure, area auto growth clutte at. Understory H frequent. V ed. Few matur Little connect	matically qual ered and restri clutter domir arying tree he re trees presen tion to adjacen	ifies as a 1 cts flying/ nant but no ight and tr	: poor). /foraging ot ubiquitor reefalls allo ected to oth	us. Trees w for free ner areas	greater to	han 15″ I	ЭВІ
3 4 9 .	 Optimal: Streams or ponds (including road rut available. Forest Structure: (if hardwoods are absent or nea 1. Poor: Habitat even aged and young. Trees sma 2. Moderate: some diversity in age of trees in the may be present but rare. Optimal: Mature forest. Diverse age classes of gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surround 2. Marginal: Trees present in the form of small w 3. Optimal: Area is largely forested. Wooded stated the potential of the personnel of the present o	arly absent or it aller than 5 inch stand. Trees 5 trees present. ling site predor coodlots and wonds are connec	f stand in DBH. to 15 in Trees > minantly coded forced to co	s monocult Understory ches preser 15 inch DB v un-foreste ence rows.	ure, area auto growth clutte at. Understory H frequent. V ed. Few matur Little connect	matically qual ered and restri y clutter domir arying tree he re trees presention to adjacen wooded strean	ifies as a 1 cts flying/ nant but no ight and to t not conne t forested a n, fence ro	: poor). /foraging ot ubiquitor reefalls allo ected to oth	us. Trees w for free ner areas	greater to	han 15″ I	ЭВІ
	 Optimal: Streams or ponds (including road rut available. Forest Structure: (if hardwoods are absent or nea 1. Poor: Habitat even aged and young. Trees sma 2. Moderate: some diversity in age of trees in the may be present but rare. Optimal: Mature forest. Diverse age classes of gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surround 2. Marginal: Trees present in the form of small w 	arly absent or it aller than 5 inch stand. Trees 5 trees present. ling site predor coodlots and wonds are connec	f stand in DBH. to 15 in Trees > minantly coded forced to co	s monocult Understory ches preser 15 inch DB v un-foreste ence rows.	ure, area auto growth clutte at. Understory H frequent. V ed. Few matur Little connect	matically qual ered and restri clutter domir arying tree he re trees presen tion to adjacen	ifies as a 1 cts flying/ nant but no ight and tr t not conne t forested a n, fence roo	: poor). /foraging of ubiquitor reefalls allo ected to oth areas. w, or other	us. Trees w for free ner areas wooded	greater to	han 15″ I	OBI

	Noodlot Neca 1:NYE 41		Sex	Repr.	Mass	FA (mm)		Height	WDI	G/H/B/T	Band#	Freq.	Moon Phase		4		Vax / Wane
# Time	Species	Age		Kepr.	(g)	4.00		(m)	W.Z.	G/11/D/1	Type	_	WIOON I Mase	70			
9.10	EPFU	A	M	5	1-	44	B	2	0		-	_			Rise		Set
11:30	LABO	5	F	NR	11	41	C	2	0	-	-	_	Sun		069		8'51
_	LABO	7	F	NR	11	40	(1	0	-	-	-	Moon	-	191	0	0431
110						f							-				
			_									-	Time	Temp (F)	Sky	Wind	No. Bats
				16.5		-							71.44	104	_		
													9:00	80	-1	-	-
		h 7 mi											10:00	35	-		9
					_							-	11,00	78	4	2	0
0			-							-		-	1200	78	1	-	0
1								1					1:00	76	0	2	0
2		1	-	-									2:00	74	0		0
3		-	-		-	-				-	_	-	-			-	
5		-	-								_				_		
		-													Sky Code		
7										-			0	Clear	oky couc		
8		1											1	Few Cloud	e		
9		1	1	-									2	Partly Clou			
0			-										3	Cloudy or			
1		1											4	Fog or smo			
2													5	Drizzle or			
3													6	Heavy rain			
4														ricary run	manac	Louin	
5										7-		5		Beau	fort Wind	Scale	
6						A							0	Calm: <1 n			
													1	Light air: 1			
									1				2			h	
				9 0	123						,		3				
0													4			•	
27 28 29 30 Species Abbro	eviations: Coryn	orhinus r	afinesqu	ıii (CORA); Coryn	orhinus t.	virginia	nus (COVI)); Eptesic	us fuscus (E	PFU); Lasiun	us	2 3	Light breez Gentle bree Moderate b	e: 4-6 mp eze: 7-10 r	nph	

.

Mist Netting Data Form Site No. 6 Project No./Name 411 / Emerson Green Date 7/31/15
Site Location Woodlot South of Child OH Time Up 8/36 Time Down 155 ON 72 74962 Zone Datum NAD83 Observers Eric Smith County Senera State_OH_ Lat/Lon; UTM: NYE 41, 18653 Freq. Band# Mass Height Species FA (mm) Net WDI G/H/B/T Moon Phase Wax / Wane Time Sex Repr. (g) (m) Type_ 9:05 EFFU 44 Rise Set 10:00 LA BO M Sun 8:49 3 12:30 1 ABO 40 R Moon 4 5 Temp (F) Time Wind No. Bats 6 7 9.00 8 Tin 2 0 10:00 9 11:00 71 0 2 10 12:00 2 11 1:00 1 0 71 12 7:00 0 2 13 14 15 16 Sky Code 17 Clear 0 18 1 Few Clouds 19 Partly Cloudy 2 20 3 Cloudy or overcast 21 4 Fog or smoke 22 5 Drizzle or light rain 23 Heavy rain - thunder storm 24 25 **Beaufort Wind Scale** 26 Calm: <1 mph 0 27 Light air: 1-3 mph 1 28 Light breeze: 4-6 mph 2 29 Gentle breeze: 7-10 mph 3 Moderate breeze: 11-16 mph Acoustic Survey: Unit type Unit# Date Stop time_ Start time Date Start time Stop time_ Please Return to: Date Start time Stop time_ P.O. Box 73, Paint Lick, KY, 40461. Weatherproofing_ Coordinates (859) 925-9012 Comments: p. 2

	WIN 82 8496	Projec		Zone -	_	Observers_	enc	Smit	h		129-1	
Lat/Lon; UTM: (NYE 41, 1865) Datum: NAOS County Sens			Ouad		Rock							
Site Diagram:	Diate_			Length		T		Domin	nant Ve	getation		
		Net	(m)	(m)	Dates	1. Red M	uole.		4.	0		
		A	6	6	7/29.7/31	2. Shipba			5.			
		В	9	9	7/29:7/31	3. Elm			6.			
		C	6	6	7/29,7/31							
		D	6	6	7/29.7/31			Net S	Set by F	labitat		
		E		1 3 3		Habitat	A	В	C	D	E	F
		F		Table 1		River			-			
						Stream				= : ()		
				4.7.		Pond				1.1		
18			Photogr	raphs		Corridor	X	X	X	X	9 0	
17		The second of	era:			Cave		. —		-10	PERC	
1 //	1	Photo	o Log:_			Mine				11		
11	14	-		_		Forest						
1 //	P	<u> </u>				Gap	-					_
		_				Other						
A		_							7.1			
Roost habitat: 1. Poor: No or fe 2. Moderate: Snags with sloughin 3. Optimal: Snags with sloughin Water Resources: 1. Poor: bat of 2. Moderate: Ephemeral or inter openings or canopy gaps allow be 3. Optimal: Streams or ponds (in available.	ing bark or other roost feat ng bark or other roost featu drinking resources not pres mittent streams or ponded bats easy access to the reso	ures pares present at larcas urce.	resent 5 esent >1 the site present	i-15 inch D 5 inch D but too c	DBH within 1000 BH within 1000 f cluttered to allow	Ofeet of forest eet of forested many bats to throughout th	ed areas. I areas. o drink eas ne majorit	sily or simu				are
Forest Structure: (if hardwoods 1. Poor: Habitat even aged and y 2. Moderate: some diversity in a may be present but rare. 3. Optimal: Mature forest. Dive gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kil	young. Trees smaller than age of trees in the stand. Trees age classes of trees presonneter surrounding site p	5 inch rees 5 t sent. T	DBH. It to 15 inc	Understo thes presents 15 inch D un-fores	ry growth clutter ent. Understory BH frequent. Va ted. Few mature	red and restric clutter domin arying tree hei	cts flying/ ant but no ight and to not conn	foraging of ubiquitor reefalls allowed to other the control of the	w for fre	quent sm		
Forest Structure: (if hardwoods 1. Poor: Habitat even aged and y 2. Moderate: some diversity in a may be present but rare. 3. Optimal: Mature forest. Dive gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kil 2. Marginal: Trees present in the 3. Optimal: Area is largely fores	young. Trees smaller than age of trees in the stand. Trees age classes of trees presume trees age classes of trees presume form of small woodlots a sted. Wooded stands are controlled.	5 inch rees 5 t sent. T oredom	DBH. It to 15 inc	Understo thes presents 15 inch D un-fores ence rows	ry growth clutter ent. Understory BH frequent. Va ted. Few mature s. Little connection	red and restrictly red and restrictly restrictly restrictly reserved trees present on to adjacent coded stream	ets flying, ant but no ight and to not conn forested a , fence ro	foraging of ubiquitor reefalls allo ected to other areas.	w for fre	quent sm.		
Forest Structure: (if hardwoods 1. Poor: Habitat even aged and y 2. Moderate: some diversity in a may be present but rare. 3. Optimal: Mature forest. Dive gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kil 2. Marginal: Trees present in the 3. Optimal: Area is largely fores Total Habitat Score (Should be be	young. Trees smaller than age of trees in the stand. Trees age classes of trees presumeter surrounding site parts form of small woodlots a sted. Wooded stands are controlled.	5 inch rees 5 t sent. T oredom	DBH. It to 15 inc	Understo thes presents 15 inch D un-fores ence rows	ry growth clutter ent. Understory BH frequent. Va ted. Few mature s. Little connection	red and restrictly red and restrictly restrictly red trees present on to adjacent rooded stream	ets flying, ant but no ight and to not conn forested; f, fence ro n to:	foraging of ubiquitor reefalls allo ected to other areas. w, or other	w for fre ner areas wooded	quent sm.		
Forest Structure: (if hardwoods 1. Poor: Habitat even aged and y 2. Moderate: some diversity in a may be present but rare. 3. Optimal: Mature forest. Dive gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kil 2. Marginal: Trees present in the 3. Optimal: Area is largely fores	young. Trees smaller than age of trees in the stand. Trees age classes of trees presumeter surrounding site parts form of small woodlots a sted. Wooded stands are controlled.	5 inch rees 5 t sent. T oredom	DBH. It to 15 inc	Understo thes presents 15 inch D un-fores ence rows	ry growth clutter ent. Understory BH frequent. Va ted. Few mature s. Little connection	red and restrictly red and restrictly restrictly restrictly reserved trees present on to adjacent coded stream	ets flying, ant but no ight and to not conn forested; f, fence ro n to:	foraging of ubiquitor reefalls allo ected to other areas. w, or other	w for fre ner areas wooded	quent sm.		

		ata Form	Desta	NI. /5	Tinio	11.0	, ,	MEde-	1 100				Data	7/26/1	<		Sheet_/_	ot
oite No)	STREEM OF	Projec	INO./IN	vame	412		ALCK-20	4 CRCE	/			Date	1/00/1		-	10	
Count	cation_	JECA O	rr or	Chata	OH		Time IIn	9:	55 Tim	no Down	2'00	>		A 0770			EC	7.5
Lat/La	n · LITA	1: N/E 41.1	7072	State_	WIN	-92.	29207	0.	Zone -	ne Down	Datum (MADER	Observe	MTM.	RRR		-	
Lat/ LC	m, On	1. IV/ E	1010			00.	012		Zone		Datum_1	VI.IVO	e Observe	15 11 33 31	1.1.1.	Co	PPE	HEAD
#	Time	Species	Age	Sex	Repr.	Mass (g)	FA (mm)	Net	Height (m)	WDI	G/H/B/T	Band# Type	Freq.	Moon Phas	se 50 %		(V	Vax / Wane
1	9:10	LABO	A	F	PL	14	41	C	3	0	_	-				Rise		Set
2	9:45	FAFU	A	F	PL	17	47	N	2	0	-		_	Sun		06	21	9:00
3	10.30	EPEU	A	F	84	20	49	R	2	^	-	-	-	Moon		163		0246
4	11:30	EPFU	17	F	PL	20	50	1	9	8	_		_			100		0,10
5	11:45		TA	F	DL	21	47	B		0	_		-		2.70		1000	4
6	1-4D		A.	F	PL	17	48	1	8	0	_		_	Time	Temp (F)	Sky	Wind	No. Bats
7	1	6111	1				1					1000		9:00	73	3	1	2
8											-		-	10:00	71	-3	1	1
9									0					11:00	70	.3	1	2
10														12:00	109	2	1	0
11	- 4								1		11			1:00	66	Z	1	1
12											-		-	2:00	66	2	1	0
13														1				
14								-										
15									-					1				
16				0.00												Sky Code		
17														0	Clear			
18				0				/= 1					-	1	Few Cloud	ds		
19														2	Partly Clo	udy		
20					/									3	Cloudy or	overcast		
21														4	Fog or sm	oke		
22						1000			THE STATE					5	Drizzle or	light rain		
23														6	Heavy rain	n - thunde	r storm	
24								1,										
25				Egi											Beau	fort Wine	d Scale	
26													-	0	Calm: <1 r	nph		
27								-						1	Light air:	l-3 mph		
28														2	Light bree	ze: 4-6 mp	h	
29														3	Gentle bre	eze: 7-10	mph	
30	-1	1		-										4	Moderate	breeze: 11	-16 mph	

Species Abbreviations: Corynorhinus rafinesquii (CORA); Corynorhinus t. virginianus (COVI); Eptesicus fuscus (EPFU); Lasiurus borealis (LABO); Lasiurus cinereus (LACI); Lasiurus seminolus (LASE); Lasionycteris noctivagans (LANO); Myotis austroriparius (MYAU); Myotis grisescens (MYGR); Myotis leibii (MYLE); Myotis lucifugus (MYLU); Myotis septentrionalis (MYSE); Myotis sodalis (MYSO); Nycticeius humeralis (NYHU); Perimyotis subflavus (PESU); Tadarida brasiliensis (TABR)

Other Abbreviations: Male: M; Female: F; Pregnant: P; Lactating: L; Post Lactating: PL; Scrotal: S; Non Repro: NR

Please Return to:

P.O. Box 73, Paint Lick, KY, 40461.

(859) 925-9012

Mist Netting Data Form Project No./Name 412 / Embrson CRIER Date 7-29-15 Site No. 3 Site Location STREAM OF 131. County SENECE State OHO Time Up 8.50 Time Down 2:00 Lat/Lon; UTM: N/E 4/.17072 W/N - 82.89307 Zone Datum NIAD83 Observers MTM, TAB Freq. Height Band# Mass Time Species Repr. FA (mm) Net WDI G/H/B/T Moon Phase Wax / Wane Sex Age (g) (m) Type___ 1 10:50 FPFU M 20 46 Rise 2 0622 Sun 2052 1916 3 Moon 0431 4 5 Wind Temp (F) Time Sky No. Bats 6 7 9 00 2 0 8 a 79 10:00 9 11:00 0 10 12:00 2 0 0 11 1.00 12 13 14 15 16 Sky Code 17 Clear 18 Few Clouds 19 2 Partly Cloudy 20 Cloudy or overcast 21 4 Fog or smoke 22 Drizzle or light rain 23 Heavy rain - thunder storm 24 25 **Beaufort Wind Scale** 26 Calm: <1 mph 27 Light air: 1-3 mph 28 Light breeze: 4-6 mph 29 3 Gentle breeze: 7-10 mph Moderate breeze: 11-16 mph Acoustic Survey: Unit type Unit# Stop time_ Date Start time Date Start time Stop time_ Please Return to: Date Start time_____ Stop time P.O. Box 73, Paint Lick, KY, 40461. Weatherproofing____ Coordinates (859) 925-9012 Comments: p. 2

Datum	LUTMANIA HILL HILL DI	Site No. 8	2.89307	oject No.,	Zone			Observers_		RRR		Date		
Datum	n; UTM: N/E 41-17072 : NAD83 County Ser		State 0	Quad	1000	ido		Observers_		131.13				
Site Di	and the Color of t		State_O	Heigh	t Length					Domir	nant Veg	etation		
	A Say b	eans/	1	let (m)	(m)	Dat	tes	1. RED OF	VK.	- 50000	4. Bees			
1	1		-	A 6	6	7-26		2. RED N			5. ELM			
1	1/0 51		woodel	B 6	6	7-26	7-29	3. COTTON	wood		6			
	Law .			0 9	9	7-26	7-29							
	18	1	and the second second	0 6	6	7-26	7-29	*****			Set by H			P
				Eu	4m		7-29	Habitat	A	В	С	D	E	F
	•	-	14	F				River Stream	-	-	17	-	-	
			1					Pond	-	V	V		-	
C	aybeans	- 1	0 5	te Photog	graphs			Corridor						
21	O.L.			amera:				Cave	1.			1		
			F	hoto Log	1.			Mine						
		7 300	day				- 1	Forest				/		
		D	-				-	Gap						
			-				-	Other			100			
	a Bat Habitat Characterization Roost habitat: 1. Poor: No or							tures (cracks,	crevices,	etc)		1 64		
Indiana 3 3	Roost habitat: 1. Poor: No or 2. Moderate: Snags with slough 3. Optimal: Snags with slough Water Resources: 1. Poor: ba 2. Moderate: Ephemeral or into openings or canopy gaps allow 3. Optimal: Streams or ponds (available. Forest Structure: (if hardwood 1. Poor: Habitat even aged and 2. Moderate: some diversity in may be present but rare. 3. Optimal: Mature forest. Div gaps that facilitate bat foraging Land Cover: 1. Poor: Square I	few snags >= 5" Dhing bark or other ing bark or other ing bark or other it drinking resource remittent streams or bats easy access to lincluding road rules are absent or netlyoung. Trees smage of trees in the verse age classes of g. kilometer surround	DBH with slot roost feature roost feature res not prese or ponded a to the resourts) present the early absent than 5 e stand. Tree of trees preseding site preseding site presedures and site presedures are stand.	ughing bases present a present at the si eas presente. I at the si eas presente. I at appear or if stand nich DBH. Is 5 to 15 in the Trees and dominant.	rk or other 5-15 inch D te. to offer d is monocu Underste inches pres 15 inch E y un-fores	r usable ro DBH with BH withir cluttered t rinking re- alture, area ry growth ent. Under BH frequents	post feat in 1000 in 1000 fe to allow source t in a autom in clutter erstory of ent. Var mature	feet of foresteet of foresteet of foresteet of foresteet many bats to hroughout the atically qualed and restricutter domirrying tree he trees present	ted areas. d areas. o drink each ne majority ifies as a 1 cts flying/ nant but no ight and to	sily or simu y of the sur : poor). /foraging of ubiquito reefalls allo	mmer. Fluis. Trees	greater the	resource: han 15" I	овн
3	Roost habitat: 1. Poor: No or 2. Moderate: Snags with slough 3. Optimal: Snags with slough Water Resources: 1. Poor: ba 2. Moderate: Ephemeral or into openings or canopy gaps allow 3. Optimal: Streams or ponds (available. Forest Structure: (if hardwood 1. Poor: Habitat even aged and 2. Moderate: some diversity in may be present but rare. 3. Optimal: Mature forest. Div gaps that facilitate bat foraging Land Cover: 1. Poor: Square 12. Marginal: Trees present in 13. Optimal: Area is largely for	few snags >= 5" D hing bark or other ing bark or other it drinking resource emittent streams or bats easy access to including road ru ds are absent or ne tyoung. Trees sm age of trees in the verse age classes of control of small versed. Wooded st	DBH with slot roost feature roost feature res not prese or ponded a to the resourts) present the early absent early absent feature than 5 e stand. Tree of trees prese woodlots and	ughing bases present a present at the si eas presente. I at the si eas presente. I at appear or if stand ench DBH. Is 5 to 15 in the trees and the trees are the trees and the trees are trees	rk or other 5-15 inch D te. to offer d is monocu Underste inches pres 15 inch D	r usable ro DBH with BH withir cluttered t rinking re- alture, area ry growth ent. Under DBH frequents sted. Few s. Little co	post feat in 1000 in 1000 fe to allow source t a autom in clutter erstory of ent. Var mature onnection	feet of foresteet of foresteet of foresteet of foresteet of foresteet on the detection of the section of the se	ted areas. d areas. o drink ear he majority ifies as a 1 cts flying/ hant but no ight and to t not conn t forested h, fence ro	sily or simu y of the sur : poor). /foraging of ubiquito reefalls allo ected to oth areas.	nmer. Fly us. Trees ow for free her areas	greater the	resource: han 15" I	овн
3	Roost habitat: 1. Poor: No or 2. Moderate: Snags with slough 3. Optimal: Snags with slough Water Resources: 1. Poor: ba 2. Moderate: Ephemeral or into openings or canopy gaps allow 3. Optimal: Streams or ponds (available. Forest Structure: (if hardwood 1. Poor: Habitat even aged and 2. Moderate: some diversity in may be present but rare. 3. Optimal: Mature forest. Div gaps that facilitate bat foraging Land Cover: 1. Poor: Square 12. Marginal: Trees present in 3. Optimal: Area is largely for Total Habitat Score (Should be	few snags >= 5" D hing bark or other ing bark or other it drinking resource emittent streams or bats easy access to including road ru ds are absent or ne tyoung. Trees sm age of trees in the verse age classes of control of small versed. Wooded st	DBH with slot roost feature roost feature res not prese or ponded a to the resourts) present the early absent early absent feature than 5 e stand. Tree of trees prese woodlots and	ughing bases present a present at the si eas presente. I at the si eas presente. I at appear or if stand ench DBH. Is 5 to 15 in the trees and the trees are the trees and the trees are trees	rk or other 5-15 inch D te. to offer d is monocu Underste inches pres 15 inch D	r usable ro DBH with BH withir cluttered t rinking re- alture, area ry growth ent. Under DBH frequents sted. Few s. Little co	post feat nin 1000 n 1000 fe to allow source t a autom n clutter erstory c ent. Va- mature onnectic is via we	feet of foresteet of foresteet of foresteet of foresteet on the many bats to throughout the stricture of the	ted areas. d areas. o drink ear ne majority ifies as a 1 cts flying, nant but no ight and to t not conn t forested n, fence ro	sily or simuly of the sur poor). foraging of ubiquitor reefalls allow ected to off areas. w, or other	us. Trees ow for free her areas wooded	greater the	resource: han 15" I	овн

#	Time	Species	Age	Sex	Repr.	Mass (g)	FA (mm)	Net	Height (m)	WDI	G/H/B/T	Band# Type	Freq.	Moon Phas	e %		W	ax / Wane
1	9:20	EPFU	A	M	TD	15,5	44	D	5	0	_		-			Rise		Set
2	11:00		3	F	NR	15	45	D	5	0	-	-	-	Sun		060	21	2058
3		LABO	A	F	PL	13	41	0	3	0	-	_	-	Moon		(63		0246
4										1								
5					1: 21				-	1				Time	Temp (F)	Sky	Wind	No. Bats
6								-					-	9:00	75	5	-	-
7			-					_							72	3	-	8
9								_	-					11:00	70	3	0	1
10			-					_		-				12:00	67	2	0	1
11			1			-	1		1					1:00	66	2	0	3
12	-		+			1		_						5000	64	2	0	0
13							-							0.1	-			
14					-													
15					51	-												
16																Sky Code		
17					ìr.									0	Clear			
18	= =													1	Few Cloud	ls		
19						7	1		2-2-1					2	Partly Clou	udy		
20														3	Cloudy or	overcast		
21														4	Fog or smo			
22														5	Drizzle or			
23	L- 3													6	Heavy rain	ı - thunde	r storm	
24																	10.1	
25			-			-								-		fort Wind	1 Scale	_
26 27			-	-										0	Calm: <1 n			
28			-						-	-	-	_		2	Light air: 1 Light bree:		sh	
29														3	Gentle bree			
30			1											1				
alis (AU); SO);	(LABC ; Myo Nycti	eviations: Coryn D); Lasiurus cine tis grisescens (M ceius humeralis ations: Male: M;	ereus (LAC IYGR); M (NYHU);	CI); Lasi yotis leil ; Perimy	urus sem bii (MYLI yotis subf	inolus (L E); Myoti lavus (Pl	ASE); Lasi is lucifugus ESU); Tada	onycter (MYLU rida bra	is noctivaga J); Myotis s siliensis (T.	ans (LAN eptentric ABR)	IO); Myotis onalis (MYSI	austroripariu	15	Please Re P.O. Box (859) 925	73, Paint I			

Mist Netting Data Form Site No. 19 Project No./Name 412 / Emerson Creek
Site Location Noodlot South of E Township Coad 124

South State OH Time Up 9 10 PM Time Down 2:00 AM

Datum NIAY Date 7/28/2015 Zone — Datum NAO 83 Observers E5, TAB W/N 82,92948 Lat/Lon; UTM: (N)E 41,14756 Freq. Band# Mass Height Time Species Repr. FA (mm) Net WDI G/H/B/T Moon Phase Wax / Wane Sex Age (g) (m) Type_ 9:00 1 ABO Escape A Rise Set 2 9:10 LABO) £ PL 13 40 3 0 Sun 0623 8:55 0 0356 9:20 NR 9 A Moon LABO 38 3 9:50 EPFU A M 48 TO 17.5 D 0 2 5 10:00 EPEL A F PL 49 5.5 265 Temp (F) Time Sky Wind No. Bats TD 15 0 6 10:00 EPFLA A M 460 D 35 ---900 10:45 FPFU A PL 48 5 0 90 D 79 4 11:30 EPFU 2 F NR 14 45 D 4 _ 3 10:00 11:30 EPFU J D 1,5 M NR 2 2 11:00 EPFU 2:50 4 Esca sed 00.6 73 2 LABO NR 11 1:00 0 12 2:00 0 13 14 15 16 Sky Code 17 0 Clear 18 1 Few Clouds 19 2 Partly Cloudy 20 3 Cloudy or overcast 21 4 Fog or smoke 22 5 Drizzle or light rain 23 Heavy rain - thunder storm 24 25 **Beaufort Wind Scale** 26 0 Calm: <1 mph 27 Light air: 1-3 mph 1 28 2 Light breeze: 4-6 mph 29 Gentle breeze: 7-10 mph 3 Moderate breeze: 11-16 mph Acoustic Survey: Unit type_ Unit # Date Stop time_ Start time Date Start time Stop time Please Return to: Date-Start time Stop time_ P.O. Box 73, Paint Lick, KY, 40461. Weatherproofing Coordinates (859) 925-9012 Comments: p. 2

(LOD UTM: W/E 41, 14356 (N/N 8292948		Zone		Observers_	ESM	ith				_
rum: NAD83 County Seneca	State OH	Quad_	Fire	Side							
Diagram:			Length	67.0			Domi	nant Veg	getation		
	Net	(m)	(m)	Dates		Maple		4. K	at a	de	_
3	A		9		2. 54 45			_5			_
)	В		6		3. E4	m		_6			
	C		6			_	Net	Set by H	ahitat		
<u>"J 1</u>	E		17_	_	Habitat	A	B	C	D	E	F
	F				River	- 17		-	-		
					Stream		X				-
C Stream		10.00			Pond			100	11 121	1) - 1	
The state of the s		Photogr	aphs		Corridor			X	X		
		nera:			Cave						
¥-	Pho	to Log:_			Mine			1			
A	_				Forest	X					
			-		Gap	/ \					
		-			Other						
1. 1. 1 had been a second at 1.											
na Bat Habitat Characterization (Ch										·	
Roost habitat: 1. Poor: No or few sn							etc)				
 Moderate: Snags with sloughing ba Optimal: Snags with sloughing ba 											
Water Resources: 1. Poor: bat drink				r within 1000	reet of foreste	u areas.					
2. Moderate: Ephemeral or intermitte	ent streams or ponded area			ttered to allo	w many bats t	o drink eas	sily or simi	ultaneous	ly. No co	rridors,	
openings or canopy gaps allow bats e	asy access to the resource.	n ansar4		landa nase		65.5.75.36	2.0		S. C. C.		
Optimal: Streams or ponds (includ available.	ing road ruts) present that	appear to	o offer drin	king resource	throughout t	he majority	y of the sur	nmer. Fl	yways to	resources	are
Forest Structure: (if hardwoods are	absent or nearly absent or i	f stand is	monoculti	ire, area autoi	matically qual	ifies as a 1	noor)				
1. Poor: Habitat even aged and young	g. Trees smaller than 5 incl	h DBH. U	Jnderstory	growth clutte	red and restr	icts flying/	foraging				
Moderate: some diversity in age of	trees in the stand. Trees 5	to 15 inc	hes presen	t. Understory	clutter domin	nant but no	ot ubiquito	us. Trees	greater th	han 15" D	BH
		Twons > 1	E inch DRI	I (magness V	antina tuan han	dalet and to		an tau tau	20.02.04	and the second	and and A
may be present but rare.	to alaccos of twoos message		15 Inch Dbi	i frequent. v	arying tree ne	ight and tr	reetans and	ow for fre	quent sm	all openir	igs and
may be present but rare. 3. Optimal: Mature forest. Diverse a	ge classes of trees present.										8
may be present but rare. 3. Optimal: Mature forest. Diverse a gaps that facilitate bat foraging.					e trees presen	t not conn	ected to of	ner areas	of trees.		
may be present but rare. 3. Optimal: Mature forest. Diverse agaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilome 2. Marginal: Trees present in the form	ter surrounding site predo m of small woodlots and w	minantly ooded fe	un-foreste	d. Few matur Little connect	ion to adjacen	t forested a	areas.				
may be present but rare. 3. Optimal: Mature forest. Diverse a gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilome	ter surrounding site predo m of small woodlots and w	minantly ooded fe	un-foreste	d. Few matur Little connect	ion to adjacen	t forested a	areas.				.85
may be present but rare. 3. Optimal: Mature forest. Diverse as gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilome 2. Marginal: Trees present in the fora 3. Optimal: Area is largely forested.	ter surrounding site predor m of small woodlots and w Wooded stands are connec	minantly ooded fe	un-foreste	d. Few matur Little connect	ion to adjacen vooded strear	t forested a n, fence ro	areas.			~	
may be present but rare. 3. Optimal: Mature forest, Diverse as gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilome 2. Marginal: Trees present in the form 3. Optimal: Area is largely forested. Total Habitat Score (Should be between	ter surrounding site predor m of small woodlots and w Wooded stands are connec	minantly ooded fe	un-foreste	d. Few matur Little connect	ion to adjacen vooded stream Please retu	t forested a n, fence rou rn to:	areas. w, or other	wooded		හ	
may be present but rare. 3. Optimal: Mature forest. Diverse as gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilome 2. Marginal: Trees present in the fora 3. Optimal: Area is largely forested.	ter surrounding site predor m of small woodlots and w Wooded stands are connec	minantly ooded fe	un-foreste	d. Few matur Little connect	ion to adjacen vooded strear	t forested a n, fence rou rn to:	areas. w, or other	wooded		හු	

6	Heavy rain - thunder storm
H	Beaufort Wind Scale
0	Calm: <1 mph
1	Light air: 1-3 mph
2	Light breeze: 4-6 mph
3	Gentle breeze: 7-10 mph
4	Moderate breeze: 11-16 mph

Please Return to: P.O. Box 73, Paint Lick, KY, 40461. (859) 925-9012

Date 7/25/15

Moon Phase

Sun

Moon

Time

9:00 10.00 11:00

7.00

1:00 2:00

0

1

2

3

4

5

Clear

Other Abbreviations: Male: M; Female: F; Pregnant: P; Lactating: L; Post Lactating: PL; Scrotal: S; Non Repro: NR

#	Time	Species	Age	Sex	Repr.	Mass (g)	FA (mm)	Net	Height (m)	WDI	G/H/B/T	Band# Type	Freq.
1	9.20	EPFU	21	M	NR	11	46	A	3.0	0	na	Da	na
2	9.26	EPFU	JV	m	NR	11.25	45	A	5.0	0	na	na	na
3	10.00		TV	m	NR	6.5	39	D	0.5	0	00	00	na
4		EPFU	JV	M	NR	8.75	41	A	30	0	na	na	na
5		EPFU	JV	M	MR	13.00	44	A	3.0	0	NG	Na	-
6		EPFU	A	F	PL	17.75	47	Α	3.0	61	na	na	1
7	10.00	EPFU	A	F	PL	20.5	49	A	5.0	0	no	,	-
3	15:00	E PPU	JV	M	NR	14.5	46	A	6.0	0	50	_	1
9		EPFU	A	F	FL	16.75	48	A	5.0	0	na	~	1
0		LABO	2V	F	NR	80	41	A	2.0	0	-	-	-
1		EPFU	A	M	S	160	44	À	7.0	0	_		
2	10:40	EPFU	A	M	2,	16.5	45	A	6.0	0	_	-	-
3	10:40	EPFU	A	1=	PL	20.0	47	A	4.0	U	750	_	-
4	11:13	EPFU	JV	F	NR	130	46	A	3,0	0		-	-
5	11:50	EPFU	A	3	5	1915	45	A	3.0	Ď	~	-	
6	11:50	EPFU	TV	3	NR	6.141		A	3. D	0	-	1	_
7	15.50	EPFV	A	7	QL.	2025	44		5.5	6	-	-	-
8						A. C.		7	1				
9					1-1	-			1				
0													7
1										-			1
2	1								7 = 1				
3				1 1									-
4			1										-
5					- 30						-		
6			7								13.		
7									7	1.00			-
8	= T		to the second										1
9	12 7		7220) Tell				2			
0			127	-	Ca. s								

forest

Time Up 9:00

Emerson

Time Down 2:00 am

Project No./Name 4/2.01

Site Location Forest gap; lough cond: Pond in

Mist Netting Data Form

Site No._

Species Abbreviations: Corynorhinus rafinesquii (CORA); Corynorhinus t. virginianus (COVI); Eptesicus fuscus (EPFU); Lasiurus borealis (LABO); Lasiurus cinereus (LACI); Lasiurus seminolus (LASE); Lasionycteris noctivagans (LANO); Myotis austroriparius (MYAU); Myotis grisescens (MYGR); Myotis leibii (MYLE); Myotis lucifugus (MYLU); Myotis septentrionalis (MYSE); Myotis sodalis (MYSO); Nycticeius humeralis (NYHU); Perimyotis subflavus (PESU); Tadarida brasiliensis (TABR)

p. 1

Mist Netting Data Form Date 7/30/15 Project No./Name_ 412_,01 / EMUSSIN Site No. 10 Site Location Forest gapitogging road; pond in forest Lat/Lon; UTM: N/E 41. 15312 DH Time Up 8:50 Time Down_ Datum NAD83 Observers J. Storm, M. Newton MYN - 82, 92621 Zone COPPERHEAD Height Band# Mass G/H/B/T 97.6 FA (mm) Time Species Age Sex Repr. Net WDI Moon Phase Wax / Wane (g) (m) Type_ 9:05 LABO Rise Set 2 47mm Sun 6:25 am 3:51pm 3 ERF! Moon 12:10 pm 5:35 am PL 4 A E Harris A 4 TREU 14 5 M A 2 Time Temp (F) Sky Wind No. Bats 6 TOFU M Hymn A 0 FPFI 0.40 **T-M** 10 14 D. 17 47mm 0 1 8 38m NB a Ά -9 LACT 49 core 3 7 IV A -10 NB Hemp A 4 10:00 74 8 11 M 1.4 45mm Q 11:00 12 29 m 2 12:00 0 13 45 2 1:00 631 14 2 20 mm A 62.8 =100 15 mm 16 Sky Code 9.75 17 0 Clear 18 1 Few Clouds 19 2 Partly Cloudy 20 3 Cloudy or overcast 21 4 Fog or smoke 22 5 Drizzle or light rain 23 Heavy rain - thunder storm 24 25 **Beaufort Wind Scale** 26 Calm: <1 mph 0 27 1 Light air: 1-3 mph 28 Light breeze: 4-6 mph 2 29 Gentle breeze: 7-10 mph 3 Moderate breeze: 11-16 mph Acoustic Survey: Unit type____ Unit # Date Start time Stop time Date Start time Stop time Please Return to: P.O. Box 73, Paint Lick, KY, 40461. Date Stop time_ Start time Weatherproofing Coordinates (859) 925-9012 Comments: p. 2

	; UTM: N/E 41. 153/2 W/N 82. 9	Project No./1	Zone -	_	Observers	J.51	CA. T	Winser		7/25	
atum:		ate OH Quad_	14 A A A				-				
țe Diaș			Length		1		Domi	nant Veg	getation		
}	1	Net (m)	(m)	Dates	1. Red	Maple		4.5/4	PRIY 8	lun	
	+ 11	A 7.8	9	7/257/30			P. Pinsak		Lord		1. N 00
	\ \x\;	B 5.2	6	7/25 + 7/30	3. Shag	borkh	chay	6.	VEF MO	nfle	
	62 62	C 6.1	0	7/25 47/30			(
8		D 5.2	10	7/25 07/30	11.1.2			Set by H		-	
	ET! Le	E			Habitat	A	В	C	D	Е	F
}	who in	F			River						
Lynn	I Beneman				Stream				./		
	84	Site Photogr	aphs		Pond Corridor	×	11	V	X		-
		Camera:	чрио		Cave	- 21	X	×			
	TELL (S X) PO	Photo Log:_			Mine						
	1 0 to a cold	1			Forest	T. 10					
ores	3				Gap	×					
	C 112/				Other				_		
	CITY				11		1				
liana	Bat Habitat Characterization (Choose appropria Roost habitat: 1. Poor: No or few snags >= 5" DBH of	vith sloughing barl	or other	usable roost fea	tures (cracks,	crevices,	etc)				
<u>}</u>	Roost habitat: 1. Poor: No or few snags >= 5" DBH or 2. Moderate: Snags with sloughing bark or other roost 3. Optimal: Snags with sloughing bark or other roost Water Resources: 1. Poor: bat drinking resources no 2. Moderate: Ephemeral or intermittent streams or poropenings or canopy gaps allow bats easy access to the 3. Optimal: Streams or ponds (including road ruts) pravailable. Forest Structure: (if hardwoods are absent or nearly 1. Poor: Habitat even aged and young. Trees smaller 2. Moderate: some diversity in age of trees in the stan may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees.	with sloughing barl t features present 5 features present >1 t present at the site nded areas present resource. esent that appear to absent or if stand is than 5 inch DBH. I d. Trees 5 to 15 inc	or other -15 inch D 5 inch D but too c o offer dr monocu Jndersto	t usable roost feat DBH within 1000 BH within 1000 f cluttered to allow rinking resource liture, area autom ry growth clutter ent. Understory	tures (cracks, d feet of forest feet of forested of many bats to throughout the matically qualified and restrictly clutter domin	ted areas. d areas. o drink each ne majorit ifies as a 1 cts flying, ant but no	sily or simuy of the sun : poor). /foraging of ubiquitor	nmer. Fly us. Trees	ways to	resource	овн
2	Roost habitat: 1. Poor: No or few snags >= 5" DBH or 2. Moderate: Snags with sloughing bark or other roost 3. Optimal: Snags with sloughing bark or other roost Water Resources: 1. Poor: bat drinking resources not 2. Moderate: Ephemeral or intermittent streams or poopenings or canopy gaps allow bats easy access to the 3. Optimal: Streams or ponds (including road ruts) pravailable. Forest Structure: (if hardwoods are absent or nearly 1. Poor: Habitat even aged and young. Trees smaller 2. Moderate: some diversity in age of trees in the standard be present but rare.	with sloughing bark t features present 5 features present >1 t present at the site inded areas present resource. esent that appear to absent or if stand is than 5 inch DBH. I d. Trees 5 to 15 inc s present. Trees > 1 site predominantly lots and wooded fe	or other -15 inch D 5 inch D but too c offer dr monocu Jndersto hes prese 5 inch D un-fores nce rows	tusable roost feat DBH within 1000 BH within 1000 feat within 1000 feat within 1000 feat within the seat of the seat within the seat with the seat with the seat within the se	tures (cracks, deet of forest eet of forested many bats to throughout the matically qualified and restrict clutter dominarying tree height	ted areas. d areas. o drink each ne majorit ifies as a 1 cts flying/ iant but no ight and to t not conn	sily or simuly of the sur epoor). foraging of ubiquitor reefalls allo ected to other	nmer. Fly us. Trees ow for free ner areas o	greater to quent sma	resource han 15″ [all openii	овн
<u>}</u>	Roost habitat: 1. Poor: No or few snags >= 5" DBH or 2. Moderate: Snags with sloughing bark or other roost 3. Optimal: Snags with sloughing bark or other roost Water Resources: 1. Poor: bat drinking resources not 2. Moderate: Ephemeral or intermittent streams or portion openings or canopy gaps allow bats easy access to the 3. Optimal: Streams or ponds (including road ruts) pravailable. Forest Structure: (if hardwoods are absent or nearly 1. Poor: Habitat even aged and young. Trees smaller 2. Moderate: some diversity in age of trees in the stan may be present but rare. 3. Optimal: Mature forest. Diverse age classes of tree gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding 2. Marginal: Trees present in the form of small wood	with sloughing bark t features present 5 features present >1 t present at the site inded areas present resource. esent that appear to absent or if stand is than 5 inch DBH. I d. Trees 5 to 15 inc s present. Trees > 1 site predominantly lots and wooded fe	or other -15 inch D 5 inch D but too c offer dr monocu Jndersto hes prese 5 inch D un-fores nce rows	tusable roost feat DBH within 1000 BH within 1000 feat within 1000 feat within 1000 feat within the seat of the seat within the seat with the seat with the seat within the se	tures (cracks, d) feet of forest feet of forested w many bats to throughout the matically qualified and restrict clutter dominarying tree heit etrees present on to adjacent coded stream	ted areas. Id ar	sily or simuly of the sur epoor). foraging of ubiquitor reefalls allo ected to other	nmer. Fly us. Trees ow for free ner areas o	greater to quent sma	resource han 15″ [all openii	овн
2	Roost habitat: 1. Poor: No or few snags >= 5" DBH or 2. Moderate: Snags with sloughing bark or other roost 3. Optimal: Snags with sloughing bark or other roost Water Resources: 1. Poor: bat drinking resources not 2. Moderate: Ephemeral or intermittent streams or portion openings or canopy gaps allow bats easy access to the 3. Optimal: Streams or ponds (including road ruts) proposed by the structure: (if hardwoods are absent or nearly 1. Poor: Habitat even aged and young. Trees smaller 2. Moderate: some diversity in age of trees in the standard be present but rare. 3. Optimal: Mature forest. Diverse age classes of tree gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding 2. Marginal: Trees present in the form of small wood 3. Optimal: Area is largely forested. Wooded stands Cotal Habitat Score (Should be between 4 & 12)	with sloughing bark t features present 5 features present >1 t present at the site inded areas present resource. esent that appear to absent or if stand is than 5 inch DBH. I d. Trees 5 to 15 inc s present. Trees > 1 site predominantly lots and wooded fe	or other -15 inch D 5 inch D but too c offer dr monocu Jndersto hes prese 5 inch D un-fores nce rows	tusable roost feat DBH within 1000 BH within 1000 feat within 1000 feat within 1000 feat within the seat of the seat within the seat with the seat with the seat within the se	tures (cracks, deet of forest eet of forested many bats to throughout the matically qualified and restrict clutter dominarying tree height	ted areas. d areas. d areas. d drink ear ne majorit ifies as a 1 cts flying/ iant but no ight and to t not conn forested a frence roo n to:	sily or simuly of the sur epoor). foraging of ubiquitor reefalls allo ected to other w, or other	us. Trees ow for free ner areas o	greater to quent sma	resource han 15″ [all openii	овн

#	Time	Species	Age	Sex	Repr.	Mass (g)	FA (mm)	Net	Height (m)	WDI	G/H/B/T	Band# Type	Freq.	Moon Phas	e 50 %		(V	Vax Wan
1	10:20	FPFU	A	F	L	18	46	2	7	0		_	_			Rise		Set
2		EPFU	A	M	5	16.5		2	5	0	_	_	_	Sun		Ole	12	2052
3							1							Moon		138	28	0049
1		(1														
5														Time	Temp (F)	Sky	Wind	No. Bats
7												-		9:00	75	0	0	0
														10:00	73	0	0	1
														11 00	70	0	0	0
)				J. Hilliams										12 00	68	0	1	0
1									-	-				1.00	66	0	2	1
														2.00	65	0	2	0
					10 mg 4												1	
				71	1				1								1	
5																		
5																Sky Code		
7														0	Clear			
3														1	Few Cloud			
)		P												2	Partly Clou			
														3	Cloudy or			
					1.7						9 -			4	Fog or smo			
2										_	1 = 1			5	Drizzle or	~		
3														6	Heavy rain	ı - thunde	r storm	
1								_							n	C	10.1	
5		_					-		6					- 0	4. 4.	fort Wind	Scale	
7			-			-		-			-		-	0	Calm: <1 n Light air: 1			_
3			-			-								2	Light breez		L	
1														3	Gentle bree			
5			-			7				-				4	Moderate l			

Mist Netting Data Form Site No. CR 122 Site Location Site Location CV \27C

County Sene Ca State OH Time Up 8:45 Time Down

Zone Datum Freq. Height Band# Mass Wax / Wane Moon Phase 50 % FA (mm) G/H/B/T WDI Time Species Age Sex Repr. Net (m) Type_ 9:40 LABO S 37 2 A M 14 Rise Set 8:55 9:40 EPFU F NR 19 4 -0622 46 Sun W 10:20 EPFU 4 731 51 0 Moon 0240 11:30 EPFU M 22.5 49 5 4 0 5 Temp (F) Wind No. Bats Time 6 76 100 8 10:00 75 9 11:00 10 12:00 0 11 00 71 0 0 12 2:00 0 68 0 13 14 15 16 Sky Code 17 0 Clear 18 Few Clouds 1 19 Partly Cloudy 20 Cloudy or overcast 21 Fog or smoke 22 5 Drizzle or light rain 23 Heavy rain - thunder storm 24 25 **Beaufort Wind Scale** 26 0 Calm: <1 mph 27 Light air: 1-3 mph 28 Light breeze: 4-6 mph 29 Gentle breeze: 7-10 mph Moderate breeze: 11-16 mph Acoustic Survey: Unit type_ Unit # Date Start time Stop time_ Stop time Date Start time Please Return to: Stop time_ Date Start time_____ P.O. Box 73, Paint Lick, KY, 40461. Weatherproofing Coordinates (859) 925-9012 Comments: p. 2

Mist Net Site I Lat/Lon; UTM: N		e No. 11 W/N 82.99222			Zone -	412/5mb	Observers		RRR			-23-15	
Datum:	County Susca		ite OH	Quad	Fires	side		0 - 7					
Site Diagram;	county				Length				Domi	inant Veg	getation		
10 3	1 -3	3.11	Net	(m)	(m)	Dates	1. Comp	MADOD		4. ELM			
100	6		A	6	6	7/23/15 7-27	2. REFM			_ 5. L. A.	ALLET		
7.111 -		1	В	9	9	7/23/15 7-27	3. RED 01	K.		6		_	_
D Z	21/2 EA.	2/ 11	C	6	b	7/23/15 7-21				C . 1 . 11			
17/18	DP 50	181	D	6	6	7/23/15 7-27	Thelifere	A .	Net B	Set by H	abitat D	E	U
V// 0		2/1/	((4)) E	-			Habitat River	A	D	С	ь	E	r
13/10 h	A S	J9/ /	T				Stream				~	-	
2) 10 E	10 0 11 12	54 /					Pond			+			-
0//5	x 20 = 10	1	Site	Photogr	raphs		Corridor	~	V	V			
7/	Q MA			nera:			Cave						
	- 4)	30 II	Pho	to Log:_			Mine		J			1	1
1/1	-1						Forest						
2/10		2011	-				Gap						4
	The state	5 511					Other						
1 0	VO W	8	-										
3. Optin Water R 2. Mode opening 3. Optin available 3 Forest S 1. Poor; 2. Mode may be 3. Optin	rate: Snags with sloughing bases ources: 1. Poor: bat drink rate: Ephemeral or intermittes or canopy gaps allow bats on al: Streams or ponds (include: tructure: (if hardwoods are Habitat even aged and youn rate: some diversity in age of present but rare. 1. Mature forest. Diverse at facilitate bat foraging.	ark or other roost king resources no ent streams or por easy access to the ding road ruts) problems absent or nearly and trees in the standard frees in the standard king road ruts.	features p t present a nded area resource. esent that absent or i than 5 inc d. Trees 5	resent >1 at the site s present appear t f stand is h DBH. I to 15 inc	5 inch D but too o offer d monocu Understo ches pres	BH within 1000 for cluttered to allow rinking resource to alture, area automory growth clutter ent. Understory of	many bats to throughout th natically qualitied and restriction	d areas. o drink ea ne majorit ifies as a 1 cts flying, ant but ne	y of the su : poor). /foraging ot ubiquite	ummer. Fl	yways to greater t	resources han 15″ [овн
2 Land Co 2. Margi	over: 1. Poor: Square kilome inal: Trees present in the for nal: Area is largely forested.	rm of small wood!	lots and w	ooded fe	nce row	s. Little connection	on to adjacent	forested	areas.				
												_	
10 Total Hab	oitat Score (Should be between	en 4 & 12)					Please retur	n to:				$c \rightarrow$	
10 Total Hab	<u>ritat Score</u> (Should be betwe	en 4 & 12)					Please return P.O. Box 73,		k, KY. 404	61	. (හ	

Species Abbreviations: Corynorhinus rafinesquii (CORA); Corynorhinus t. virginianus (COVI); Eptesicus fuscus (EPFU); Lasiurus borealis (LABO); Lasiurus cinereus (LACI); Lasiurus seminolus (LASE); Lasionycteris noctivagans (LANO); Myotis austroriparius (MYAU); Myotis grisescens (MYGR); Myotis leibii (MYLE); Myotis lucifugus (MYLU); Myotis septentrionalis (MYSE); Myotis sodalis (MYSO); Nycticeius humeralis (NYHU); Perimyotis subflavus (PESU); Tadarida brasiliensis (TABR)

Other Abbreviations: Male: M; Female: F; Pregnant: P; Lactating: L; Post Lactating: PL; Scrotal: S; Non Repro: NR

0 Calm: <1 mph
1 Light air: 1-3 mph
2 Light breeze: 4-6 mph
3 Gentle breeze: 7-10 mph
4 Moderate breeze: 11-16 mph

Please Return to: P.O. Box 73, Paint Lick, KY, 40461. (859) 925-9012

p. 1

29

30

Mist Netting Data Form Project No./Name 4/2 / Emerson Creek Date 7/08/15 Site No. 13 Site No. 13 Project No./Name 412 / Ewerson Creek Date 7 88/5
Site Location Wood of 1950 Food 2 Stream

County Seneral State Of Time Up 8:55 Time Down 155

Lat/Lon; UTM: N/E 1 7809 W/N 82, 89002 Zone Datum N 8083 Observers J. Stream J. Lisse Freq. Band# Mass Height FA (mm) WDI G/H/B/T %92.8 Species Net Moon Phase Wax / Wane Time Sex Repr. Age (g) (m) Type Set 6:23 2:54 2 Sun 3 Moon 3.56 am 4 5 Time Temp (F) Sky Wind No. Bats 6 7 9:00 8 10:00 9 11 100 0 1010.7 10 12:00 65.4 0 11 1:00 65.3 0 0 12 104.5 2:00 13 14 15 16 Sky Code 17 0 Clear 18 Few Clouds 1 19 2 Partly Cloudy 20 Cloudy or overcast 3 21 4 Fog or smoke 22 5 Drizzle or light rain 23 Heavy rain - thunder storm 24 25 **Beaufort Wind Scale** 26 Calm: <1 mph 27 Light air: 1-3 mph 28 Light breeze: 4-6 mph 29 3 Gentle breeze: 7-10 mph Moderate breeze: 11-16 mph Acoustic Survey: Unit type____ Unit# Stop time_ Date Start time____ Stop time Date Start time Please Return to: Start time_____ Stop time_ P.O. Box 73, Paint Lick, KY, 40461. Date Weatherproofing Coordinates (859) 925-9012 Comments: p. 2

Lat/Lon; UTM: N/E 41, 17809 W/N 82.89062 Zone Observers J. Storm; J. Klinger Datum: NYXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Mist Net Site Habitat Sheet Site No.	13 Project	No./Name_L	Ha, Ew	verson	(NDO &			Data	7/26	15
Datum: NAVS County Server State Off Quad Freed B. Net light Length Dominant Vegetation							w T.	(6) no		1100	11-
Height Length Common C	Datum: WAV83 County Sereca			ide_	Coscivers_	9.9.	101	9	-		
Net (m) (m) Dates A 6.0 (p) 7 (s) 7 7 (2p) 4 A 4 A 6.0 (p) 5 A 6.0 (p) 7 (s) 7 7 (2p) 4 A 4 A 6.0 (p) 5 A 6.0 (p) 7 (s) 7 7 (2p) 4 A 6 A 6.0 (p) 7 (s) 7 7 (2p) 4 A 6 A 6.0 (p) 7 (s) 7 7 (2p) 4 A 6 A 6.0 (p) 7 (s) 8 A 6.0 (p) 7 (s) 9 A 6 A 6.0 (p) 8 A 6.0 (p) 8 A 6.0 (p) 8 A 6.0 (p) 8 A 6.0 (p) 9 A 6.0 (p) 8 A 6.0 (p) 9 A 6.0 (p)	Site Diagram: // Dr)				T -		Domin	ant Veg	etation		
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic) Roost habitat 1. Poor: No or few snags >= 5' DBH with sloughing bark or other rost features present > 5 inch DBH within 1000 feet of forested areas. A constant of the summer of the summer of the summer of the summer. Flyways to resources are available. 2. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. 3. Optimal: Streams or ponded (including road ruts) present at the site. 2. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. 3. Optimal: Streams or ponded (including road ruts) present at the site. 2. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. 3. Optimal: Streams or ponded (including road ruts) present at that appear to offer drinking resources throughout the majority of the summer. Flyways to resources are available. 5. Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory cluttered and restricts flying/ foraging. 2. Moderate: Some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory cluttered and restricts flying/ foraging. 2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded corridor. 1. Foor: Square kilometer surrounding site predominantly un-for	1/ 3/6				1. Stero	ry elm				_	
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic) Roost habitat: 1. Poor. No or few snags >= 5° DBH with sloughing bark or other usable roost features (Gap Other Usable roost features) present 5.15 inch DBH within 1000 feet of forested areas. 3. Optimal: Snags with sloughing bark or other roost features present 5.15 inch DBH within 1000 feet of forested areas. 4. Moderate: Snags with sloughing bark or other roost features present 5.15 inch DBH within 1000 feet of forested areas. 3. Optimal: Snags with sloughing bark or other roost features present 5.15 inch DBH within 1000 feet of forested areas. 4. Moderate: Sphemeral or intermittent streams or ponded areas present bart to ocluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. 3. Optimal: Streams or ponded sincluding road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available. 5. Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging 2. Moderate: some diversity in age of trees in the sland. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15" DBH may be present but are. 3. Optimal: Streams or special and treefalls allow for frequent small openings and gaps that facilitate bat foraging. 2. Moderate: some diversity in age of trees in the sland. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15" DBH may be present but are. 3. Optimal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded stands via wooded stands.	Ill could	A 6	5.2 10	7126+7128							
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic) Pond P	C/FA	В						6			
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic) Site Photographs Corridor Co	(1003		5.2 6			,					
Site Photographs Carridor Cave Mine Pond Mine Photo Log: Mine Prosest Care Mine	11253	D 2	5.2 6	7261723				et by H	abitat		
Site Photographs Carridor Cave Mine Pond Mine Photo Log: Mine Prosest Care Mine	() (col b	E			Habitat	A	B 3	C	D	E	F
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic) Roost habitat: 1. Poor: No or few snags >= 5° DBH with sloughing bark or other usable roost features (cracks, crevices, etc) 2. Moderate: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. 3. Optimal: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. 4. Mater Resources: 1. Poor: but drinking resources not present at the site. 2. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. 3. Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available. Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging. 2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15° DBH may be present but are. 3. Optimal: Mature forest. Diverse age classes of trees present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees. 2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded stands via wooded stream, fence row, or other wooded corridor. Total Habitat Score (Should be bet	The state of	F			River						
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic) Roost habitat: 1. Poor: No or few snags >= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc) 2. Moderate: Snags with sloughing bark or other roost features present 5-15 inch DBH within 1000 feet of forested areas. 3. Optimal: Snags with sloughing bark or other roost features present 5-15 inch DBH within 1000 feet of forested areas. 4. Moderate: Demenal or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. 5. Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available. 6. Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging 2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15" DBH may be present but rare. 3. Optimal: Matter forest. Diverse age classes of trees present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees. 2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded stands via wooded stream, fence row, or other wooded corridor. Total Habitat Score (Should be between 4 & 12)	0	The state of the s			Stream				X		
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic) Roost habitat: 1. Poor. No or few snags >= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc) Mine Roost habitat: 1. Poor. No or few snags >= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc) Moderate: Snags with sloughing bark or other roost features present 5-15 inch DBH within 1000 feet of forested areas. Apter Resources: 1. Poor: bat drinking resources not present at the site. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. Notimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available. Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging 2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15" DBH may be present but trae. 3. Optimal: Mature forest. Diverse age classes of trees present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees. 2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded stream, fence row, or other wooded corridor. Total Habitat Score (Should be between 4 & 12) Plea	-				Pond						
Photo Log: Mine					Corridor	×	X	X			
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic) Roost habitat: 1. Poor: No or few snags >= 5′ DBH with sloughing bark or other usable roost features (cracks, crevices, etc) Moderate: Snags with sloughing bark or other roost features present 5-15 inch DBH within 1000 feet of forested areas. Optimal: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. Water Resources: 1. Poor: bat drinking resources not present at the site. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available. Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging 2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15″ DBH may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees. 2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded straam, fence row, or other wooded corridor. Total Habitat Score (Should be between 4 & 12)	\\ torest 1		V		Cave						The Co
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic) Roost habitat: 1. Poor: No or few snags >= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc) Anderate: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. Notimal: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. Mater Resources: 1. Poor: bat drinking resources not present at the site. Noderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available. Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging 2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15" DBH may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees. 2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded stream, fence row, or other wooded corridor. Total Habitat Score (Should be between 4 & 12)	la la	Photo I	Log:		Mine						
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic) Roost habitat: 1. Poor: No or few snags >= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc) 2. Moderate: Snags with sloughing bark or other roost features present 5-15 inch DBH within 1000 feet of forested areas. 3. Optimal: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. Water Resources: 1. Poor: bat drinking resources not present at the site. 2. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. 3. Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available. Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging 2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15" DBH may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees. 2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded stream, fence row, or other wooded corridor. Total Habitat Score (Should be between 4 & 12) Please	15	-					V				
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic) Roost habitat: 1. Poor: No or few snags >= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc) Moderate: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. Joptimal: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. Water Resources: 1. Poor: bat drinking resources not present at the site. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. Joptimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available. Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging 2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15" DBH may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees. 2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded stands via wooded stream, fence row, or other wooded corridor. Total Habitat Score (Should be between 4 & 12)	Folest and	-					^				-
Roost habitat: 1. Poor: No or few snags >= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc) 2. Moderate: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. 3. Optimal: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. Water Resources: 1. Poor: bat drinking resources not present at the site. 2. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. 3. Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available. Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging 2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15" DBH may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees. 2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded straam, fence row, or other wooded corridor. Total Habitat Score (Should be between 4 & 12) Please return to: P.O. Box 73, Paint Lick, KY. 40461	1 1/3	1			Other						
Roost habitat: 1. Poor: No or few snags >= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc) 2. Moderate: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. 3. Optimal: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. Water Resources: 1. Poor: bat drinking resources not present at the site. 2. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. 3. Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available. Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging 2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15" DBH may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees. 2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded straam, fence row, or other wooded corridor. Total Habitat Score (Should be between 4 & 12) Please return to: P.O. Box 73, Paint Lick, KY. 40461	acourt 1/3	-									
Roost habitat: 1. Poor: No or few snags >= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc) 2. Moderate: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. 3. Optimal: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas. Water Resources: 1. Poor: bat drinking resources not present at the site. 2. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource. 3. Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available. Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging 2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15" DBH may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees. 2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded straam, fence row, or other wooded corridor. Total Habitat Score (Should be between 4 & 12) Please return to: P.O. Box 73, Paint Lick, KY. 40461	4111										
3. Optimal: Area is largely forested. Wooded stands are connected to other wooded stands via wooded stream, fence row, or other wooded corridor. Total Habitat Score (Should be between 4 & 12) Please return to: P.O. Box 73, Paint Lick, KY. 40461	2. Moderate: Snags with sloughing bark or 3. Optimal: Snags with sloughing bark or Water Resources: 1. Poor: bat drinking re 2. Moderate: Ephemeral or intermittent stropenings or canopy gaps allow bats easy a 3. Optimal: Streams or ponds (including re available. Forest Structure: (if hardwoods are absen 1. Poor: Habitat even aged and young. Tre 2. Moderate: some diversity in age of trees may be present but rare. 3. Optimal: Mature forest. Diverse age cla gaps that facilitate bat foraging. Land Cover: 1. Poor: Square kilometer su	other roost features present at the eams or ponded areas precess to the resource. The early absent or if states smaller than 5 inch Din the stand. Trees 5 to 1 sees of trees present. Trees counting site predomin	sent 5-15 inch ent >15 inch D ne site. resent but too o pear to offer dr and is monocu BH. Understo 15 inches prese ees > 15 inch D nantly un-fores	DBH within 1000 fer within 1000 fer cluttered to allow rinking resource to the liture, area automary growth clutterent. Understory of BH frequent. Varieted. Few mature in the little result.	feet of foresteet of foresteet of foresteet of foresteet many bats to hroughout the atically qualitied and restrictutter dominarying tree heretrees present	ted areas. If ar	of the sum poor). foraging tubiquitous	mer. Fly s. Trees v for free	ways to greater th	resources nan 15″ D	овн
P.O. Box 73, Paint Lick, KY. 40461	3. Optimal: Area is largely forested. Woo	ded stands are connected	to other wood	ded stands via wo	ooded stream	, fence rov	reas. v, or other v	wooded o	corridor.	2	
COPPERMENT	Comments:						KY 40461			<u>S</u>	
							, 10401		COPI	ERH	EAD

Mist Netting	Data	Form
--------------	------	------

					officet
Site No. 16	Project No./Name_	412.01 / Emerson Cr	zeir Date	7-23-15	
Site Location Pond i	N wood lot west	CFCR18 and south of E	ast county Rd 24		13
County SONECOL	State OH	Time Up 09000m Time D		1.	TCO?
Lat/Lon; UTM:/N/E 4	1.157652 WIN	Time Up 09000m Time D -82.989 259 Zone	Datum Observ	ers BRenley F. Mc	GOPPERHEAD
	0,				COPPERHEAD

#	Time	Species	Age	Sex	Repr.	Mass (g)	FA (mm)	Net	Height (m)	WDI	G/H/B/T	Band# Type	Freq.
1	9:30	EPFU	Esc	assed	while	lower	ing ne	-B	3	-	_	_	/
2	9:40	EPFU	A	F	PL	17.5	44	A	2	0	NA	NIA	NA
3	9:50	EPFU	A	F	PZ	19.75	47	D	2	0	N/A	UA	NA
4	10:20	EPFU	J	M	NYL	9.75	43	A	5	0	NIA	NA	N/A
5	10:40	EPFU	IA	F	PL	19.0	47	A	6	i	NIA	NIA	
6	11:00	EPFU	J	F	NR	15.0	46	A	7	0	NIA	NA	NA
7	11:20	EPFU	A	F	PL	22.0	49	Α	6	0	NIA	NIA	NA
8		,				P 50	-				- 11	-//	1
9				-									
10							1 = 1						
11													
12						-							
13					-		-						
14													
15					-						10		
16											- 10		
17	E .												
18							1						
19				1 (1)									
20								7					
21									-				
22						77-0							
23													
24	7 - 20				1	EE(1			1			
25							-						
26													
27					1								
28										-			
29													
30									-				

Moon Phase 49 %	0	Wax / Wane
	Rise	Set
Sun	6:12	20:52
Moon	13.28	00:45

Time	Temp (F)	Sky	Wind	No. Bats
0900	74	1	0	NIA
1000	68	0	0	3
1100	63	0	0	3
1200	60	0	0	1
0100	61	0	0	0
0200	61	0	0	0
	-			

	Sky Code
0	Clear
1	Few Clouds
2	Partly Cloudy
3	Cloudy or overcast
4	Fog or smoke
5	Drizzle or light rain
6	Heavy rain - thunder storm

	Beaufort Wind Scale
0	Calm: <1 mph
1	Light air: 1-3 mph
2	Light breeze: 4-6 mph
3	Gentle breeze: 7-10 mph
4	Moderate breeze: 11-16 mph

Please Return to:

P.O. Box 73, Paint Lick, KY, 40461. (859) 925-9012

Other Abbreviations: Male: M; Female: F; Pregnant: P; Lactating: L; Post Lactating: PL; Scrotal: S; Non Repro: NR

Species Abbreviations: Corynorhinus rafinesquii (CORA); Corynorhinus t. virginianus (COVI); Eptesicus fuscus (EPFU); Lasiurus borealis (LABO); Lasiurus cinereus (LACI); Lasiurus seminolus (LASE); Lasionycteris noctivagans (LANO); Myotis austroriparius

(MYAU); Myotis grisescens (MYGR); Myotis leibii (MYLE); Myotis lucifugus (MYLU); Myotis septentrionalis (MYSE); Myotis sodalis (MYSO); Nycticeius humeralis (NYHU); Perimyotis subflavus (PESU); Tadarida brasiliensis (TABR)

p. 1

Mist Netting Data Form Site No. 6 Project No./Name 412.01 / Engreson Creeks
Site Location fond in wood lot West of CR18 + South OF East County Rd Date County GeNCCA State OH Time Up 8:55 Time Down ONSS Lat/Lon; UTM: N/E 41,157652 W/N -82,989259 Zone Datum NAD83 Observers B. Rentey/R. McGrego Freq. Band# Height Mass FA (mm) WDI G/H/B/T Moon Phase (Wax / Wane Net Time Species Sex Repr. Age (g) (m) Type_ PL 46 NIA NIA 10:00 EPFU 16,5 A Rise Set NA 8:5512 10:00 EPFU 3 45 MA MA A Sun 4 10,00 FEPFU PL NIX A 185 48 NIA NA Moon 5:31 PM 2:46 AN 10:20 E PFU W NR 13.5 46 NIA WIA 4 T 5 11.00 EPFU 5 NR 15.0 45 1,5 Time Wind Temp (F) No. Bats 11750 EPFU 19,0 46 NIA MA M NR 2 N/A 6 A 0 900 13:40 LABO 7 NR QO NIA N/A NIA NIL 1000 74 8 0 9 73 10 11 100 12 200 69 13 14 15 Sky Code 16 17 0 Clear 18 1 Few Clouds 19 2 Partly Cloudy 20 3 Cloudy or overcast 21 4 Fog or smoke 22 5 Drizzle or light rain 23 Heavy rain - thunder storm 24 25 **Beaufort Wind Scale** 26 0 Calm: <1 mph 27 Light air: 1-3 mph 1 28 2 Light breeze: 4-6 mph 29 3 Gentle breeze: 7-10 mph 30 Moderate breeze: 11-16 mph Acoustic Survey: Unit type____ Unit # Stop time_ Date Start time Date Start time Please Return to: Stop time_ P.O. Box 73, Paint Lick, KY, 40461. Date Start time Stop time_ Weatherproofing (859) 925-9012 Coordinates Comments: p. 2

	989 259 Zone	10	Observers_	B. Rem	of IR	McGu	ego/		_
Diagram \ (6)1)	Height Length	/(2		-	Domin	ant Vec	getation		
Diagram	Net (m) (m)	Dates	1. 54gar	manle	Domini		ed Oa	k	_
7 1		1/23/15 +7/27		bary His	Korg	5		-	
		7/23/15 + 2/27		white		6.			
Not A Forest		2/23/15 + 7/27				-			
1/		1/23/5 +7/27			Net S	et by H	abitat		_
settile strik	E 9.6	(1270) 4.101	Habitat	A	В	Č	D	E	I
of contains	F		River	100					
Truts			Stream	100		1111			
			Pondelse	11.11.19	V				
	Site Photographs		Corridor	/		V	V		
Pond Nas 1	vet Camera:		Cave						
	Photo Log: Downlo	anded	Mine	70		-			
	to google dri	11 5:telb	Forest						
avet /			Gap						ļ.
Dedict / Count			Other						
Year.							1 1		
						R = 1			
iana Bat Habitat Characterization (Choose appropriate Roost habitat: 1. Poor: No or few snags >= 5" DBF 2. Moderate: Snags with sloughing bark or other roost Water Resources: 1. Poor: bat drinking resources: 2. Moderate: Ephemeral or intermittent streams or popenings or canopy gaps allow bats easy access to the streams or popenings or canopy gaps allow bats easy access to the streams or ponds (including road ruts) available. Forest Structure: (if hardwoods are absent or nearly	I with sloughing bark or other uport features present 5-15 inch Dist features present >15 inch DBI not present at the site, bonded areas present but too clume resource. present that appear to offer dring present the dring present that appear to offer dring present that appear to offer dring present the dring present that appear the dring present that appear to offer dring present the dring present that appear to offer dring present the dring present the dring present the dring present that appear the dring present the dring prese	isable roost feat BH within 1000 If within 1000 for attered to allow aking resource t	tures (cracks, lefeet of forest eet of forested many bats to throughout th	ed areas, d areas. o drink easi ne majority	ily or simu				s are

Species Abbreviations: Corynorhinus rafinesquii (CORA); Corynorhinus t. virginianus (COVI); Eptesicus fuscus (EPFU); Lasiurus borealis (LABO); Lasiurus cinereus (LACI); Lasiurus seminolus (LASE); Lasionycteris noctivagans (LANO); Myotis austroriparius (MYAU); Myotis grisescens (MYGR); Myotis leibii (MYLE); Myotis lucifugus (MYLU); Myotis septentrionalis (MYSE); Myotis sodalis (MYSO); Nycticeius humeralis (NYHU); Perimyotis subflavus (PESU); Tadarida brasiliensis (TABR)

Other Abbreviations: Male: M; Female: F; Pregnant: P; Lactating: L; Post Lactating: PL; Scrotal: S; Non Repro: NR

Please Return to:

P.O. Box 73, Paint Lick, KY, 40461. (859) 925-9012

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

2/2/2018 2:00:46 PM

in

Case No(s). 17-2295-EL-BGN

Summary: Application Exhibit J Appendix E - Part 9 of 12 electronically filed by Teresa Orahood on behalf of Sally W. Bloomfield