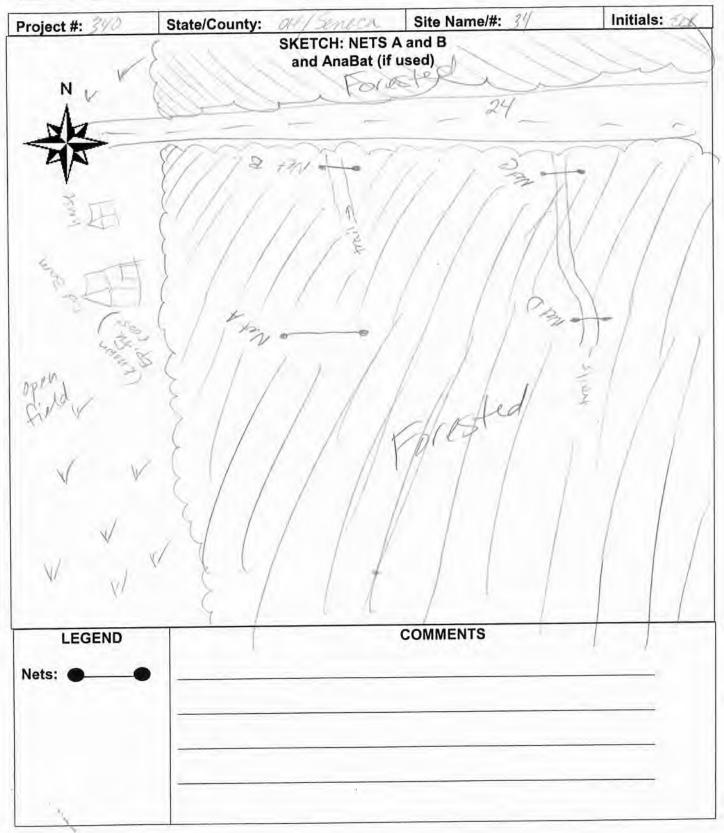
Project #	#: 340		_	Date:	35 July	26/1 Biolo	ogists: E. Ba	SISER	
1.1.2	Name: Ro	evul	dic-	Wind	d V		Name/#: 34	0	
State:	6H	Cou	nty:	Sem	eea		S Quad: Fire	side	
Net/Trap/ or AnaBat	Net/Trap/ AnaBat Seria			Latitud	de		ongitude	Picture #	Waypoin
A	Nut		41 .	29 13	18.9 "N	82.5	7 . 42.9 "W	975	55
B	Net		41 .	09 4	Parl "N	12 · 57	2 · 43.3 "W	974	56
C	Dit	_	91 .	19:4	0,2 "N	82.53	2 · 38,/ "W	976	57
Distance	to closest v	water			817 "N	82 ° 5	pe of water sou	the second second	38
					CTERISTICS		NETS): Stream Width	:met	ers
Substrat	um: Be	edrock	B	oulder	Cobble	Gravel	Sand	Silt/Clav	
							or cm Clarity	0.0	
VEGETA				111010	go mator B	opunm	or on or orally	(1,1,1,1,2)	
Dominan		pecies	s (> 40 c	cm/16" d	lbh)	Subdomina	nt Canopy Spec	cies (< 40 cr	m/16" dbł
	t Canopy S	pecies	s (> 40 c	cm/16" d	lbh)	Subdomina	nt Canopy Spec	cies (< 40 cr	m/16" dbł
Quan	t Canopy S	lia		cm/16" d	lbh)	Subdomina	nt Canopy Spec		m/16" dbł
Quen QNO	t Canopy S AD AU ICUD U	when		cm/16" d	lbh)	Tilia	avata	ina	m/16" dbł
Quesi QNI Cons	t Canopy S MD AU ICUD U LA OVE	lia When				Larya Tulia Minus	avnen o America	112	
	t Canopy S CAD AU CAB AU LA OVC d dbh range	lva Min Nos e: Lg:	.70	_ Sm:	40	Carga Nilia Minus Estimated o	America America Ibh range: Lg:	112	
<u>Augu</u> <u>Augu</u> <u>Can</u> Estimate Relative	t Canopy S A A A A A A A A A A A A A A A A A A A	Area Area e: Lg: of dor	<u>70</u> minant v	_ Sm:		Carga Nilia Minus Estimated o	America America Ibh range: Lg:	40 Sm	: <u>10</u>
Estimate Estimate Estimate	d dbh range abundance d canopy cl	And And Pe: Lg: of dor losure	<u>70</u> minant v	_ Sm:	0 ominant (rati	Estimated o	Ibh range: Lg: Modera	<u>40</u> Sm te	: <u>10</u> Open
Estimate Relative Estimate Roost tre	d dbh range abundance d canopy cl	And And a: Lg: of dor losure consis	<u>70</u> minant v : sts of:	_ Sm: /s. subdo	ominant (rati	Estimated o	Ibh range: Lg: Modera	<u>40</u> Sm te	Open Neither
Estimate Relative Estimate Roost tre Roost tre	t Canopy S A A A A d dbh range abundance d canopy cl e potential e potential	A contract A contract A construction A construction	<u>70</u> minant v : sts of: e area is	_ Sm: /s. subdo	0 ominant (rati	Estimated o	Ibh range: Lg: Modera	<u>40</u> Sm te	: <u>10</u> Open
Estimate Relative Estimate Roost tre Roost tre Roost po	d dbh range abundance d canopy cl	A contract A contract A construction A construction	<u>70</u> minant v : sts of: e area is	_ Sm: /s. subdo	ominant (rati	Estimated o	Ibh range: Lg: Modera	<u>40</u> Sm te	Open Neither
Estimate Relative Estimate Roost tre Roost tre Roost po Subcano	t Canopy S d dbh range abundance d canopy cle e potential e potential tential com	a: Lg: of dor osure consis for the ments	<u>70</u> minant v sts of: a area is : <u>Arad</u>	_ Sm: /s. subdo	ominant (rati Closed Large T High Closed	Estimated of	America America Ibh range: Lg:  Modera Snags Modera	te	Open Neither Low
Estimate Relative Estimate Roost tre Roost tre Roost po Subcano Subcano	t Canopy S d Canopy Can	a: Lg: of dor osure: consis for the ments ed larg	<u>70</u> minant v sts of: a area is a area is gely of:	_ Sm: /s. subdo	ominant (rati Closed Large T High Closed Lower E Canopy	Estimated of	Ibh range: Lg: Modera Modera Modera	<u>40</u> Sm te te te	Open Neither Low
Estimate Relative Estimate Roost tre Roost tre Roost po Subcano Subcano	t Canopy S d Canopy Can	a: Lg: of dor osure: consis for the ments ed larg	<u>70</u> minant v sts of: a area is a area is gely of:	_ Sm: /s. subdo	ominant (rati Closed Large T High Closed Lower E Canopy	Estimated of the set o	Ibh range: Lg: Modera Modera Modera	<u>40</u> Sm te te te	Open Neither Low Open Shrubs
Estimate Relative Estimate Roost tre Roost tre Roost po Subcano Subcano	t Canopy S d Canopy Can	e: Lg: of dor osure consis for the ments ed larg	<u>70</u> minant v sts of: e area is : <u>Arad</u> gely of: cies:	_ Sm: /s. subdo	ominant (rati Closed Large T High Closed Lower E Canopy	Estimated of the set o	Ibh range: Lg: Modera Modera Modera	<u>40</u> Sm te te te	Open Neither Low Open Shrubs
Estimate Relative Estimate Roost tre Roost tre Roost po Subcano Subcano	t Canopy S A Current of the second dependence abundance d dbh range abundance d canopy cla be potential tential comp py clutter: py comprise a Subcanopy Description:_	e: Lg: of dor osure consis for the ments ed larg	<u>70</u> minant v sts of: e area is : <u>Arad</u> gely of: cies:	_ Sm: /s. subdo	ominant (rati Closed Large T High Closed Lower E Canopy	Estimated of the set o	Ibh range: Lg: Modera Modera Modera	<u>40</u> Sm te te te	Open Neither Low Open Shrubs
Estimate Relative Estimate Roost tre Roost tre Roost po Subcano Subcano Subcano Common Habitat D AnaBat H <u>Check al</u>	t Canopy S A Curry A A Curry A Curry	e: Lg: of dor osure consis for the ments ed larg	<u>70</u> minant v sts of: a area is a area is a area is a area is a area is a ar	Sm: rs. subdo :: <u>Arac</u> <u></u> A	ominant (rati Closed Large T High Closed Lower E Canopy	Estimated co o): Trees Branches of Trees	America America Ibh range: Lg: Modera Modera Modera Modera	te	Open Neither Low Open Shrubs
Estimate Relative Estimate Roost tre Roost tre Roost po Subcano Subcano Subcano Common Habitat D AnaBat H <u>Check al</u> Young	t Canopy S A Curry A d dbh range abundance d canopy cla be potential be potential tential comp py clutter: py comprise a Subcanopy Description:_ labitat: I that apply:	A Consist of dor losure consist for the ments ed larg y Spect Const rest	<u>70</u> minant v sts of: a area is a area is cies: <u>a lor</u> cies: <u>A lor</u> For	Sm: rs. subdo :: <u>Arac</u> <u></u> A	ominant (rati Closed Large T High Closed Lower E Canopy	Estimated c o): Trees  Branches of Trees  t   t Strea	Ibh range: Lg: Modera Modera Modera Modera Sapling: 	te	Open Neither Low Open Shrubs



# **NET SITE HABITAT DESCRIPTION (continued)**



TOT		BAT CAPTURE DATA	DATA		4				WE	WEATHER DATA		DATA
Drniart #- 340	340	1.7 3C -dic	The Tar	1	100)	Time Temp (°C)		Wind Speed (estimated – see chart)*	d chart)*	Wind Direction: From to	% Cloud Cover (estimated)	ted) Comments
	B. a. M.	vare. as	-	1	18		0	5-1			25%	
Project Name:		6-10120		I	102	0200 231				WE	10 %	
State: 0	County:	nty: Sevia ca	J	-	9230	181	t	1-3		2-5	1026	
Biologiete.	the Pour	305		-	03	3300 03.	_	M	1	2-11	0%	
neifininia	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1.44		T	10	330 22.	00.	(N) (		SW-NE	010	
Site name/#:	5			4	00	0000 22.	6	5		SW-NE	0%	
GDS I Init #-	** 9528	me	Camara #. Con 671	11.	8	á	3-	1-12	101	3	Se la	
			1	1	127	dà	0	N N	A.V	510-110E	0% 25	
		MOON PHASE*			103	0.0	0	1-10	2 9	13	200	
New moon Waxing gibb	New moon Waxing gibbous	Waxing crescent Full moon Waning crescent	First quarter Waning gibbous	SNOC								
Net/Trap/Anabat #	nabat Net/Trap Type <sup>1</sup>		Latitude		Longitude	tude	2	Length H	Height (m)	Time Up Ti (0000 h)	Time Down (0000 h)	Picture #
A	NIN	50 . 20	N. + 25 .	520	· ES	Ma & Ct		Ø	0		77 27 97	5
0	NN	60 = 15	N. 1. 03.	0	· 11 ·	W. 234	1	0	0	2	0150 97	46
0	NN	50 · 16	Nº COA.	52 0	11	Ma 1:38	1	5	0	avo.	0000 97	9
Net Place	Net Placement/Site Description:	ption: 411 AL DIA	5. 55	8.2 Nob	25	たっち		9	2	5008	6 0.00	22
Capt Ne #	Net #	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro. <sup>2</sup>	(a)	RFA (mm)	Belly (FIM/E)	Wing Index* (0-3)	Picture	Comments Picture # /Guano/Hair Sample
0	- LOGINA CUS	1001 25. 15	0	00.	M	MR	0.2	39	10	0	2090	
0	> Lasines	in such	2:30	Ad	íL.	JA	12,0	41	W	0	5	
3 6	3 Foresirus	151.18	02.100	A.d	14	>	0.4	db	W	0	3092	
1 1	Shoum O	Sachwartsea	15 3145	Ad	M	>	50	32	M	0	3093-	3085
10	MI Secto	SUCH SUSI S	3325	Ad		1	1000		M	0	PSCOLL	P
L t	SUCS M	where a large	0560	AA	V	¥	2,5	36	5	0	-	
4	C W Sept	why work is	2300	Port	11	32	00	37	N	2		
2 8	C to Clar	s	3303	PE	P.V.	NR	0.01	43	5	0		
							-					

	BA	<b>BAT CAPTURE DATA</b>	RE DATA					WEAT	WEATHER DATA	-		
	100	P.C	a the man	-	Time 1 (0000 h)	Temp (°C)	Wind Speed (estimated – see chart)*	hart)* Fro	Wind Direction: From to		% Cloud Cover (estimated)	Comments
Project #:	2	Date	and and	100	2304	Jun3	4	-		0	tot.	1. 1840
Project Name: 2	Henry	an - D	1010 m	100	330	25.2	the state		(	0		1 March
Ctato OA	County:	Susse	e ca	105	200	245				23	Ve	Clark
olaic.	-		1	~	10%	2112	Þ		1	6	1	
Biologists:	Patrick	Pr P		0	0.8/0	2401	4			0	10	
Site name/#·	44			10	0520	28.6	4		1		2	
0	0451		,	127	1000			-				
GPS Unit #: /	201		Camera #:	17	012.1			-				
	WC	MOON PHASE*		1 1								
New moon	1	Waxing crescent	First quarter Maning dibbolis	ar hous				-				
Last quarter	11	Waning crescent										
Net/Trap/Anabat	Net/Trap Type <sup>1</sup>	T	Latitude	Lon	Longitude		Length He (m)	Height Ti (m) (0	Time Up Tir (0000 h) (	Time Down (0000 h)		Picture #
H	2113	50 . 7	N.	•	50	Mu		0	0	5510	975	
0	101	56	1 .		1.1.	Ma	(0)	2 3	20: 10	6150	474	
1	14.1	5	N	0	1.2/8 4	Ma	2-	1	2 640	0155	976	
							and the second s	and an other states and and			Contraction of the second seco	

Net Placement/Site Description:

Capt #	Met #	Species	Time	Age (Ad/Jv)	Sex (M/F)	Repro. <sup>2</sup>	Wt (g)	(mm)	(F/M/E)	Wing Index* (0-3)	Comments Picture # /Guano/Hair Sample
1000	-	1.4.1.	205-	An	1	1.FT		Alper.	4	10	
	1	FPESSON	10250	<u>Ad</u>	4	0	25/25	- Ne	L	0	
											1
-											
++								-			

novations, Inc. 513-451-1777)

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s,

13



# **BAT TRANSMITTER DATA**

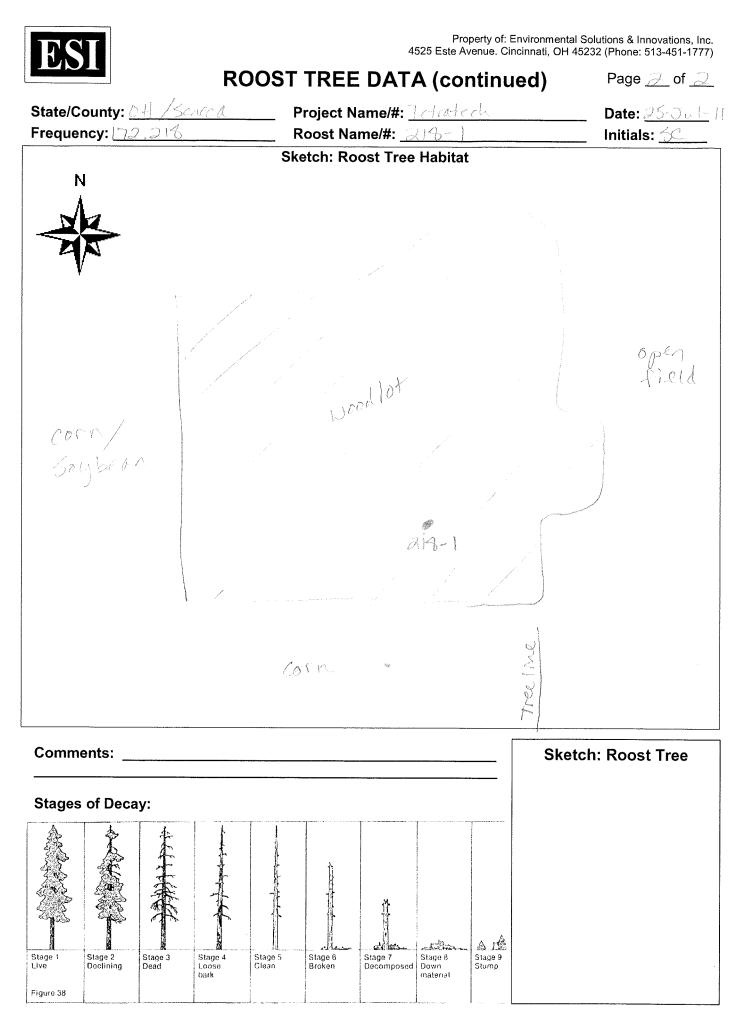
Project #: <u>340</u> .	02 Date:	24 July 2011	Biologists: DJ	Healt, S	Reeves
Project Name:	Etratich Ripul	olic	Site Name/#:	lite Ila	
State: C	County: <u>Seneca</u>		Camera #: <u>(* 483</u>	34	
Picture #: 3788	1-99, 3803-0-				
Bat Species:	lyotis sodatis		Capture Time	e: <u>2120</u>	
Age Ad or Jv	Sex M or F	-	/e Condition _/PL; M=↑/↓	Wt (g)	RFA (mm)
Ad		PL		7.0	37.0
Transmitter weight =	<u>(), 2</u> grams	Frequ	ency number:7	2.219	
Transmitter + bat total weight = <u>7.4</u> grams Band/color number: <u>Silver/ODNR/12063</u>				112063	
<ol> <li>2) Signal receive</li> <li>3) Band attached</li> <li>4) Condition of</li> </ol>	ment (Y/N):/ animal: <del>Excel</del> ∖e	42.2181			
RELEASE TIME:	<u>22.</u> TC	OTAL HOLD TIME	::	nutes	
RELEASE LOCA	TION: Site IL	e, capture loca	Nion		
COMMENTS:		ofter failed			
	, and the second s	to west in			
	smitter gave no				
	smitter readi				



<b>ROOST TREE DATA</b>
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Page _	of
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Project #: <u>340.02</u> Date: <u>25 Jul</u>	142011 Biologists: P. Jeffcott, S. Captain
Project Name: Tetratech Republic	
GPS Unit #: <u>45</u> Waypoint: <u>214-1</u>	
Latitude: <u>41 ° 13 ' 07,6</u> "N	Longitude: <u>4,2 ° 56 '34.0</u> "W
Bat Species: Myotis sodalis	Sex(M/F): Age(Ad/Jv):Ad Repro.:PL
Capture Date: 24 July 2011	Capture Site 16
Frequency: 172. 2(8)	Roost Name/#:bat #1
ROOST TREE DATA	
Roost tree species: Carya Ovata	dbh: <u>25</u> cm
Estimated height from ground to roost: //	(meters) Tree height <u>スス</u> (meters)
Exfoliating bark (%): <u>30%</u> Distance from cap	oture site: <u>1  <sub>km</sub> </u> m or km (circle one)
Tree health: $\angle$ Live	DeadPartial
Observed roost potential: $\underline{X}$ Exfoliating Bark	<pre><cracks crevasseshollowunknown<="" pre=""></cracks></pre>
Bat vocalizations:Yes	<u>∕</u> No
Guano on ground/foliage:Yes	<u> </u>
Is guano fresh (if present)?:Yes	<u>X</u> No
Guano volume (if present):	
DESCRIPTION OF SURROUNDING HABITAT	
Dominant Canopy Species (> 40 cm/16" dbh)	Subdominant Canopy Species (< 40 cm/16" dbh)
Estimated dbh range (cm): Lg: Sm: <u>40</u>	Estimated dbh range (cm): Lg: <u>39</u> 2 Sm: <u>5</u> 2
Estimated canopy closure at roost: $40$ %	
	nt <u> </u>
Subcanopy Clutter:ClosedMo	
	Distance to nearest flight
Distance to nearest water source: $1 \kappa_m$ m or	
Habitat Description: Woodlot with Some large tre	ees mainly shaghark hidrory, fragmented areas of opm
<u>Check all that apply:</u> Gubcanoly, With Verydonse Mature Upland Forest Young Upland Forest Mature Lowland Forest XYoung Lowland Forest Comments: Evidence of logging, landowner allo	orestCrop/Pasture LandShrub/scrub Swamp Stream/RiverVernal Pool geEmergent WetlandDeepwater Lake/Pond Forested SwampOther



DOT	452	Property of: Environmenta 25 Este Avenue. Cincinnati, OH	I Solutions & Innovations, Inc. 45232 (Phone: 513-451-1777)
			Page of
	ROOST T	REE EMERGE	NCE DATA
		Biologists: <u></u> Fa	
Project Name: <u>Republic</u>	State: <u></u>	County: Serv	2C-Q
GPS Unit #:	Waypoint:	0rt-1	
Latitude: <u>41 ° 1)</u> , 67.5	"N	Longitude: <u>82_</u> °	<u>56,38.0</u> "w
Roost Name/#:			
Radio-tagged bat present in tre	e: Yes No <u>∕∕</u>	_	
Complete the following information only	if a radio-tagged bat is pr	esent in the roost	
Bat species: <u>M. Sodali</u> S	Sex(M/F):	Age(Ad/Jv):	Repro.:
Capture date: <u>24-5al-11</u>	Capture site: <u>16</u>	Frequer	ncy:/ <u>`\&amp;.⊋K}</u>
·····			

				11
Arrival time:	2045	Departure time:	Total Bats:	

Emergence Time	Number of Bats	Emergence Aspect
The Car	2	
2116		
2118		
	40gr	

Rould not determine point of exit, Bats oral

	1 2	f: Environmental Solutions & Innovations, Inc. Cincinnati, OH 45232 (Phone: 513-451-1777)
		Page of IERGENCE DATA
	USI IREE EN	IERGENCE DATA
Project #: 340.01 Date: 27	Jul 11 Biologis	ts: <u>M.Flynn</u>
Project Name: <u>Republic</u>	State: <u>OH</u> Cour	nty: <u>Seneca</u>
GPS Unit #:	Waypoint:	
Latitude: <u>4</u> ° <u>3</u> ' <u>07,6</u> "N	Longitu	de: <u>42 ° 56 ' -38 0</u> "W
Roost Name/#:		
Radio-tagged bat present in tree: Yes_	No <u> ×                                   </u>	
Complete the following information only if a radio-ta	gged bat is present in the	
Bat species: <u>Myotis Sodalis</u> Sex(M/	F): Age(Ad/J	ı):_ <u>A</u> Repro.:_ <u>P</u> L
Capture date: $\frac{1}{2} \frac{1}{4} - \frac{1}{5} \frac{1}{4} - \frac{1}{5} \frac{1}{4} $ Capture	e site:_/ <u>/</u>	Frequency: <u>172.218</u>
<b>NOTE:</b> Tallies of bat exits should be made at 2-r distinguish bats as silhouettes against the sky as the root to observe all exiting bats, but not close	hey exit the roost. Please	ensure that you are close enough to

the roost to observe all exiting bats, but not close enough to influence emergence (do not stand directly the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).

# Arrival time: <u>21:00</u> Departure time: <u>21:45</u> Total Bats: <u>4</u>

Emergence Time	Number of Bats	Emergence Aspect
9:10	3	circling around
9:12		circling around 1008t tree
9:14		
	ag	

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the

transmittered bat fly? 3 bats emerged simulaneously bluen 9:10-9:12. All bats circled roost tree for 10-15 mins before dispersive.

	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)
ESI	Page of ROOST TREE EMERGENCE DATA
Project #: D	ate: 29 Jul 11_ Biologists: <u>PErgenu</u>
Project Name: <u>Republe</u>	State: <u>0</u> County: <u>Service</u>
GPS Unit #: <u>351 055671</u>	Waypoint:
Latitude: <u>/// ° 13</u> , 07, 6	."N Longitude: <u>42 • 56 • 736 7</u> "W
Roost Name/#: 💈 218- /	
Radio-tagged bat present in tree	:: Yes No
Complete the following information only if	a radio-tagged bat is present in the roost
Bat species: M. Sbd alis	Sex(M/F): Age(Ad/Jv): Repro.:
Capture date: an Jul 11	Capture site: 16 Frequency: 172.218
	and the second

Arrival time: 20.50 Departure time: 21.30 Total Bats: \_/\_\_\_\_

Emergence Time	Number of Bats	Emergence Aspect
	1	circlina
	1004	

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

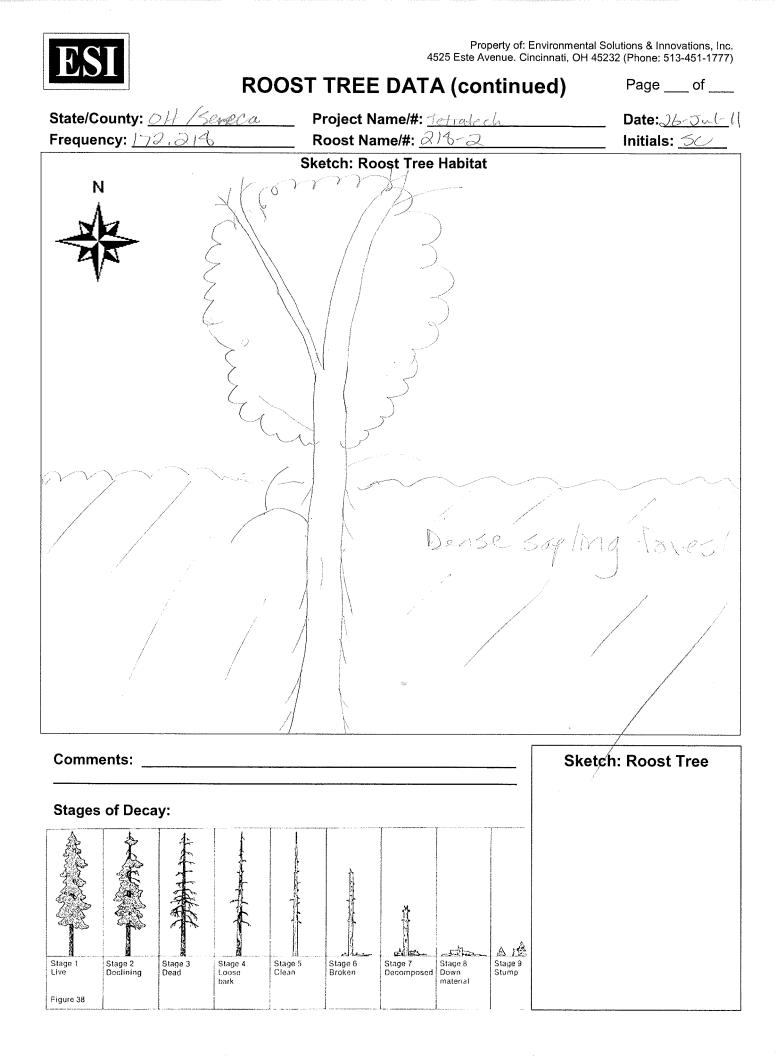
transmittered bat fly? <u>I had comerged</u>, circled nost tru par in pproximately 16 million enforce <u>Auspinising</u>

Page \_\_\_\_ of \_\_\_\_



# **ROOST TREE DATA**

Project #: <u></u>	Date:26-5	ul-11 Biolo	gists: <u>5, Ca</u> f	stain
Project Name: Jetrutech		State: <u><i>D</i></u> <u> </u>		Senoca
GPS Unit #: <u>A5</u> Wa		Camera #: <u>4</u> 3		104-3831,104-3933
Latitude: <u>41°13'06</u>	<u>_</u> "N		<u>a °56'44</u>	
Bat Species: M. 30dalis		Sex(M/F):	Age(Ad/Jv	v): <u>Ad</u> Repro.: <u>PL</u>
Capture Date: <u>24-Jul-1</u>		Capture Site:	16	
Frequency: 172, 218		Roost Name/#	#: <u>214-2</u>	
ROOST TREE DATA Roost tree species: <u>Cary a</u>	to roost: <u>30</u>	(meters)	dbh: $3$ cm Tree height	//////(meters)
Exfoliating bark (%):	_ Distance from ca	pture site:/	m o <del>( km</del> )(«	circle one)
Tree health:	Live	Dead	-	Partial
Observed roost potential:	Exfoliating Bar			HollowUnknown
Bat vocalizations:	Yes	<u>∕_</u> No	Ć.	
Guano on ground/foliage:	Yes	<u>,</u> ∕∕No		
Is guano fresh (if present)?:	Yes	<u>∖∕</u> No		
Guano volume (if present):				
DESCRIPTION OF SURROU	NDING HABITAT			
Dominant Canopy Species (>	40 cm/16" dbh)	<u>Сасуи</u> <u>Рорици</u>	ovata Q sdel-pidos	pecies (< 40 cm/16" dbh) Puercuss Eubra
Estimated dbh range (cm): L	g: Sm:	Estimate	ed dbh range (cr	m): Lg: <u>30</u> Sm: <u>10</u>
Estimated canopy closure at	,			
Slope:Steep	_ModerateSlig	ght <u>X</u> None	Slope aspect:	
Subcanopy Clutter:	Closed _ <u>&gt;_</u> M	oderate	Open	
Distance to nearest water so	urce: <u>400 (</u> mo	r km (circle one)	1 <sup>47</sup>	nearest flight <u></u> meters
Habitat Description:				
Young Upland Forest Mature Lowland Forest	Recently Logged Pine Plantation Woodlot/ForestEd Old Field	Stre	p/Pasture Land eam/River ergent Wetland ested Swamp	Shrub/scrub Swamp Vernal Pool Deepwater Lake/Ponc Other



ESI	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777) Page of OOST TREE EMERGENCE DATA
Project #: <u>340</u> Date: <u>06</u>	-Jul-11 Biologists: 5, Captain
Project Name: Tetratech	State: 014 County: Sene ca
GPS Unit #: <u>45</u>	Waypoint:
Latitude: <u>4</u> ° <u>3</u> ' <u>66</u> , "N	Longitude: <u>\$2 • 56 '44,6</u> "W
Roost Name/#: <u>∠/ &amp; - </u>	
Radio-tagged bat present in tree: Yes_	<u> </u>
Complete the following information only if a radio-t	tagged bat is present in the roost
Bat species: <u>m . 32 dati 5</u> Sex(M	1/F): F Age(Ad/Jv): Ad Repro.: PL
Capture date: 24-5u[-1] Captu	re site: 16 Frequency: 170, 218
distinguish bats as silhouettes against the sky as	-minute intervals. Use the back lighting of the setting sun to help they exit the roost. Please ensure that you are close enough to e enough to influence emergence (do not stand directly beneath d/or conversation, and minimize use of lights).

Arrival time: <u>2635</u>	Departure time: $\underline{a}$	125 Total Bate	s:
---------------------------	---------------------------------	----------------	----

Emergence Time	Number of Bats	Emergence Aspect
2056	$\bigcirc$	
	**	

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly? Couldn't see well to the E/NE ;50 she rould have exited from there.

		rty of: Environmental Solutions & Innovations, Inc. nue. Cincinnati, OH 45232 (Phone: 513-451-1777)
		Page of EMERGENCE DATA
	Date: 27501 2011 Biolog	
Project Name: <u>Republic</u>	State: 04 Co	ounty: Aneca
GPS Unit #:	Waypoint:	
Latitude: <u>4/ • 13 , 0</u> 6	<u>z, /</u> "N Longi	itude: <u>\$2 • 56 • 33 .5</u> "W
Roost Name/#: 2		
Radio-tagged bat present in	/	
	nly if a radio-tagged bat is present in th	
		/Jv): Repro.:
Capture date:	_ Capture site:	Frequency:
the roost to observe all exiting bats, the roost and do not make unnecess		
Emergence Time	Number of Bats	Emergence Aspect
		· · · · · · · · · · · · · · · · · · ·

individuals drapping from roost true. See



# Page \_\_\_\_ of \_\_\_\_ ROOST TREE EMERGENCE DATA

Project #: <u>340</u>	Date: 31 - Jul - 11	Biologists: <u>5, Car</u>	Hoin
Project Name: <u>Republic</u>	State: <u>0</u> H	County: <u>Serve</u>	A
GPS Unit #:_ <u>A<sup>+</sup>7</u>	Waypoint:	218-2	
Latitude: <u>4</u> ° <u>13</u> ' <u>0</u> 6. j	<u>°13 '06.]</u> "N Longitude: <u>₹2 ° 66 ' 44,6</u> "W		
Roost Name/#: <u>&amp;1&amp;- </u>			
Radio-tagged bat present in t	ree: Yes No_ $\ge$	_	
Complete the following information on	ly if a radio-tagged bat is pre	esent in the roost	
Bat species: <u>M. Sodali S</u>	Sex(M/F): <u>F</u>	Age(Ad/Jv): <u>Ad</u>	Repro.: <u>PC</u>
Capture date: 24-Jul-11	Capture site: <u>/</u>	Frequen	icy: <u>/72,218</u>

**NOTE:** Tallies of bat exits should be made at 2-minute intervals. Use the back lighting of the setting sun to help distinguish bats as silhouettes against the sky as they exit the roost. Please ensure that you are close enough to the roost to observe all exiting bats, but not close enough to influence emergence (do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).

## Arrival time: <u>2040</u> Departure time:<u>2146</u> Total Bats: <u>7</u>

Emergence Time	Number of Bats	Emergence Aspect
·	900 / 1	
	10 0415	

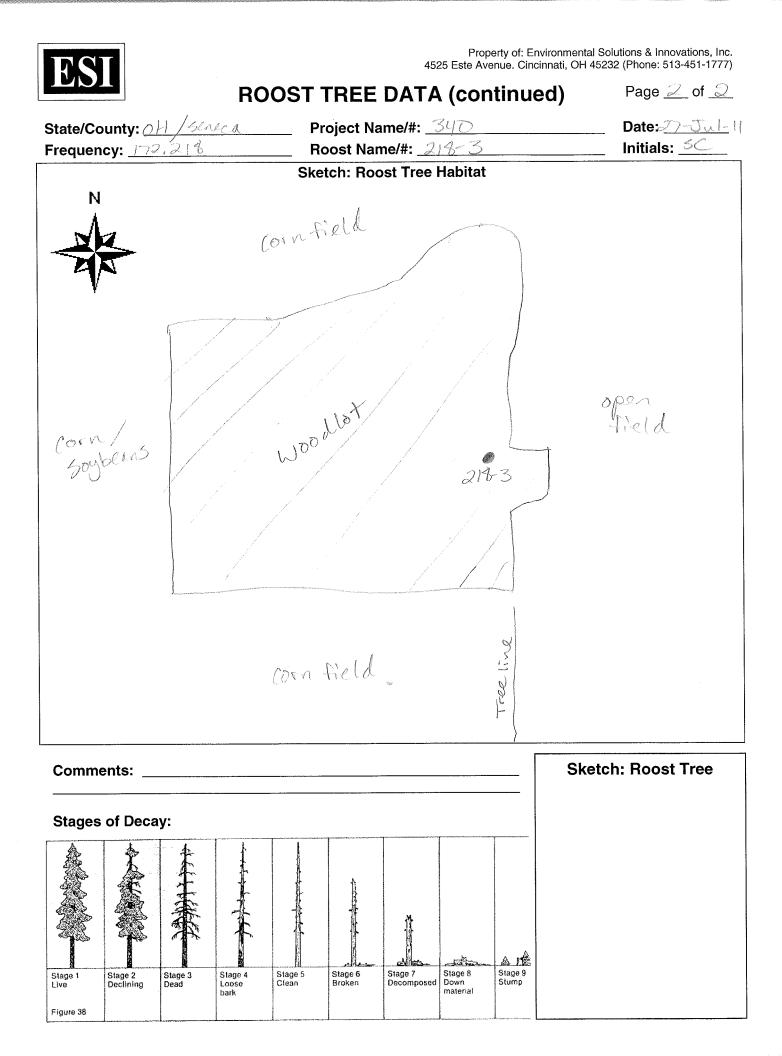


<b>ROOST TREE I</b>	DATA
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Page		of	$\sim$
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Project #: <u>340</u> Date: <u>27-0</u>	III Biologists: S. Captain M. Farmer
Project Name: Telad Colu	State: <u>6 //</u> County: <u>Server</u>
	Camera #: <u>4634</u> Picture #: <u>/04-3335,3836</u>
Latitude: <u>41 ° 13 ' 12,0</u> "N	Longitude: <u>42 ° 56 '33.6</u> "W
Bat Species: M. Sodali 5	Sex(M/F): Age(Ad/Jv): <u>Ad</u> Repro.: <u>PL</u>
Capture Date: <u>24-5ul-11</u>	
Frequency: 172, 216	
ROOST TREE DATA	
Roost tree species: Carya ovata	dbh: <u>25_</u> cm
Estimated height from ground to roost: 20	(meters)   Tree height <u>/</u> (meters)
Exfoliating bark (%): 20 Distance from ca	ipture site:m or km (circle one)
Tree health:	DeadPartial
Observed roost potential: Exfoliating Bar	rkCracks/crevassesHollowUnknown
Bat vocalizations:Yes	`∕∕_No
Guano on ground/foliage:Yes	∕No
Is guano fresh (if present)?:Yes	<u>≻</u> No
Guano volume (if present):	
DESCRIPTION OF SURROUNDING HABITAT	
Dominant Canopy Species (> 40 cm/16" dbh)	Subdominant Canopy Species (< 40 cm/16" dbh) Carya ovata Aces Saccharum
Estimated dbh range (cm): Lg: Sm:	Estimated dbh range (cm): Lg: 25 Sm: 7
Estimated canopy closure at roost:%	
Slope:SteepModerateSlig	ght $\nearrow$ None Slope aspect:
Subcanopy Clutter:Closed/Mo	oderateOpen
	Distance to nearest flight
Distance to nearest water source: 750 mor	
Habitat Description: Manly Carga oyata fee	wlasgences, very dense vegetation
Check all that apply:Mature Upland ForestYoung Upland ForestMature Lowland ForestYoung Lowland ForestYoung Lowland ForestOld Field	Stream/RiverVernal Pool

Comments:



	ROOST TREE EMERGENCE DATA		
Project #: <u>340</u>	Date: 27-5-11-11	Biologists: <u>S. Captai</u>	<u> </u>
Project Name: T.ctatech	State: <u>⊖</u> ⊢	_ County: <u>Soneco</u>	- 100
GPS Unit #: <u>A7</u>	Waypoint:	214-3	
Latitude: <u>41 ° 13 ' 12.(</u>	<u>)_</u> "N	Longitude: <u>\$</u> 2 ° <u>5</u>	<u>6'733.5</u> "W
Roost Name/#:_ <u>2/%-3</u>			
Radio-tagged bat present in t	ree: Yes_ <u>×</u> No		
Complete the following information onl	y if a radio-tagged bat is pre	sent in the roost	
Bat species: <u>M. Sodalis</u>	Sex(M/F):	Age(Ad/Jv): <u>Ad</u> R	Repro.: <u><i>PL</i></u>
Capture date: 24-Jul-11	Capture site:_ <u>1</u> / <sub>6</sub> _	Frequency	178.213

Arrival time: $2045$ Departure time: $2145$ Total Bats: $\bigcirc$	$2145$ Total Bats: $\bigcirc$
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Emergence Time	Number of Bats	Emergence Aspect
2124		
1		
		· · · · · · · · · · · · · · · · · · ·
	'8gr.	
	2	

	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)
<u>ENT</u>	Page of ROOST TREE EMERGENCE DATA
Project #: Date:	29 Julian Biologists: MFormal
Project Name: <u>Pepublic</u>	_ State: 01 County: Seneca
GPS Unit #:5	Waypoint:
Latitude: <u>4(° (3) (2,0</u> "N	Longitude: <u>42°56, 33,6</u> "W
Roost Name/#:R_3	
Radio-tagged bat present in tree: Ye	s No <u>X</u>
Complete the following information only if a radio	p-tagged bat is present in the roost
Bat species: <u>Januar saplatis</u> Sex(	M/F):_F Age(Ad/Jv):_Ad Repro.:_F
Capture date: 24-Jul -11 Capt	M/F): <u>F</u> Age(Ad/Jv): <u>Ad</u> Repro.: <u>PL</u> ture site: <u>16</u> Frequency: <u>172, 218</u>
NOTE: Tallies of bat exits should be made at	2-minute intervals. Use the back lighting of the setting sun to help

# Arrival time: <u>2010</u> Departure time: <u>2130</u> Total Bats: <u>2</u>

Emergence Time	Number of Bats	Emergence Aspect
2113		
2114		
	10x	· · · · · · · · · · · · · · · · · · ·

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

Boty darages the asid rachel the

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	Property of: Environmental Solutions & Innovations, Inc. 781 Neeb Road. Cincinnati, OH 45233 (Phone: 513-451-1777)
LSI	Page of ROOST TREE EMERGENCE DATA
Project #:	Date: 20 Date 11 Biologists: Degra
	State: O County: County:
GPS Unit #:	Waypoint: <u>3/16 - 3</u>
UTM Zone: Easting:	<u>Northing: 1.56/25/2</u>
Roost Name/#: <u>21-63</u>	
Transmittered bat present in tr	ee: Yes No
Complete the following information only	if a radio-tagged bat is present in the roost
Bat species: <u>M. Solution</u>	Sex(M/F): Age(Ad/Jv): Repro.:
Capture date:	Capture site: //// Frequency: ////////////////////////////////////

#### Arrival time: \_\_\_\_\_ Departure time: \_\_\_\_\_

Emergence Time	Number of Bats	Emergence Aspect
2054		
2056	$\mathcal{O}$	
2058		
2100	nama Juana	
2102	19ar	· · ·
Zm 104	0	
2106	0	
Z108	0	
2110	0	
2112	/	
2114		
2116	0	
Z118	0	

	7	Property of: Environmental Solutions & Innovations, Inc. 81 Neeb Road. Cincinnati, OH 45233 (Phone: 513-451-1777)
LISI	ROOST TF	Page of REE EMERGENCE DATA
Project #: Da	ite: <u>50-0a (- 11</u>	Biologists: <u>Doctage</u>
Project Name: <u>Telesteria</u>	State: <u></u>	County: <u>Standala</u>
GPS Unit #:	Waypoint:	014-3
UTM Zone: Easting:	<u> 1915 - R</u>	Northing: <u>Alexander</u>
Roost Name/#: <u>&amp;/-{}</u>		
Transmittered bat present in tree	: Yes No	_
Complete the following information only if a	a radio-tagged bat is pre	esent in the roost
Bat species: <u>M. Solution</u>	Sex(M/F):	Age(Ad/Jv): Repro.:
Capture date: de Talan	Capture site:	Frequency:

#### Arrival time: \_\_\_\_\_ Departure time: \_\_\_\_\_

Emergence Time	Number of Bats	Emergence Aspect
Z.O. 5.4		
2056	Õ	
2058		
2100	2	
2102		
2.104	0	
2106	0	
2108	0	
2110	0	
2112		
2114		
2116	0	
Zio     8	0	

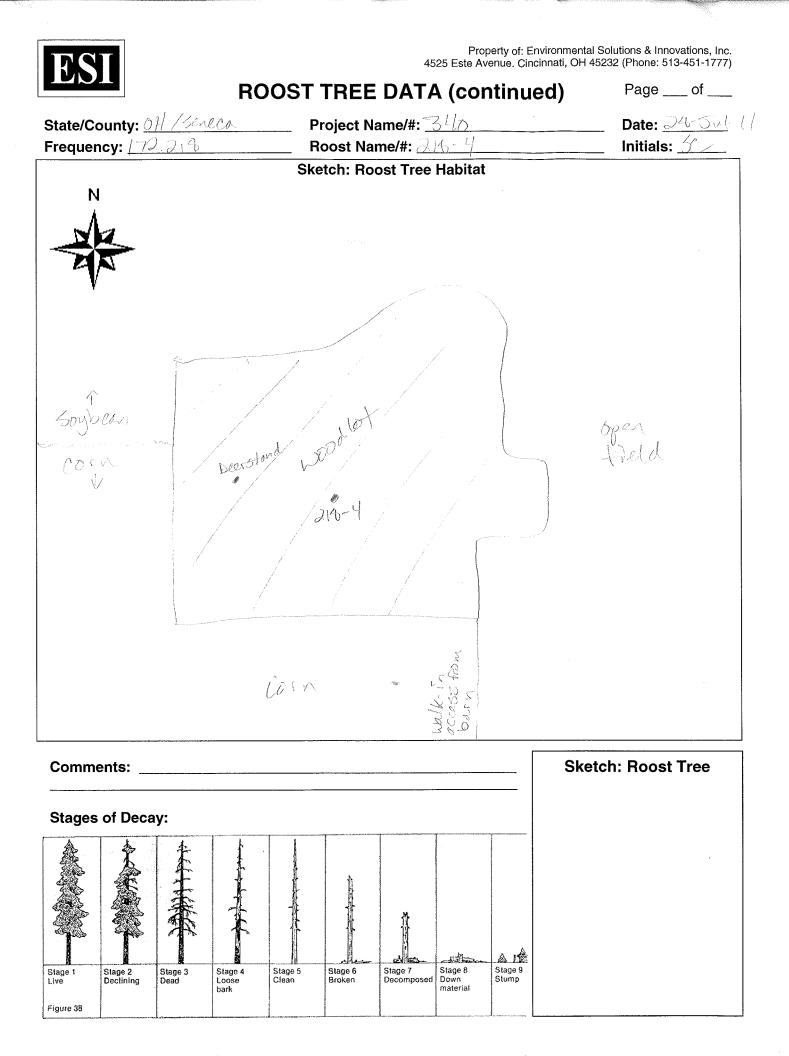


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<b>ESI</b> ROOS	T TREE DATA
Project #: <u>340</u> Date:24	-Sul-11 Biologists: S. Caplain 7 M. Farmer
Project Name: <u>Tetatech</u>	State: <u>OH</u> County: <u>SPACEA</u>
	Camera #: <u>4%34</u> Picture #: <u>104-3%37, 3%3%</u>
Latitude: <u>41 ° 13 ' 09-6</u> ."N	Longitude: <u></u>
Bat Species: M. 38da 15-5	Sex(M/F): Age(Ad/Jv): <u>A </u> Repro.:_ <u>P</u>
Capture Date: <u>24-5ul-11</u>	
Frequency: <u>172.218</u>	- 2
ROOST TREE DATA	
Roost tree species: Carya ovata	dbh: <u> 3つ</u> cm (meters)   Tree height <u> </u>
• -	m capture site:m or km (circle one)
Tree health:	
Observed roost potential:	
Bat vocalizations: _Yes	
Guano on ground/foliage:Yes	<u>×</u> No
Is guano fresh (if present)?:Yes	<u></u> No
Guano volume (if present):	
DESCRIPTION OF SURROUNDING HABIT	
Dominant Canopy Species (> 40 cm/16" dbh)	
Estimated dbh range (cm): Lg: Sm:	Estimated dbh range (cm): Lg: 30 Sm: 10
Estimated canopy closure at roost:%	
Slope:SteepModerate	_SlightNone Slope aspect:
Subcanopy Clutter:Closed	ModerateOpen
Distance to nearest water source: 300	Distance to nearest flight m or km (circle one) corridor: <u> </u> meters
Habitat Description:	
Check all that apply: Mature Upland Forest Young Upland Forest Mature Lowland Forest Young Lowland Forest Comments:	nStream/RiverVernal Pool

.



Capture date:	Capture site:	Frequer	icy:2/9
Bat species: <u>A statis to tak</u> s			
Complete the following information only			ana 1
Radio-tagged bat present in tre	e: Yes_ <u>`</u> No		
Roost Name/#:			
Latitude: <u>41 ° 13 , 08.6</u>	_"N	Longitude: <u>82</u> °	<u>56,377</u> "W
GPS Unit #: <u>A</u> 5			د 
Project Name: <u>Republic</u>		County: <u>5ev</u>	lcar
Project #: 7 4 C		-	
LNI	ROOST T	REE EMERGE	Page of
TCT	4	Property of: Environmenta 525 Este Avenue. Cincinnati, OH	Solutions & Innovations, Inc. 15232 (Phone: 513-451-1777)

### Arrival time: \_\_\_\_\_ Departure time: \_\_\_\_\_ Total Bats: \_\_\_\_\_

Emergence Time	Number of Bats	Emergence Aspect
2212	erig north	
2215	and the second se	
$\sum_{i=1}^{n} (i) = \sum_{i=1}^{n} (i) = \sum_{i=1}^{n$		
	<u>***</u>	

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, 'rcle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the mittered bat fly?

are and aracha she roost.

DOT	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)
<b>ENI</b>	Page _/_ of _1_
	ROOST TREE EMERGENCE DATA
Project #: <u>3비간</u> Da	te: <u>29-Jul-11</u> Biologists: M. Flynn
	State: <u>6 H</u> County: <u>Seneca</u>
GPS Unit #:	Waypoint: <u>21-8-4</u>
Latitude: <u>4   ° 13</u> ' 04.6 "	N Longitude: <u>%2 ° 56 ' 33.7</u> "W
Roost Name/#: <u>216-4</u>	
Radio-tagged bat present in tree:	Yes No <u>⊱</u>
Complete the following information only if a	radio-tagged bat is present in the roost
Bat species: <u>M. sodalis</u>	Sex(M/F): <u>F</u> Age(Ad/Jv): <u>Ad</u> Repro.: <u>PL</u>
Capture date: <u>AY -5u(-//</u>	Capture site: 16 Frequency: 172.218
distinguish bats as silhouettes against the	de at 2-minute intervals. Use the back lighting of the setting sun to help sky as they exit the roost. Please ensure that you are close enough to ot close enough to influence emergence (do not stand directly beneath

Arrival time: <u>2030</u> Departure time: <u>2/25</u> Total Bats: /

the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).

Emergence Time	Number of Bats	Emergence Aspect
2110		
	1	
	@pr	



ROOST TREE EMERGENCE DATA

Project #: <u>340</u> Date:	30-JU-2011 Biologists: M. Farmer
Project Name: <u>Republic</u>	_ State: OH County: <u>Seveca</u>
GPS Unit #:	Waypoint: 2/4 - 4
Latitude: <u>41 • 13 • 08.6</u> "N	Longitude: <u>82 • 56 , 33,7</u> "W
Roost Name/#:	
Radio-tagged bat present in tree: Yes	s No <u>,X</u>
Complete the following information only if a radio	p-tagged bat is present in the roost
Bat species: M. Sodali S Sex(	M/F): Age(Ad/Jv): <u>Ad</u> _ Repro.:_ <u>PL</u>
Capture date: <u>24</u> -Jul-11 Capt	ure site: 16 Frequency: 172,218

**NOTE:** Tallies of bat exits should be made at 2-minute intervals. Use the back lighting of the setting sun to help distinguish bats as silhouettes against the sky as they exit the roost. Please ensure that you are close enough to the roost to observe all exiting bats, but not close enough to influence emergence (do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).

Arrival time: 2055 Departure time: 2140 Total Bats:  $\cancel{D}$ 

Emergence Time	Number of Bats	Emergence Aspect
	19 <sub>16</sub> .	

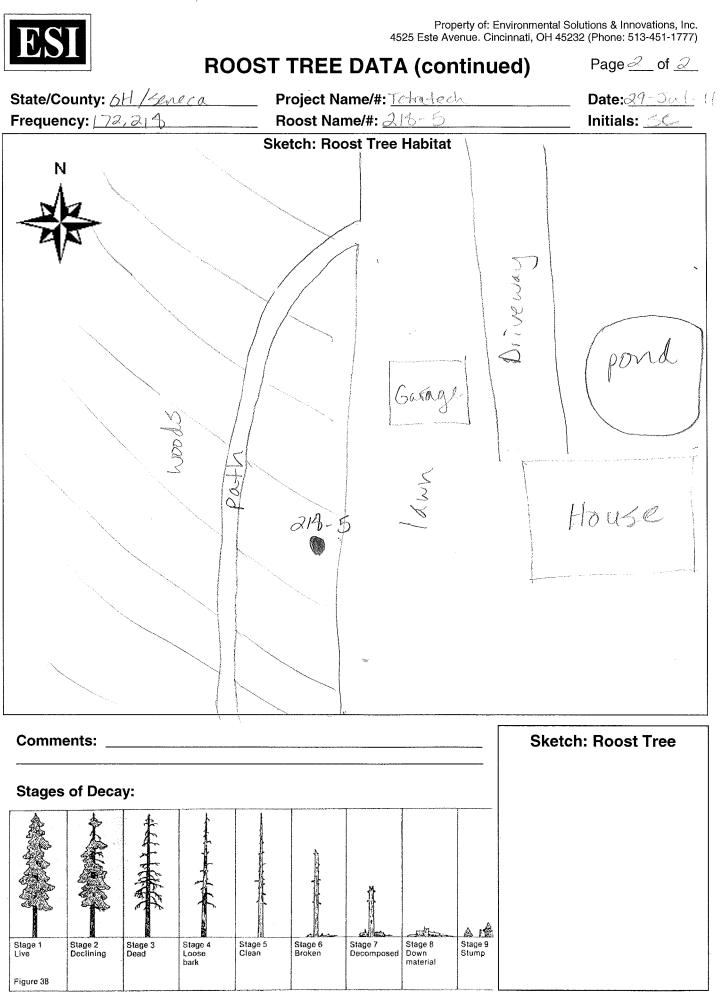
No bats leaving roost, although previous ly (p. 6cls foraged circling the roost area for approx several minutas

Page / of 🧟



**ROOST TREE DATA** 

Project #: <u>347</u> Date: <u>29-5</u>	1-11 Biologists: 3. Captain & M. Farmer
Project Name: T. et catech Republic	e
GPS Unit #: <u>A-7</u> Waypoint: <u>218-5</u>	
Latitude: <u>41 ° 12 · 35.6</u> "N	Longitude: <u>}</u> ° <u>57_'03.4</u> "W
Bat Species: M. Sodal, S	Sex(M/F): F Age(Ad/Jv): Ad Repro.:_PL
Capture Date: 24-Jul-11	Capture Site: <u>/ </u>
Frequency: <u>172, 214</u>	Roost Name/#: <u> ⋧≀<del>8</del> - 5</u>
ROOST TREE DATA	
Roost tree species: Carya ovata	dbh: <u>40</u> cm
Estimated height from ground to roost: 35	_(meters) Tree height <u>40</u> (meters)
Exfoliating bark (%): <u>4</u> D Distance from cap	ture site: <u>/ 0</u> 5 mor km (circle one)
Tree health:	DeadPartial
Observed roost potential: <u> ×</u> Exfoliating Bark	Cracks/crevassesHollowUnknown
Bat vocalizations:Yes	<u>∕∕</u> No
Guano on ground/foliage:Yes	<u>∕≺</u> No
Is guano fresh (if present)?:Yes	XNo
Guano volume (if present):	
DESCRIPTION OF SURROUNDING HABITAT	
Dominant Canopy Species (> 40 cm/16" dbh)	Subdominant Canopy Species (< 40 cm/16" dbh)
Carya ovata	Carya ovasta
	Aces saccharum
	Populus de Haides
Estimated dbh range (cm): Lg: $40$ Sm: $40$	Estimated dbh range (cm): Lg: $35$ Sm: $10$
Estimated canopy closure at roost: <u>25</u> %	
· · · · · · · · · · · · · · · · · · ·	t None Slope aspect:
Subcanopy Clutter:ClosedMod	
Distance to nearest water source: <u>25</u> mor l	Distance to nearest flight km (circle one) corridor: <u></u> meters
	ntwo houses. New edge of lownw/apond.
Check all that apply:	· · · · · · · · · · · · · · · · · · ·
Mature Upland ForestRecently Logged ForestPine Plantation	orestCrop/Pasture LandShrub/scrub Swamp Stream/RiverVernal Pool
Mature Lowland ForestWoodlot/ForestEdg	eEmergent WetlandDeepwater Lake/Pond
Young Lowland ForestOld Field Comments:	Forested Swamp <u>X</u> Other <u>decorative</u> pond w/ to untain



	. 452		al Solutions & Innovations, Inc. 45232 (Phone: 513-451-1777)
ĽSI	ROOST TF	REE EMERGE	Page of NCE DATA
Project #: <u>340</u>	Date: <u>29-Jul-11</u>	Biologists: <u>5. Car</u>	otain
Project Name: Tetratech Ro			
GPS Unit #:7			
Latitude: <u>41 ° 12 ' 3</u> 4, (	<u>~</u> "N	Longitude: <u>4</u> 2	• <u>57 *83.7</u> "W
Roost Name/#:_ <u>214-5</u>			
Radio-tagged bat present in tre	e: Yes_🦳 No	-	
Complete the following information only	if a radio-tagged bat is pre	esent in the roost	
Bat species: <u>M. sodalis</u>	Sex(M/F):	Age(Ad/Jv):	Repro.: <u>PL</u>
Capture date: <u>Alf-Jul-11</u>	Capture site: <u>16</u>	Freque	ncy: <u>/ 72. 218</u>
<b>NOTE:</b> Tallies of bat exits should be	made at 2-minute intervals	. Use the back lighting	of the setting sun to help

Arrival time: 2025 Departure time: 2100 Total Bats:

Emergence Time	Number of Bats	Emergence Aspect
2053		NW
	100-	

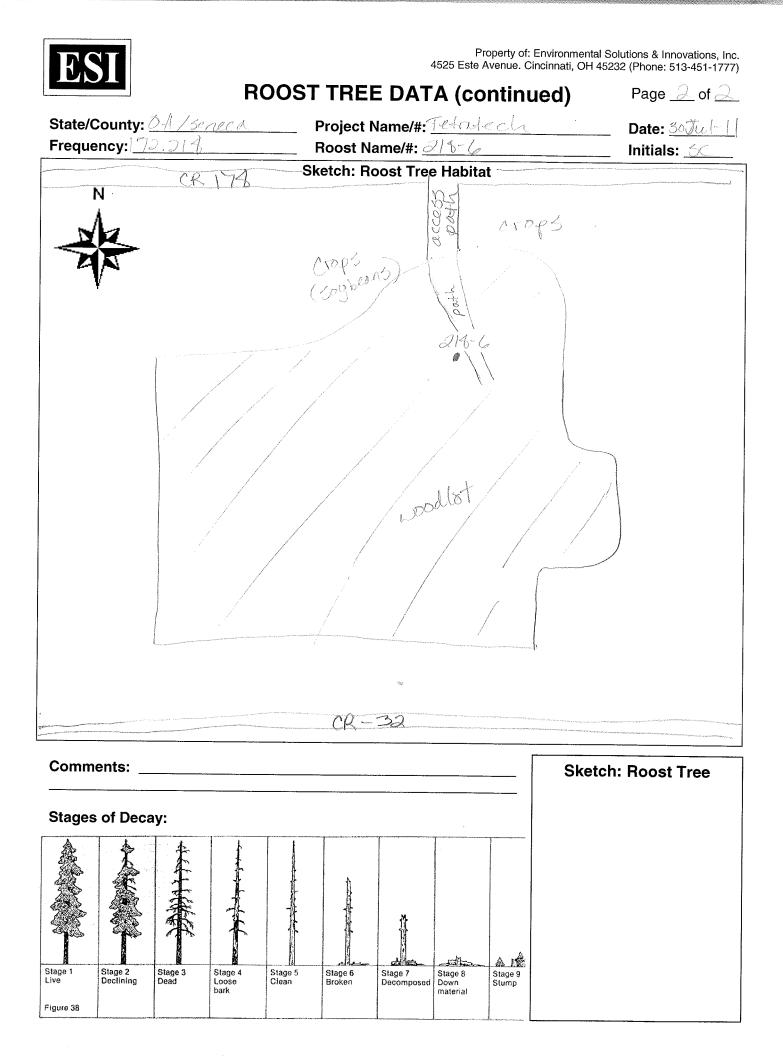
Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly? Did not see exact spot on tree where she emerged.

Page \_\_\_\_ of \_\_\_\_



**ROOST TREE DATA** 

Project #: <u>340</u> Date: <u>30</u>	-Jul-11 Biologists: S. Captan
Project Name: Tetatech Reputic	State: <u>OH</u> County: <u>Several</u>
GPS Unit #: <u>A7</u> Waypoint: <u>21%</u> -	<u>6</u> Camera #: <u>4834</u> Picture #: <u>104-3846,3847</u>
Latitude: <u>41 ° 13 '17,9</u> "N	Longitude: <u>42°56'33.6</u> "W
Bat Species: M. Sodalis	Sex(M/F): F Age(Ad/Jv): Ad Repro.: PL
Capture Date: 211-Jul-11	Capture Site: 16
Frequency: <u>172,214</u>	Roost Name/#: <u>⊘/∿-⊘</u>
ROOST TREE DATA Roost tree species: <u>Carya Ovata</u> Estimated height from ground to roost: <u>15</u> Exfoliating bark (%): <u>30</u> Distance from	
Tree health:	DeadPartial
Observed roost potential:	BarkCracks/crevassesHollowUnknown
Bat vocalizations:Yes	. <u>×</u> No
Guano on ground/foliage:Yes	<u>∕</u> No
Is guano fresh (if present)?:Yes	<u>∕</u> No
Guano volume (if present):	
DESCRIPTION OF SURROUNDING HABITA	<u>.T</u>
Dominant Canopy Species (> 40 cm/16" dbh)	Subdominant Canopy Species (< 40 cm/16" dbh) Carya avata <u>Dsinger Singer</u> Quercus alba <u>Populus grandidentata</u>
Estimated dbh range (cm): Lg: $\frac{1}{2}$ Sm: $\frac{1}{2}$	
Estimated canopy closure at roost: $\underline{75}$ %	
Slope:SteepModerate	Slight <u>\</u> None Slope aspect:
Subcanopy Clutter:Closed	_ModerateOpen
Distance to nearest water source: <u> </u>	Distance to nearest flight n or km (circle one) corridor:meters
Habitat Description: Deciduous forest u	Manaty trail, slightly less distanced than rest of
Check all that apply:Mature Upland ForestRecently LoggYoung Upland ForestPine PlantationMature Lowland ForestWoodlot/ForestYoung Lowland ForestOld FieldComments:Old Field	ed ForestCrop/Pasture LandShrub/scrub Swamp Stream/RiverVernal Pool



	Property of: Environmental So Este Avenue. Cincinnati, OH 452	onmental Solutions & Innovations, Inc. nati, OH 45232 (Phone: 513-451-1777)	
			Page of
	ROOST TR	EE EMERGEN	CE DATA
Project #: <u>340</u> [	Date: 30-5-11-11	Biologists: 5, Cap-	hain
Project Name: Republic	State: <u>014</u>	County: Server	<i>Ø</i> ,
GPS Unit #: <u>A7</u>	Waypoint:	219-6	
Latitude: <u>41 ° 13 '17,9</u>		Longitude: <u>32</u> °	<u>66,33,6</u> "W
Roost Name/#: <u>216-6</u>			
Radio-tagged bat present in tre	ee: Yes_⊉_ No	-	
Complete the following information only	if a radio-tagged bat is pre	esent in the roost	
Bat species: <u>M. 30dalis</u>	Sex(M/F):	Age(Ad/Jv):_ <u>Ad</u>	Repro.:
Capture date: 24-546-11	Capture site: <u>1</u> [	Frequenc	y: <u>172,216</u>

Arrival time: <u>2030</u> Departure time: <u>2220</u> Total Bats: <u>3</u>

Emergence Time	Number of Bats	Emergence Aspect
2054	3	unknown
	tur.	

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

tree directly



			Page of
	ROOST TR	REE EMERGI	ENCE DATA
Project #: <u>340</u>	Date: 31-Jul-11	Biologists: <u>M</u> .Fa	umes
Project Name: <u>Republic</u>	State: <u>61</u>	4 County: <u>Serve</u>	i.e.a.
GPS Unit #: <u>477</u>	Waypoint:	214-6	
Latitude: <u>(1) ° 73 , (7.</u>	<u>7_</u> "N	Longitude: <u>82</u>	<u>•56 ' 33,6</u> "W
Roost Name/#: <u> </u>			
Radio-tagged bat present in tr	ee: Yes No_ <u>&gt;</u>	<u></u>	
Complete the following information only	y if a radio-tagged bat is pr	esent in the roost	
Bat species: <u>M.sodalis</u>	Sex(M/F):	Age(Ad/Jv):_ <i>Ad</i>	Repro.:
Capture date: <u>24 - Jul - II</u>	Capture site: <u>/</u> 6	Freque	ency: <u>72,218</u>
NOTE: Tallies of bat exits should be	made at 2-minute interval	s. Use the back lighting	of the setting sun to help

#### Arrival time: $20^{45}$ Departure time: 2155 Total Bats: $\cancel{0}$

Emergence Time	Number of Bats	Emergence Aspect
· · ·		
	/bg:	
······································		

Transmitter in roost free, "is "sound transmitter dropped bat. No individuals see to foraging the kampy organd not in Flyways at roost tree, bats were presen level,

	4525	Property of: En Este Avenue. Cinc	ivironmenta cinnati, OH	al Solutions & Innovations, Inc 45232 (Phone: 513-451-1777
ESI		• .		Page of
R	OOST TR	EE EME		NCE DATA
Project #: <u>340.0</u> Date: <u>3</u>	A. C. C. A. M.	Biologists:	Las	Ara Tyson
Project #: <u>346.9</u> Date: <u>2</u> Project Name: <u>Republic</u>	State: <u>State</u>	_ County:	Sere	[ <u>C</u> A
GPS Unit #:	Waypoint:_			
Latitude: <u>3 '19</u> "N		Longitude:	<u>82 (</u>	<u>• 56 • 83.6</u> "w
Roost Name/#:				
Radio-tagged bat present in tree: Yes_	No	UNK ~		
Complete the following information only if a radio-t			A 11	<u>O</u>
Bat species: <u>Messedants</u> Sex(M	I/F): <u> </u>	.ge(Ad/Jv):	Ad_	Repro.:
Capture date: 24Jul -11 Captu	re site: <u> </u>	F	reque	ncy: <u>12,218</u>

# Arrival time: <u>2030</u> Departure time: <u>2130</u> Total Bats: \_\_\_\_\_

Emergence Time	Number of Bats	Emergence Aspect
à.r."09	P	17 197
31.11		
al 13		l'
2115	/	
2117	2	1 Carrot Charles
2112		
2111	1 m. 	
21.23	na la companya da companya	
2125	/	
2127		
2 2 4		
21 31		
· ) / // //		

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

- Buts there the stringence unkneeder

RST	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)			
	TELEMETRY DATA	Pageof		
Project #: <u>340</u> Date:	: <u>St-Jul-11</u> Biologists: <u>S. Cap</u>	ein		
Project Name: <u>Actatech</u>	State: OH County: 5			
USGS Quad:	GPS Unit #: <u></u> Way	point:		
Bat Species: M, Sodatis				

Transmitter Frequency: 172,213 Comments: 50,2: Union cennetary on 32

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
	U1º10'17.7	22°58'316	218	205	243	160
52	41°14'17.2 41°12'45.1	32°58'31.6 32°58'15.4	213	0000	32	
502				0005	64_	
502				010	79'	
502				0015	<del>\$</del> 4	
562				0020	California and a second se	
502				0025		
50				0030	66 78	
412				0035	778	
11				Ο̈́Ϋ́Ď	Carrow and	
11				0045		
11				0050	31 54	
11				0055	54	
11				0100	65	
11				0105	Colo	
11				0110	C 28500 8220 (20.20)	
40				0115	STATISTICS STATISTICS	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						
503	41013'15.1	'32° 55'04.4		0145	202	
51-2	11 10 13.1	ges so vier		0150	261 263	
200				0165	263	
203				0200	270	
JUS						



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Project #: <u>340.0</u> Date: <u>2</u>	5 Jul 11 Biologist	s: M Flynn
Project #: <u>340.07</u> Date: 2 Project Name: <u>Republic</u>	State: <u>OH</u>	
USGS Quad:		<u>70</u> Waypoint: <u>019</u>
Bat Species: Myotis Sedalis	-	
Transmitter Frequency: 172.218		
Comments:		

\_\_\_\_\_

		.3s.				
Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
house	(11º 12' 416.0"	1 821 581 31.1	172.218	9130	er 1	no sianal
	<u> </u>	· ·		9130	Harrison and	and the second s
				9:40	€	
				9,45.	and the second second	f :
   				91.50		ander ander ein die eine andere eine einen einen einen andere einen andere einen andere einen andere einen ander
				0.50		<i>t</i> .
				-5155	Lance	1.1
			· · · · · · · · · · · · · · · · · · ·	10:05	All descent of the second seco	C 1
				10110	<b>A</b> lender of the second s	Z 1
	7			10:15		<u>م</u> ان من معنی می
	·			10:20		
				10:25	and the second sec	· /
				(0130	1.00	
				1013-5		travel
			Sgr.	10.40		Jorabel -
				10:45		Amariel
5 C	41 11 17.2	52 55 3 G	121318	10:50	9	Barris Scotion
				10:55	22 1 62	120
				00:11	S J CODY	263
				1155		V3 91272!
	· · · · · · · · · · · · · · · · · · ·			1110	<b>Andrew Street Street Street</b>	1° 2°
			11:15	~~~~	ti iz	
			11:20	CHEARD	0	
	-		11:25		30	
				11:30		20
	2 / //			11:35		116 Stanal
		-		Higo	1 K	
				10.05	4	1640
				11:50		1640



Page\_\_\_of\_\_\_\_

### FIXED TELEMETRY DATA (continued)

Project #:<u>340.61</u>

Date: 25Jul 11 State: OH County: Schoola

Initials: ME

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
		s		17.56	1120	1:50
			······································	<u>CC: S1</u>	lastro.	no signal
				12:05	1 / 11	no signal
	· · · · · · · · · · · · · · · · · · ·			19110	$1^{2}p$	1640
				12115	di Antonio di Antonio di A Antonio di Antonio di A	no store
				12:20	and the second s	t (
				2:25	-1 03° -103° -110°	1020
				12:30		100
				12:35		100 1180
				12190		NO STATION
				12:45		( (
				12150	1220	
				12:55	1280	
				1:00	1260	
		······································		1:05		10 - 100 C
				1:10	200 Augusta	
		week and a second second		115		1 *
				1:26	14:19	
				1:25	12,30	
		- <u>18</u>		0.80		Vio Mary /
				1:35	1.00 × 1.00	-1.
				140	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 19	
				145		
				1:50		41
				1:55		
				2:00	1999 - C. 1999 -	C.
				236	134/2	
				2:10	موتريد اللا	NO AND AN
				215		
		-		2.80	and the second	
				Q di	gan taun t	f e f e
				8130		
						·
					-	
						ануунуудын тараан та



#### FIXED TELEMETRY DATA

Page 2\_of 2

Project #: <u>346</u> [	Date: 25- Jul-11	Biologists: M, Farmer	-
Project Name: Tetratech	State: <u></u>	County: Scale a	-
USGS Quad:	GPS Unit #	#: <u></u> Waypoint: <u></u>	_
Bat Species: M. Sodali 3	¥ 🔿	Construct Side	
Transmitter Frequency: 172,2	213	1 x tox	
Comments:			
		$\sim$	

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
NSF	411336.9	42:56:10.9		3045	2.60*	
				0050	2.00*	
	······			6055	2.60'	
				3100	73.8	
				0125	237	
				010	210	
				015	1540	
				0120	2400	s
				0125	223	
				0130	Dark South	
				0174	240° 22.3° 23.3° 150°	
				0170	トート しつしノー・トー	
				0145		·····
			ine .	1150	12165	
				6155	1453	
				0020	1443	
				0205		
				0210		
				0215		
						<u></u>



Page / of 2

# FIXED TELEMETRY DATA (continued)

Project #: 340 Date: 25 to State: 614 County: Seneca

Initials: MF

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
	41013' 36.9"	82°56'10,9"		2120	and the second s	
				735	79	
	ч. — <sub>сурд</sub> анын — соораанула			7146	42	
				FUE	91.5	
				7150	60.0	
				2155	26	
				2200	90.0	
				2.205	810	
				22.10	44	
				2215	60	
	· · · · · · · · · · · · · · · · · · ·			2220	62	
				2235	30	
				2230	6	
				2735	40	
				27.46		
				2248	Ly Ly S	
				2250	25	
				14.30	52.	
				21566	5 Z	
				23.05	66	
				17516	80	
			*	2315	270	0
				2,320	240.5	
				2325	233	
				2730	alpha free a chair a tha an	
				2335	2.19	
				2040	The same the	
				2 345	225	
				235	260	
				2355	252	
				0000	232	(Paint signal)
				\$ 02 S	305	Grand Frank to 1
				2010	1-14	
				00(5	16.100	
				2020		Participation world have
				0025	Due South	ð
				2030	2.00	
				0.35	i Topographic and set of some of	
				0040	2.94	



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Page\_\_\_of\_\_

#### FIXED TELEMETRY DATA

Project #: 346.62 Date:2	S July 2011 Biologists: S Rel VIS
Project Name: Tetratech Republic	State: 64 County: Seleca
USGS Quad: Fireside	_ GPS Unit #: <u>E9528</u> Waypoint: <u>617</u>
Bat Species: <u>Myphis</u> Socialis	-

#### Transmitter Frequency: 172.2181

-from marlinery Dassible at JMiller Bara Comments: Herference

Station #	Latitude 📈	Longitude ${\cal W}$	Frequency	Time (0000h)	Azimuth	Comments
JH iller han	41º 11'55.0"N	82° 56° 53.9	172.2181	Z100;		No Signal
J Hiller Po		82°56' 53.9"	172,2181	2140		No sonal
Mille Ba	a 41º 11' 55.0"	82° 56' 53.9"	172.2181	2345		No signal
Millia	41° 11' 55.0"	82° 56' 53,9"	172,2181	2350	يويان (مارور) ويور المارور) ومارور والمارور والمارور والمارور والمارور والمارور والمارور والمارور والمارور وال	No sonal
JHille	41° 11' 55,5"	82° 56' 53.9"	172.2181	0000	and the part of th	No transl
Millerba	· 41º11'55.0''	820 56' 53.9''	172,2181	(2005		No signal
JHillaba	a 41° 11' 55.0"	82° 56' 53.9"	172,2181	000		No signal
Milles	" 41°11°55.0°	820 56 53.7"	172,2181	0015	gampanya managana a	No stand
Milly Ba	410 11' 55.0"	82° 56'53.9"	172.2181	0500	And the first particular state of the second s	Nasiria
Millert	41° /1' 55.0"	82° 56' 53.9"	172,2181	MZS	Amount of the second data and the second data	No Signal
Milleß	41°11'55.0"	82. 50'53.9"	172.218	0030		No signal
JM14, 14,	······································	82°56'53.9"	172.2181	0035	and an of the address of the operation of the design of th	Nosiqual
32/79	4"12" 43.5"	82056 14,21	172.2191	0055	350"	
32/79	41°12' 43.5"	82° 56' 14.2"	172-2181	0160	243	
32/74	410 12 43.5"	820 56' 14.2"	172,2181	0105	352"	
32/79	410 12' 43.5"	82° 561 14.2"	172.2181	0116		No Signa
32/79	41' 12' 43.5'	82° 541 14.2"	172,2181	OUS	(*************************************	No signal
32/70	1 410 121 43.5"	82 50 14.2	172.2181	0/20	3180	
32/79	1410 121 43.5"	82° 56' 14.2"	172.2181	0125	3430	
32179	41° 12' 43,5"	82° 56' 14.2"	172.2181	0130	359°	- And a second and a second and a second and a second a
32/71	41° 12' 43.5"	82° 56' 14.2"	172.2181	0135	340°	er maat en verste verste steren van aan een verste stere een verste stere een verste stere een verste stere een
32179	41012 43.5"	82' 56' 14.2"	172,2141	0146	0 °	
32/70	and the second sec	82° 561 14.2"	172.2181	0145	Uteration and a second state of the second sta	No Signal
32/70	41.12 43.5"	82' 56' 14.2"	172.2181	0150	30	j
32/79		82° 56 14.2"	172.2181	0155	*******	No Signal
32/79	410 2 43.5	82° 56' 14.2"	172.2181	0200	25°	
					page -	
			-			

( ....



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· ···=	ELEMETRY D	ΑΙΑ	Pageof
Project #: <u>540.01</u> Date. <u>«</u> Project Name: Republic		_ County: <u>Servar</u>	
USGS Quad:	_ GPS Unit #:	Waypoint: _	/MF
Bat Species: <u>Myons sodalis</u>	<b></b>		l
Transmitter Frequency: 172,218			
Comments:			

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
SC	41014 17.21	820581311	172,218	22:10	19.2.°	
		· · · ·		22:15	1230	
				aa!26	1200	
			:	a2:25	1080	
				aa' <u>80</u> aa385	1120	
			· · · · · · · · · · · · · · · · · · ·	3335	1380	
				22:40	1240	
			×	22:45	130°	
				23:10	1080	······
MP	41 12 384	82 97 5920		60:65	60°	
				01:40	Bar	
		,		0150	- 56°	
	······································					
			1			
			1	-		
						2
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			State of the state			

11



FI	ED TELEMETRY	DATA Page / of 2
Project #: <u>347</u>	Date: 26-Jul-11 Bi	ologists: <u>S. Captain</u>
Project Name: Tetratech	State: 04	County: <u>Seneca</u>
USGS Quad:	GPS Unit #:_/	5 Waypoint:
Bat Species: <u>M.Sodalis</u>		

#### Transmitter Frequency: 172.214

Comments: go & Emerson Creek bridge near 13

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
5C3	41°13'15.1	32°55'04.4	218	2225	292	
	et and and and the second of t			2230	a galaxies (1996) au conference (der free of some Spin	
				2235	262	
				2240	338	
				2245	310	
				2250	Business and a second sec	
				2255	#10.107.07******	
				2300	319	
				2305	294	
				231D	<u>a65</u>	
	-			2315	261	······
				2320	266	
				2325	91	1 0: 0 t
				0330	299	
				2035	295	
				2340	361	
				2345	212	( A with
				2350	Martine 1 1 1 10	
				2355	e et a ser an anné de col	
				0000	320	
				0005	291	
				010	2-79	
				0015	er transacturations	
				2020	271	-Caived
				0025		
and the state of the				0030	300	
- 100 B				0535	271	· · · · · · · · · · · · · · · · · · ·
				0040	230	
				0045	275	

19. 19.				0	oole oole							T							2		0/26	2	ed.					
Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincimati, OH 45232 (Phone: 513-451-1777) Page of	Revus 31 Spran Waypoint: 32 - 79		Comments	Movina 4 A Mail / Aci	Noving to New Logi		and a second	A Manufacture and a second sec	No Sand	History History		No stanal	No Supret.						Moving High to reco local	onest tech longui tora	Wing trate to new !	is tech to New Local	G& 42 ch. lo Noula	4	10 	10 52	104-1-16-35 272-79	WUING 40 52-77
Environmental S incinnati, OH 45.	M Ino		Azimuth			120	930	1180		010		ON -	ON I	47. 	2	NN -	No.	°2	Novi		Mon	Mario	M WGG	Nov 8K	manana P. Ma			N 16
Property of: Este Avenue. C	3iologists C		_	2205 -	$\left  - \right $	2215 4	2225 6	2230 1	22,355		2245 59	1250	2200	230 5	2310	2315 -	2320 -	2325 -	2330 -	335	340	345	350	2355	0000	1	. 5100	020
4525 EMETRY	Date: <u>26 July 20</u> 11 Biologists: <u>S. Revues</u> <u>dite</u> State: <u>ON</u> County: <u>Space</u> GPS Unit #: <u>Flaguly</u> Waypoint: 2181		Frequency	E-101	1	172,2181	2181	72.218	172.2181 2			1212121	77.2191	, 2181	213.)		2181	72.2181 2	2	2	Construction of the second sec	2	2			No	0	0
FIXED TELEMETRY DATA	12 Per		Longitude (N) ま2° Sn <sup>1</sup> は 2 <sup>n</sup>			1 14.	82° 58 1 14. 1	2	58, 14	62° 58' 548 201	02.58		82°581					.25.29		contract for an interaction mean metal photometric that the result of a photometric				An Artis and California And California And California		nd by the second s	and a second and a second and a second and a second s	
	10.02 Fresid Mydis requency:		4 12' 43.5"	and a state of the	212 101011/	410 121 45.	410 121 415.		2.45	41° 12'	10121		41:121	41 * 12'	41.0 [2]	10.12	. 71.17		A AN A REAL PROPERTY AND A REA		and a second					(a) a set of the set of t set of the set		and the second second of the second of the second
	Project #: Project Name USGS Quad:_ Bat Species: Transmitter F	Comments:	# 32-79	Contraction Contraction Contraction	<	<u>Union(en</u>	Lhier Om			Unior Con	LANDIN LAN	Union	Unionles	Whim Ow	LANDROCH	Minim (a low	VI NIEN (J.EM	WINDAUM					Page and a constrained of the			March Concerns	- Alexandra	And a second sec
							···																					



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#### FIXED TELEMETRY DATA (continued)

Project #: 340.2 Date: 20 July 2011 State: 044 County: Same na

Initials:<u>\_\_\_</u>

Station #	Latitude 📈	Longitude 📈	Frequency	Time (0000h)	Azimuth	Comments
32-79	41112143,5"	82°56 1421	172.2.181	0025	52°	an a
37 - 79	41012143.5"	82" 51/ 14.2"	172,2181	0630	930	
22-7A	4121 43:5'	829 56 14.2"	172, 2181	0035	970	
37-79	41012 43.5"	82° 56' 14.2"	172,2181	0046	551	No. on the second s
27.79	410 121 43.5"	821 -51-1 円,21	178,2181	0045	501	
32-79	470 121 43,5"	82 56 14.2"	172,2181	0056	400	a 1. Metro a constructo a constructor a constructor a constructor a constructor a constructor a constructor a c
32. 79	410 12 43.6"	82° =10 4.2°	172.2161	0.055		and a second
37.79	4 12 48.55	82 00 14.2"	172:2181	0160	320	
27.79	410121 43.5	82° 56' 14.2"	172.2181	0105	691	· · · · ·
32 - 79	4/2/2/ 45.5*	82" 20 212	172.2161	0110	141	Martin , providence
32-14	4/1 19 - 42.5"	\$2" SQ ML1"	112 Z (8)	ONS	<u> </u>	• XINTER - 11 11 4 49 1 - 11
2,2 19	4112' 45.5'	82° 56' 172'	100 2181	0120		
32-79	419 12 455"	82ª SU 19 2.	122 2181	0125		
32- 14	415 121 U25"	82 561 4 2"	17.2 . 21.81	0130	Q.P.S.,	No Singl
132 - 1A	-12" 12" "3.5"	Y2° 56 14 2"	112.716	6135	117	
37 79	412 121 413.51	82° 50' 1412"	177.2181	040	<u><u>3</u>°</u>	
32-74	311 12' 43,5'	82° 56 14.2	12.218	0145	212	a constant a second a
12-179	2110 17 43.5	82° 561 141.2"	1212.2181	0150	2950	
37.199	4110121 43.51	82° 56' 42'	77.2331	0155	2620	
22 29	SHP 121 45,55"	82° 50/142"	172.2180	0200	2.70%	and a second we
32 74	4/12/ 4854	82° et 112"	1 1. 2181	<u> 02.05.</u>	2762	and the second sec
372. 14	ST 12 / C3:5"		112721	0210	2822	an a
32 - 14	4-17 43.5	22° C. (21)	172.2.2	12:5	320	2
157 - M	与年1213年1月	82° 9,1921	177228	0220	3140	
32-79	41-12-43.5	72° 56' 14,2"	172.2181	0221		No sami
	410 121 43.5"	820 51-14.2"	1-12.2181	0220	3420	
	41-12-143,5"	82° 56'142"	172,218	0231	<u>330°</u>	
	41012143.5"	52°56114,2"	172.2181	024( :		Continue Interference
	419 121 43,5"	52 561412"	172.2181	0243	333°	
	4/1° 12' 4/3.5"	82° 56' 14.2' 82° 56' 14.2' 82° 56' 14.2'	172,2181	$\Delta 20^{\circ}$	343	t and an and a state of the sta
	4/ 12 43,5	82 56' 141.2"	172,2181	02117	340°	
	41° 12' 43.5 "	82°56 14.2'	172.2181	0300		No signal
	i a constantina for the second s					



FIXED TE		DATA Pageof
Project #: <u>340,00</u> Date:	GUL ZOIL Bio	plogists: J Basiger M. Farmer
Project Name: Tetratech	State: Off	
USGS Quad:	GPS Unit #:	Waypoint: <u>2</u> 0 ( on GP5
Bat Species: Myetis sadalis		(on GPS# 465670)
Transmitter Frequency: 172.21	B	
Comments:		

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
			172218	2205	243°	
				1210	199°	
				7210	224	
			$\vee$	2220	225	
				2225	2110	
				2238	250° 220° 235° 235°	
				2235	220°	
				2240	2350	
				2245	235°	
				2250	235	
				2255	1800	
				2360	122	
				2305	6	
				2310	epwersternersensensensensensensensensensensen	
				2315	Финитерары, караксанаро	
				2320	Manuary and an and an and an and an and	
				2325	69°	
				2330	131	
				2335	A consistence and a constraints	
				2340	170°	
				2345	1 53°	,
				2350	1410	
				2365		
				0000	211	
				0405	200	
				0010	242	
				0015		
				6020	140	
				0025	158	



Page\_\_\_of\_\_\_\_

## FIXED TELEMETRY DATA (continued)

Date:\_\_\_\_\_ State:\_\_\_\_ County:\_\_\_\_\_

Initials:\_\_\_\_

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
				0030	140'	
				• ~ 77)		
				a ser A sub-	1	
				J. 1915	79-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	
	·····			Sec. 1		
		1		a was s	No	
	<u></u>	· · · · · · · · · · · · · · · · · · ·		0.1.10	160°	
					170	
				C. A.	180	
				0115	1000	
				6120	20,0	
					170	
				J 130	160° 170° 180° 100° 250° 190°	
	<u></u>			213.	the second second	N
				0140	and the second s	
				2145	$\lim_{t\to\infty} \  u_{t,0} u_{t,0} v_{t,0} v_$	
				0150	2069	
				0155	$\widehat{M}(A^{(1)}, M(A^{(1)}, m_{(1)})) = M(A^{(1)}, m_{(1)}) = M(A^{(1$	<u> </u>
				0100	and the second second second second	
				0 400 0 200 0 2 0 10	a series and a series of the s	
				0.000	· 206°	:
				the second second	2	:
				010	) ************************************	
				022	5 2 QG"	
			'iter	0230		
				025	1 2 06	
		<u>}</u>		Q2.01		
					1. 2. 5	
ļ						
	1					



FIXED		Pageof
Project #: <u>340</u> Dat	te: 27:30 Bio	logists: <u>J Basiger M. Farmer</u> _ County: Seneca
Project Name: 1 ct. Ad edu	State: OH	_ County: Sent ca
USGS Quad:	GPS Unit #:	────────────────────────────────────
Bat Species: M. Sodatis		
Transmitter Frequency:	)	
Comments: 76 d 178 in Gara	me drivenay	
	$\Diamond$ $\supset$	

Station #	Latitude	Longitude	Frequency	<b>Time</b> (0000h) *2250	Azimuth	Comments
			172.2180	2250	161° 156° 720°	
			t.	2255	156	
				2300	220°	
			V.	2365	2200	
				2310	Manager and States and and	
		<b>```</b>		2715	Management of the second secon	
				2320	160	
				2325	2110	· · · · · · · · · · · · · · · · · · ·
				2330	2106	
				2336	2100	
				2340	Not and the second seco	11/ 11/ 11/ 11/
				2345 2356 2355	210° 210° 180° 160° 110°	to see if she was noticed
				2356	210	at all. They are showing
	<u>,</u>		9352	2355	190	
				2000	160°	
				0005	110	
				0010	180 160°	
	., <u></u>			0015	1600	
				6020	180° 208 200°	
				0025	208	
				6636	2000	
				6035	60°	
				0.40	1970	
				0045		
				0150	176	
				0055	168° 170° 215°	
				0100	170°	
				2103	215°	
				0110	And Summer of Party	



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# FIXED TELEMETRY DATA (continued)

roject #	et #: Date: State: County:		ty:	Initials:		
tation	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
#				6115	1.00°	
				0120	190 243° 237°	
				0125	243°	
				0130	2370	
				0135	at the second se	
	<u> </u>			0140		
				0145	226	Very Saint
				6150	·>	
+				6155	240	
				0 260	220'	
				6265	165	
		-		0216	1,615	
				57.15	666	
				0320	60	
				0225		2
				0236	1 165	
<u></u>						
			star.			
	1					
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. <u></u>						

TRAT	Propert 4525 Este Avenu	y of: Environmental Solutions & Innovations, Inc. e. Cincinnati, OH 45232 (Phone: 513-451-1777)
	EMETRY DA	
Project #: <u>340</u> Date: <u>2</u> 7	<sup>2</sup> July 11 Biologi	sts: <u>E. Rasizir; A. Kleinhen</u> Z County: <u>Severa</u>
Project Name: <u>Republic-Wind</u>	State: 0H	County: Severa
USGS Quad:	GPS Unit #: Erin	Waypoint: <u>N/A</u>
Bat Species: M. Sodalis		
Transmitter Frequency: 172, 219		
Comments:	۰.	

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
1	41-12144.2	82°56'28.8	172.219	2225	22	Good Signal street
				2230	10	·
		Alitheniocana		2235	341	
2	41 12' 44.0	8 2° 56'29.5		2240	1	
				2245	25	
				2250	29_	
				2255	14	
				2300		
				2305	18	missed due to visitor
				2310	and the second s	missed due to visitor
				2315	359	
				2320	40	
				2325		
			100	2330	14	
				2335		
				2340		
				2345	and the state of t	
				2350	18	
				2355	18	
				2400	18	
				2405	28	
				3410	38	
				2415	30	
				2420	32	
				24.25	46	
				2430	50	
				2435	55	
1			$\perp \underline{\setminus}$	2440	23	
	N/	W	No. and the second	2945	55	

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#### FIXED TELEMETRY DATA (continued)

Project #: Republic Wind Date: 27 J. Ly DM State: OH County: Sene ca

Initials:<u>ECB</u>

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
2	4-1°12 44.0	82'5629.5	172.219	2+50	27	
	<u> </u>	5 5 1 1		2455	10	
				0000	46	×
				10005	19	
				0010	10	
				0015	2.6	
				0020	22	
				0025	355	
				0030	6	· · · · · · · · · · · · · · · · · · ·
	·			0035	6	
				0040		lost stand
				0045	265	
				W50 -		lost signal lost ball at azingthe
				0055	274	besoic realing
				0100	284	
				3105	12	
				0110	10	signal was where seeing bot on
					34	1/p at az in with Same
				0115	120	
		-		0120		
				0125	1 1 1	
	• ¥	V	<u>ÿ</u>	0130	46	
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FIXED TELEMETRY DAT
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Project #: <u>346.6</u> Date: <i>∂</i>	7 Jul II Biol	ogists: <u>µ Plynn</u>
Project Name: <u>Republic</u>	State:	County: Servica
USGS Quad:	GPS Unit #:	Waypoint: MMF
Bat Species: <u>Myptis Sodalis</u>		
Transmitter Frequency: 172.218		
Comments:		

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
MMF			172.217	22:30	58° 56° 56°	
			<u>.</u>	22:35 20:40	560	
				20146	560	
				22:50 22:55	56° 56°	
				22:55	56	
				23:65	460	
				23:26	450	
				23-25	80°	
				23:30 23:35 23:40	800	
				28:35	66° 56° 260° 260° 265° 265° 268° 268° 268° 268° 360° 372° 272° 272° 272°	
				23/90	<u> </u>	
MMF2	1118 3 17.7"	82°55'04.4"		0045	<u> 2600</u>	
				0650	2600	
· · ·				0055	270	
				0100	2650	
				0105	2680	
				0115	2680	
				0115	8842	
	;		· ·· ·	0120	2600	
				6:25	3000	· · · · · · · · · · · · · · · · · · ·
				0130	272	
				0139	272	
			2 •	02:05	2600	
	·			02:19	2900	
				02.30	252° 286°	
				02:30	<u>2860</u>	unonover
			· · · · · · · · · · · · · · · · · · ·			
						· · · · · · · · · · · · · · · · · · ·



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Project #: <u>340</u> Date	e: <u>]]-Ju -1 </u> Biolog	gists: S. Captain
Project Name: <u>Tetratech</u>	State:_ <i>O H</i>	County: Seneca
USGS Quad:	GPS Unit #: <u>_A7</u>	Waypoint:
Bat Species: <u>M. Sodalis</u>		
Transmitter Frequency: 172.21	)	
Comments: 79 near Emerson Cre	2ekbridge (SCY)	<u></u>
565: 77 4179	0	

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
5C.4	41"14'02.8	12 57'23	218	2300	99	
				2305	attractionenergy	
				2310	Station from a substances of the	Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y
				2315	a construction and the second	
				2320	(protocol and a strategy of a	
				2325		
<u>505</u>	417 13 36.0	42 57'2 5.3	218	2340	139	
				2345		
				2350	120	Frint
				2365	116	
				2000	162	
				0005	105	
				DOID	132	
			184	0015	123	·
				0520	129	
				0025	126	
				0030	and the second second	
	1			0035		
	r 		·	5040	126	, 
				0045	jal	
				0050	116	
				0055	130	·····
				0100	119	
				0105	117	
				0110	We want with the second s	· · · ·
				0115		
				0120	an - provide and a state of the	
				0125	Star Jacob, Star Star Star Star Star	
				0130	Real and the starting of the	



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#### FIXED TELEMETRY DATA (continued)

Project #: <u>340</u> Date: <u>27-366-</u>() State: <u>674</u> County: <u>Seneca</u> Initials: <u>SC</u>

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
				0135		
				OMO	e and the street	
MMF L	410 10 461	42° 57'53.1	216	0200	11-7	
			and the first of the second	0.00		
				0210	AND THE ADDRESS OF	
				0215	encontraction and the second	
14 W/TV				baaD	al communication of the second	
				0225	#12-to-skrWEinlautung	анаран — — — — — — — — — — — — — — — — — — —
				8230	•	
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Project #:_ <u>340.01</u> Da	nte: 28 Jul II Biol	ogists: <u>M. Hynn</u>
Project Name: <u>Republic</u>	State: <u>0 +</u>	<u>    County:  Seneca</u>
USGS Quad:	GPS Unit #:	Waypoint:
Bat Species: <u>Myphis sodalis</u>		
Transmitter Frequency: 172.21	8	
Comments:		

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
			172.218	3250	200 360	
				2235	SCO	
				2240	260	
				22:45	3480	
				82:50	-3460	
				22155	00	
				2360	3640	
				2355	2950	· · · · · · · · · · · · · · · · · · ·
				26:0	<u> 8259</u>	
				2320	180	
				2326	262	
				2736	25°	
				2335	32° 8°	
			4901	2340	- 80	
				2345	3.20	
				2355	60	
				2355	60	· · · · · · · · · · · · · · · · · · ·
				6520	200	
				0005	190	
				0010	130	
				0015	20'	
	····	-		0025	3540	
				0630	180	
				0036	25%	
				6040	<u> </u>	
				0045	120	
				0250	120	
				<u> 0055</u>	120	
	N			0100	3480	



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## FIXED TELEMETRY DATA (continued)

Project #:		Date:	State:	_ Cour	nty:	Initials:
Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
				0105	<u> </u>	
				C ic	- 성영학과	
				6115		
				0120	200	
				6126	2000	
				0130	2120	
				0135	$-\partial \psi )^{\omega}$	
				0140	2620	
		·		0145	22° 22°	
				6150	230	
				0165	220	
				6259	260	
				0069	$\Delta p^2$	
				61.60	400	
		·		0215	40° 18°	
				0230	355°	
				しんび	2.02	
				5935	157	
			-			
						in the second
	<u>,</u>					
						16-1010-1-1
~ .	Trade		<u> </u>			



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FIXED	TEL	EMET	RY	DATA
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	Ho-Jul-1 Biolog	
Project Name: <u>Tetratech</u>	State: () []	County: Scale A
USGS Quad:	_ GPS Unit #:_ <u></u>	Waypoint:
Bat Species: <u>M. Scda 113</u>		
Transmitter Frequency: 172,216		
Comments: 174 d 74		

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
5C (p	111-13'36.9	-22 57 22.7	218	2245	159	
	· · · · · · · · · · · · · · · · · · ·	-		2250	151	
		~~ /		2255	162	Fair+
				J300	165	
	f			2:305	<u>150</u>	
	•	•		2310	164	
				2315	133	
				2330	129	
				2525	133	
-				30	1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	
				85		
				2340	101	
n A Anna Anna Anna Anna Anna Anna Anna A						
			· · · · · · · · · · · · · · · · · · ·	2350	124	
				2355	**************************************	
t T		,		0000	and the second s	······································
;				<u> apo 0</u>	31	
				6010	140	
				<u>pol5</u>	126	· · · · · · · · · · · · · · · · · · ·
				0520	122	
				1225	137	
				0030	131	1
	· · · · · · · · · · · · · · · · · · ·			-10002	131	
				$\frac{m \wedge \psi \wedge}{1 + 1 + 1}$	131	faint.
	···· / ····			0045	139	
					125	
				0055	128	
				12100	132	
ί	1	<u> </u>		0105	-	



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### FIXED TELEMETRY DATA (continued)

Project #:<u>340</u>

Date: 26-Dule || State: 5 Al County: Second

Initials:

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
<u> 306</u>			.2 13	OHD	158	
				0115	160	
				6126	and a second second	
				0125		
				Nr.SA	and the second sec	· · · · · · · · · · · · · · · · · · ·
l 						
·	412 3 11.10	- A2° 57'23.9	211	0145	1:26	
			· ·	0150	Martin International	
·····				01:55	103	
				1000	105	
				3205	99	
	······································			0210	100	
				0215	109	
	······································			0220	10a	
				0225	krostozowany	
				0230	125	
		·	14			· · · · · · · · · · · · · · · · · · ·
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ESI FIXED	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777) Pageof
Project #: <u>346.01</u> Date Project Name: <u>le public</u> USGS Quad: Bat Species: <u>M. Sud alis</u>	<b>TELEMETRY DATA</b> :: 28 Jul 1         Biologists: J. Basiger         State: OH         County: Service         GPS Unit #: CS1 1105710    Waypoint:
Transmitter Frequency: 21% Comments:	

13, 14,5,	82° 55'.26.6"	218 219 219 218 218 218 218 218 218	2300 7305 17310 2315 2820 7325	200° 720 246 246 190	
		219 219 218 218 218	7310	720 746 240	
		218 218 719	7315	240	
	· · · · · · · · · · · · · · · · · · ·	218	7320	190	
		218			
	2		17325	1 1111111	
		910			
		1/10	1330	eig n	
		218	2335	7.70	
and the second		218	7.340	270	
		218	7345	1770	
		213	7.350	I state the second seco	
		718	2355		
		218	0000	390	
		318	0.005	and by	
, and the second s		218	0010	210	
		718.	0015		
		218	0020		
			and		
27		and a second		100	
	· · · · · · · · · · · · · · · · · · ·			1321	
				100	
				60	
		and the second s			no Signal
		· · · · · · · · · · · · · · · · · · ·		RD NAMES OF STREET	NO SIROAL
			218 218 218 219 219 218 218 218 218 218 218 218 218	218 218 218 218 218 218 20030 218 218 218 218 218 218 218 218	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

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### FIXED TELEMETRY DATA (continued)

Project #:		Date:	State:	County:		Initials:	
Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments	
	<u></u>		218	0125	1230		
			218	01:30		No signal	
			219	0135		ns	
			218	0140		ns	
			218	0145	580		
			218	0150	1010		
			-718	0155	84°		
			718	0200	1090		
			7:18	02.05	100		
			718	0210	Sz.º		
	i		216	67.13	11110		
			218	05520	1080		
			218	0225	1120		
	s.		218	105730	(090		
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	ELEMETRY DATA	Pageof
Project Name: <u>Retratech</u>	BTM 26  Biologists: State:County: GPS Unit #:ASWayp	eheca oint: 20
USGS Quad: Bat Species: <u>M, Sodalis</u> Transmitter Frequency: (72.218)	GPS Unit #: <u>/4 &gt;</u> vvayp 	n GPS # 465670

Comments:

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments	
π			7 .512	2240	260*		
				2245	2100		
	<u></u>			7340	210*	2250 LOND	
				7505	210°	2255 LMW	
				7310	2100	2300 LMW	محمد المحمور المراجع المحادي
				2320	225°	2305 LMU	
				2320	130	2310 LMW	
				2315	210		
				2320	245		
				2325	218°		
				2330	140°		
				2335	210°		
				2340	220°		1
				2345	2150		
				2360	215°		
	····			2355	2000		-
				2405	218°		1
				0010	June James Sand		-
				1015	213		1
				0020			-
				0025			4
							-
				0030	- LIU - 1/10		-
				0035			1
				0040 0045			1
				0050	1000		-
				1054	1		1
				5100	2070		1
				~ 1 V V			I



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# FIXED TELEMETRY DATA (continued)

Project #:		Date:	State: County:			Initials:	
Station	Latitude	Longitude	Frequency			Comments	
				0105	213"		
				010	2000		
				0115	2. 2. Com	Very VERY Faint	
		_		0120		could not locate	
				0125	and the second se		
				0130	"-perturna and a second		
				0135	alaran araa ahaalaa kaalaa		
	<u></u>			0140	· · · · · · · · · · · · · · · · · · ·		
				0145	2000		
				0150	1 190		
				0155	180°		
				0206	161		
				0200	161		
				6210	1080		
				0219	1214	2	
				0220	200		
(		and the second		0 225	200		
	2			6230	> 200°		
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Page\_\_\_of\_\_\_\_



# FIXED TELEMETRY DATA

Project #: <u>345.51</u> Project Name: <u>kepublic</u> USGS Quad: Bat Species: <u>H. sodatis</u> Transmitter Frequency: [7]2,	State: GPS Unit #:	ists: <u>Providente</u> County: <u>Senacio</u> Waypoint:
Comments:		

Station	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
#		82°56′29,85″	172.2.8		250	
13	41012 43,16"	82 36 2100		12:57 18:57	340	
				1 (1 . J	0	
				2.55	10 M	
				2.1.1	10	
					15.52	
					Same Same	·····
				0100	2662	
				Contraction of the state of the		
				2.5.5		
					3 Charles	
					12.00	
				5010		
				05:22		
				0011		
				. 00.30	80	
[					1 22	
l					3 235	
				<u>- 7000</u> - 5021	1 - 195 av 2	
				<u></u>		
				01:2		
				$-\frac{Q_{1,2}}{a_{1,2}}$		
				<u></u>	$\frac{1}{2} \frac{1}{2} \frac{1}$	
L		fa				
					5 7/12	
				013	2 / <u>7</u>	
				<u>- 0</u> らいる	2	)
				0.00	52 <u>52<sup>3</sup></u>	

60° CHD OTTR 5 150  $\sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{j$ 20° 20112 202 W 15 00120  $V_{Q}^{(r)}$ 

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FIXED TEI		( DATA	Pageof
Project #: <u>340</u> Date: <u>29</u>	-Jul-11	Biologists: <u>5. Captaun</u>	
Project Name: Tetratech	State: 6	County: Sene ca	
USGS Quad:	GPS Unit #:	A 7 Waypoint:	
Bat Species: M. Sodalis			
Transmitter Frequency:			
Comments: 18 at white barn, near	- 32		
,			

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
<u>66</u>				22.45		
				2250		
				2255		N Propagation (1997)
				2300		
307	4112'51.0	52° 55' 363	212	2330	320	
· · · · ·				2335	314	
				2340	308	
	· · · · · · · · · · · · · · · · · · ·			2345	307	
				2350	313	
				2355	320	
				0000		
				0005	<u>~</u>	
				0010	Month and a state of the state	
			tage-	0015	301	
				0020	314	
				6025	gunnan an an a	
				0030	49	
				5635	18	
				0040	and a second second	
				0:45	.50	
				0.050	12	
				0055	32	
				0100	358	
				6106	349	
				010	334	
				10116	335	
			† · · · · · · · · · · · · · · · · · · ·	0120	332	
	-			0125	524	
				0130	352	



Page <u>\_</u>of <u>\_</u>

# FIXED TELEMETRY DATA (continued)

Project #: <u>340</u>\_\_\_\_

Date: <u>29.5.d-11</u> State: <u>0 H</u> County: <u>Series</u>

Initials:

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
567				0135	16	
				0140	26	
i				0145	a	
				0150	4	
				0155	20	
				0200	41	
				0205	28	
				0210	360	
				6215	1-6	
				0220	332	
				0225	314	
		-		0230	302	
				0235	300	the plant
				0240	304	
				0245	304	
k						
1-1-10 ( 1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1						
	1 k 1 - 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m					
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	D TELEMETRY DA	
Project #: D	ate: <u>29 Jul</u> Biologi	sts: , M. Farmer
Project Name: Tetratech	State:	County: <u>Scheca</u>
USGS Quad:	GPS Unit #: <i>A_S</i>	Waypoint: <u>2</u> ♥ ( on GP5#465676)
Bat Species: Mydis Soda	115	(on 67547465610)
Transmitter Frequency: 772	- 218	
Comments:		

Station #	Latitude	Longitude	Frequency	Time (0000h)	Azimuth	Comments
MFI				2255	180	
P				2200	130	NAME OF TRADE OF THE OWNER OF THE
				23.05	780	
				2310	170	
				2315	150	
	and a second of a second se			2320	220	
				2325	242	
·····				2330	2212	
				2335	:228	
				2340	230	
· · · · · · · · · · · ·				2.345	238	······
				23.50	205	
				2355	200	
			**	0000	220	1999
				0005	225	
				6010	230	
				0015		
				60 20		
				60 25	90°	
				00 30	Renamentation and a second sec	
				6035	10°	
				0040	125	
				60 45	110	
				60 50	109	
				10065	125	
	· · · · · · · · · · · · · · · · · · ·			6160	195	
				0105	12/1	
				<u>p110</u>	120	
				0116	120	and an



# FIXED TELEMETRY DATA (continued)

ES

Station #LatitudeLongitudeFrequencyTime (000h)AzimuthComments $\sim$ <	Project #:		Date:	State: Cour		ty:	Initials:
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		Latitude	Longitude	Frequency	Time (0000h)		Comments
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$					0125	130	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$					6/30	and a second sec	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$					6135		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$							
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$							
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$					0150		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$							
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$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$						+	
0240 0245 0245							
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5235 - 0240 - 0245 -							
0240 0245						Marson and a star	
0245							
					0240	Conner	
0250 -					<u> </u>	·	
	1 						



Project #: <u>340.</u>	02 Date: 2	77 July 2011 Biologists: A Kniowski, Kleinhenz
Project Name:	Epublic - Wind	Site Name/#:
	ounty: Sene ca	
Picture #: Ô	918 - 092	21
Bat Species: <u>F</u>	. foscus	Capture Time: 0140
Age Ad or IV	Sex Mor F	Reproductive ConditionWtRFAF=(NR/PG/L/PL; M=↑/↓(g)(mm)// ?14.926
Transmitter weight =		Frequency number: 172, 122 (Best@ 172.16
		⊇ grams Band/color number:Ŋ] <u>A</u>
<ol> <li>Band attachr</li> <li>Condition of</li> <li>Description c</li> </ol>	of release:	a chive TAL HOLD TIME: 80minutes
RELEASE LOCA	ATION: Captur	re sile
COMMENTS:	١	
0.01111211101		
	5= 172, 120. Spec = 172, 120	06
		La construction de la constructi



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Project #: <u>340</u>	Date:	20 July 2011	Biologists:	Basic	<u>, 17</u>			
Project Name: <u>lef</u>			Site Name/#:	9				
State: <u>OH</u> Cou	unty: <u>Sentic</u>	<u></u>	Camera #: <i>Co</i> _	nlett				
Picture #: 87	9 - 891	(_)(	24pt.=#016	<b></b>				
Bat Species: Ephiscus fuscus Capture Time: 2145								
Age Ad or Jv	Sex M or F	•	ive Condition /L/PL; M=↑/↓	Wt (g)	RFA (mm)			
V	F	NR		13.5	45			
Transmitter weight =	<u>_25_</u> grams	Free	quency number: 17	2.239				
Transmitter + bat total v	veight = <u>13,75</u>	grams Ban	d/color number:					
	nt (Y/N): <i>7^</i> imal: <i>Geeed</i> elease:_ <i>[\orr</i>	l nal						
RELEASE TIME:	<u>2730</u> TO	OTAL HOLD TIN	//E://mi	nutes				
RELEASE LOCAT	ION:							
COMMENTS:								
			. <u></u>					
<i>R</i> -	post Pic 890							

ESI	and the second second second second

Project #: 340, 01 Date: July 30, 11 Biologists: Jack Basiger
Project Name: <u>Republic</u> Site Name/#: 12
State: Ohio County: Seneca Camera #: can671
Picture #: <u>965 - 969</u>
Bat Species: <u>(Scus</u> Capture Time: <u>22</u> ,00
Age Ad or Jv $\mathcal{A}$ Sex M or FReproductive Condition F=(NR/PG/L/PL; M= $\uparrow/\downarrow$ Wt (g)RFA (mm) $\mathcal{A}$ $\mathcal{C}$ $\mathcal{M}$ $\mathcal{F}$ $\mathcal{F}$ $\mathcal{F}$ Transmitter weight = $\mathcal{3}$ $\mathcal{3}$ $\mathcal{G}$ $\mathcal{F}$ $\mathcal{F}$ Transmitter + bat total weight = $\mathcal{I}$ $\mathcal{G}$ $\mathcal{G}$ $\mathcal{G}$ $\mathcal{G}$ Transmitter + bat total weight = $\mathcal{I}$ $\mathcal{G}$ $\mathcal{G}$ $\mathcal{G}$ $\mathcal{G}$
FINAL CHECK:       Yes         1) Transmitter attachment (Y/N):       Yes         2) Signal receiving (frequency):       172.2250         3) Band attachment (Y/N):       Yes         4) Condition of animal:       Great         5) Description of release:       Fine         TOTAL HOLD TIME: 50 minutes
RELEASE LOCATION: <u>Capture</u> site
COMMENTS:
and a second and a s



Project #: <u> </u>	Date: <u>24-Jul-11</u>	Biologists: <u>A.K.</u>	owshi
Project Name: Republic		Site Name/#: <u>  </u>	
State: A County:	alla	Camera #:	
Picture #:			
Bat Species: E, Fuscue		Capture Time:_	
Age Sex Ad or Jv M or	Reproduct F F=(NR/PG	ive Condition /L/PL; M=↑/↓	Wt         RFA           (g)         (mm)           7.3         1/6
Transmitter weight = $-35$		quency number: <u>[72,6</u>	
Transmitter + bat total weight =			
<ul><li>2) Signal receiving (freque</li><li>3) Band attachment (Y/N):</li></ul>	(Y/N): ncy): goed goed goed TOTAL HOLD TI		
RELEASE LOCATION:	ite 14		· · ·
COMMENTS:			
			na an ann an



Project #:	), () 2 Date:	22 July 2011	Biologists:	effestt, S	Reves		
Project Name:	Tetratech 1	2 epublic	Site Name/#:	St.C.	<u> </u>		
State: 64 C		*	<b>Camera #:</b>	1834			
Picture #:	3736 - 37	237					
Bat Species: Eptesiaus fuscus Capture Time: 2200							
Age Ad or Jv	Sex M or F	•	ive Condition /L/PL; M=↑/↓	Wt (g)	RFA (mm)		
<u>h</u> d		l la companya de la compa		19,1	.1.15		
Transmitter weight =	<u></u>	Frec	uency number: 17	2.118			
Transmitter + bat tota	al weight =	grams ⊡Ban	d/color number:		· .		
<ol> <li>2) Signal receiv</li> <li>3) Band attacht</li> <li>4) Condition of</li> </ol>	attachment (Y/N): ving (frequency): ment (Y/N):N animal:ValU of release: <u>No cr</u>	172.1172					
RELEASE TIME:	<u>2300</u> T	OTAL HOLD TIM	1E: <u>(_()</u> mi	nutes			
RELEASE LOCA		Nure foral.	<u>an</u>				
COMMENTS:	)/A						
				n			
					X		

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# **BAT TRANSMITTER DATA**

Project #: <u> </u>	Date:	19-54-11	Biologists: <u> 8, 6</u>	Basider .	
Project Name:	20public		Site Name/#:		
State: <u>OH</u> C	County: <u>Leve c</u>	<u>(</u>	Camera #: <u> C</u> പ്പ	671	
Picture #:					
Bat Species: <u> </u>	fuscus		Capture Tim	ne: <u>216</u> 7	<u></u>
Age Ad or Jv	Sex M or F	-	ve Condition /L/PL; M=↑/↓	Wt (g)	RFA (mm)
		NR		16,7	
Transmitter weight = Transmitter + bat tot	= <u>,36</u> grams al weight = <u>16,15</u>		uency number: <u>77</u>		
<ol> <li>2) Signal receiv</li> <li>3) Band attach</li> <li>4) Condition of</li> <li>5) Description</li> </ol>	attachment (Y/N): ving (frequency): ment (Y/N): animal: of release: :	/ d. nd			
RELEASE LOCA	ation: <u>50)e Q</u>				<u></u>
COMMENTS:					
		<u> </u>	<u> </u>		
			11. Jun		

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# **BAT TRANSMITTER DATA**

Project #: <u>340</u>	Date:	15Jul 2011	Biologists: <u></u>	Basige	r + M.Flynn
Project Name:_	Republic			26	
State: <u>6</u> ]	County: <u>Se</u>	ni ca		in 67	
	32 - 835				
Bat Species:	Eptesicus fu	iscus	Capture Tim	ne: <u>2300</u>	
Age Ad or Jv	Sex M or F	F=(NR/PG	ive Condition /L/PL; M=↑/↓	Wt (g)	RFA (mm)
Ad	F	PL		24.25	47
Transmitter weight :	= <u>0.35</u> grams	Free	quency number:	2740	
	tal weight = $24.5$	grams Ban	d/color number:		N/A
<ul> <li>3) Band attack</li> <li>4) Condition o</li> <li>5) Description</li> </ul>	of release: <u>100</u>	N/A mal OTAL HOLD TIN	ле:m	inutes	
RELEASE LOC	ATION: Cap	ture site			
COMMENTS:					

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	781 Neeb Road. Cincinnati, OH 45233 (Phone: 513-451-1777)				
DSI	BAT TRANSN				
Project #: <u>340.01</u>	Date: 24)u/11	Biologists:	Basiger		
Project Name: Republic			30		
State: 24 County: State:			n 671		
Bat Species: Eptesicu		Capture Tin	ne: <u>ZZ00</u>		
Age Se Ad or Jv Mo	r F F=(NR/F	uctive Condition PG/L/PL; M=↑/↓	Wt (g) 15-75	RFA (mm) 99	
Transmitter weight = $35$	_grams F	requency number: 172	2.500	n L	
Transmitter + bat total weight =	16.10 grams E	Band/color number:	400040012000000000000000000000000000000	te a a a c Antointeachanachanach a	
<ul> <li>FINAL CHECK:</li> <li>1) Transmitter attachment</li> <li>2) Signal receiving (freque</li> <li>3) Band attachment (YO)</li> <li>4) Condition of animal: (</li> <li>5) Description of release:</li> </ul>	ency): 172 4997				
RELEASE TIME: 2230	TOTAL HOLD	TIME: <u>30</u> n	ninutes		
RELEASE LOCATION:					
COMMENTS:	F				
			,		
	and a second second				

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(s)-



**BAT TRANSMITTER DATA** 

Project #: <u>3</u>	<u>(10.01</u> Date:	7/30/11 Bi	ologists:/	Kniows	dei
Project Name:_	Jepobli	<u> </u>	te Name/#:	32	
	County: Sance		amera #:	17	an
Picture #:	0676 - <b>0</b> 68	2			
Bat Species:	E. fuscus		Capture Tim	ne:_223	5
Age Ad or Jv ) ∪	Sex M or F	Reproductive F=(NR/PG/L/F λ /R		Wt (g)	<b>RFA</b> (mm)
Transmitter + bat to FINAL CHECK: 1) Transmitte 2) Signal rece 3) Band attac 4) Condition of 5) Description	r attachment (Ŷ/N): eiving (frequency):/ hment (Ŷ/N): of animal: <u></u> n of release:	grams Band/col			
RELEASE LOC	ATION:	v location			

EST	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777) Page of
RC	OST TREE EMERGENCE DATA
Project #: Date: 2	F. Suly 2° Biologists: E. Basiser ; A. Kleinhem
Project Name: Reyubliz - Wild	State: 01+ County: Serveca
GPS Unit #: <u>E 9528</u>	1 minutes 1
Latitude: <u>4/ ° // ' 55.0</u> "N	Longitude: <u>82 ° 56 ' 53 </u> "W
Roost Name/#:8 = (	·
Radio-tagged bat present in tree: Yes_	No
Complete the following information only if a radio-ta	agged bat is present in the roost
Bat species: <u>E. Fusius</u> Sex(M	F): Age(Ad/Jv): Repro.:
	e site: 12 Frequency: 172.118

Arrival time: $2055$ Departure time: $2138$ Total Bats: 11	[	
------------------------------------------------------------	---	--

mergence Time	Number of Bats	Emergence Aspect
2(100		
2102		
2104	-6-	· · · · · · · · · · · · · · · · · · ·
2106	J	W - WW
2110	Ð	1:1F
2112	forman forman	N;S;W;E-Andiff
2114	8	
2116	19	ι (
2118		И
2120	27	) )
2122	14	7 (
2124	0	N, E, S
arale	Ż	N'E

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)
DSI	Page of
ROOST	TREE EMERGENCE DATA
Project #: 340.01 Date: 12/00	I Biologists: Laura Tysm
Project Name: <u>Republic</u> State:	<u>County: Servera</u>
GPS Unit #:	oint: <u>017</u>
Latitude:, <u>, 55,0_</u> "N	Longitude:°, "W
Roost Name/#:	
Radio-tagged bat present in tree: Yes No	
Complete the following information only if a radio-tagged ba	at is present in the roost
Bat species: Effectives fuguresex(M/F):	Age(Ad/Jv): Repro.:
Capture date: 22 July 20 Capture site:	Frequency: 172.11-13.
NOTE: Tallies of bat exits should be made at 2-minute in distinguish bats as silhouettes against the sky as they exit	

the roost to observe all exiting bats, but not close enough to influence emergence (do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).

Arrival time: 2035 Departure time: 2025 Total Bats: 44

Emergence Time	Number of Bats	Emergence Aspect
2045	Ì	"(a) sitis of
2047	3	. have + South
20 49		side
20 5 ]	20	
Ja 5 3	(j)	
<b></b>	64	
2057	/2	
jo 59	and the second se	
2101	6	
2023	À	
		2111-219=0

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

Hen flow South. Tagged bad not Neord

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<b>DSI</b> BOOST	TREE DATA Page of
	, 0
Project #: <u>340</u> Date: <u>31 Ju</u>	Biologists: J. Basiger
Project Name: <u>Republic</u>	State: 01/ County: Sanda
GPS Unit #: <u>Esa </u> Waypoint: <u>N/A</u>	Camera #: <u>671</u> Picture #: <u>982 - 983</u>
Latitude: <u>4 ° /3 ' 34 </u> ?"N	Longitude: <u>12_°57_'0.4_</u> "W
Bat Species: <u>&amp; Auscus</u>	Sex(M/F):Age(Ad/Jv):VRepro.:
Capture Date: <u>30 Jul / </u>	Capture Site: / Z
Frequency: <u> 7/2.226</u>	Roost Name/#: <u>225-1</u>
ROOST TREE DATA	
Roost tree species: <u>Bax n</u>	dbh:cm
Estimated height from ground to roost: 7	(meters) Tree height (meters)
Exfoliating bark (%): Distance from ca	pture site:m or km (circle one)
-Tree health:Live	DeadPartial
Observed roost potential:Exfoliating Bar	rkCracks/crevassesHollowUnknown
Bat vocalizations:Yes	<u> </u>
Guano on ground/foliage: $\mathcal{V}$ Yes	No
Is guano fresh (if present)?:Yes	No
Guano volume (if present): $I_{f}(f)$	
DESCRIPTION OF SURROUNDING HABITAT	
Dominant Canopy Species (> 40 cm/16" dbh)	<ul> <li>Subdominant Canopy Species (&lt; 40 cm/16" dbh)</li> </ul>
Estimated dbh range (cm): Lg: Sm:	Estimated dbh range (cm): Lg: Sm:
Estimated canopy closure at roost:%	
Slope:SteepModerateSlig	ht <u>/</u> None Slope aspect:
Subcanopy Clutter:ClosedM	
	Distance to nearest flight
Distance to nearest water source: <u>300</u> mo	
Habitat Description: Large area of crop	land
Check all that apply:        Mature Upland Forest      Recently Logged I        Young Upland Forest      Pine Plantation        Mature Lowland Forest      Woodlot/ForestEd        Young Lowland Forest      Old Field         Comments:      Old Field	Stream/RiverVernal Pool

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			olutions & Innovations, Inc. 32 (Phone: 513-451-1777)
RI RI	DOST TREE	EWERGEN	CE DATA
Project #: 340,001 Date: 3	JUL Biole	ogists: <u>Launi</u>	1901-1
Project Name: <u>Republic</u>	State: <u></u> C	ounty:	
GPS Unit #:	Waypoint:		۰ نخر ۰
Latitude: <u>4 • 13 • 39.0</u> "N	Long	gitude: <u> </u>	<u>™_' (),∦</u> "W
Roost Name/#:		. <u></u>	
Radio-tagged bat present in tree: Yes	<u> </u>		
Complete the following information only if a radio-	agged bat is present in	the roost	.A.
Bat species: Eptericus fugees Sex(M	//F): Age(A	.d/Jv): <u>Ad</u> 1	Repro.:
Bat species: <u>Eptesicus (ug</u> ces Sex(M Capture date: <u>30 50 /4</u> 20//Captu	re site:2	Frequency	1. 121225

\* ) /

Arrival time:	<u>1030</u>	<b>Departure</b>	time: <u>2196</u>	<b>Total Bats:</b>	<u></u>
---------------	-------------	------------------	-------------------	--------------------	---------

Emergence Time	Number of Bats	Emergence Aspect
2117	First energe data	Parting **
	36 Total	
	First day-	
	all tallied may	
	have missed some	
and all all all all all all all all all al		
2125	Last but Enorged	
2125	Survey darke	
Empire I.	The way I us	n Grand Anna anna anna anna anna anna anna a
Wa.		÷

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?  $T_X$  but emerge 2125

ESI	4525 Este Avenue	of: Environmental Solutions & Innovations, Inc. . Cincinnati, OH 45232 (Phone: 513-451-1777) Page of MERGENCE DATA
Project #: 340.01	Date: <u>SALAN</u> Biologis	sts:
Project Name: Republic	State: <u>0//</u> Cou	nty: <u>Sepe_ca</u>
Project Name: $\frac{Republic}{ESI-7}$ GPS Unit #: $ESI-7$	Waypoint:	V/A
Latitude:°'	"N Longitu	de:°"W
Roost Name/#: 225		
Radio-tagged bat present in ti	ree: Yes No	
Complete the following information onl	y if a radio-tagged bat is present in the	roost
Bat species:	Sex(M/F): F Age(Ad/J	v): Repro.://
Capture date: 30 July 201	Capture site: 12	Frequency:
<b>NOTE:</b> Tallies of bat exits should be distinguish bats as silhouettes against the roost to observe all exiting bats.	e made at 2-minute intervals. Use the l t the sky as they exit the roost. Please but not close enough to influence eme ry noise and/or conversation, and minin	back lighting of the setting sun to help e ensure that you are close enough to rgence (do not stand directly beneath
Arrival time: <u>2019</u> Depar		100 C
Emergence Time	Number of Bats	Emergence Aspect
3105		6
	p Lane of	1 Contraction of the second seco

h. Prive

	and the second se	The second se
	t with the	
	22	
2172		
	1 (2	
	7	
	/ 2>	
2 21	0	
	$\bigcirc$	
21.5	, j	
2629 - 22135		

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

AND IN

- Gitora

ESI		i Este Avenue. Cinci	rironmental Solutions & Innovations, Inc. nnati, OH 45232 (Phone: 513-451-1777) Page of RGENCE DATA
Project #: 340.01	Date:	Biologists:_	Cours Mass
Project Name: Kapuble	<u></u> State: <u>○ ⊭</u>	County:	Servere de
GPS Unit #: <u> <i>E G I</i> - 7         </u>	Waypoint:_	NI	<u> </u>
Latitude: <u>4 • 13 • 31</u>	<u></u> "N	Longitude:	"W
Roost Name/#: 235	ىر 100 مىلى - 100 مىلى		
Radio-tagged bat present in	tree: Yes_/_ No		
Complete the following information of	nly if a radio-tagged bat is pre	sent in the roost	
Bat species: Eptosicus to	sect/Sex(M/F): A	\ge(Ad/Jv):	<u>Ad</u> Repro.: <u>PC</u>
Capture date: <u>30 3 cly 2</u>	مار Capture site: <u>ا</u>	<u> </u>	requency:

· · · · · ·		
Arrival time: 2044	Departure time: 3145	Total Bats:

Emergence Time	Number of Bats	Emergence Aspect
A ( 5.2.	<u></u>	NE N
	Ĵ.	
2106		
	13	
21 10	240	
	21	
2173	34	and a second sec
	1.3	
		N/ E
2:21	and the second se	
	the of the second s	

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

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Page \_\_\_\_ of \_\_\_\_

### ROOST TREE EMERGENCE DATA (continued)

Project #: 340.01 Frequency

£

Project name: Republic Roost #:\_\_\_\_\_

Emergence Time	Number of Bats	Emergence Aspect
2127		· · · · · · · · · · · · · · · · · · ·
2129		
	ب ا	
12 D	(	
37	<u> </u>	
39		
		r
	194	
	···	

	4525		rironmental Solutions & Inn nnati, OH 45232 (Phone: 5	
DSI	ROOST TR	EE EME	Page RGENCE D	
Project #: 340.01 Dat	e: <u>533</u>	Biologists:_	in the second	
Project Name: <u>Republic</u>	State:	_ County:_	Sanaca	
GPS Unit #:670	Waypoint:	NIA	·	. ۲۰۰۰ کور بر
Latitude: <u>41 ° 13 ' 39,0 "</u>	N	Longitude:	82.57,00	<u>9.8</u> ."w
Roost Name/#: <u>725-1</u>				
Radio-tagged bat present in tree:	Yes No			
Complete the following information only if a	radio-tagged bat is pres	sent in the roost	1 1	01
Bat species: <u>E, Fuscus</u>	6ex(M/F): <u>/</u> A	.ge(Ad/Jv):	<u></u>	10
Capture date: 30 50 (y201)	Capture site:/	<u> </u>	requency: <u>17</u> 2	2.2.2

## Arrival time: 2015 Departure time: 2130 Total Bats: 169

Emergence Time	Number of Bats	Emergence Aspect
2050	2005) 10 - 2	
	}	
$a \mid c \mid c$		
2102	24	
	24	
n óto .	30	
<u>N 165</u>	29	
<u> 17 / 6</u>		· · · · · · · · · · · · · · · · · · ·
31/2	and the second se	
21 14	- 1 - 1 - 12 - 12	
<u>) 10</u>	p - f	-
	<u> </u>	K K K
21/20	- 200 - 200	<u>3132-0-2124 C</u>

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter,  $^{2}$  circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

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		rty of: Environmental Solutions & Innovations, Inc. nue. Cincinnati, OH 45232 (Phone: 513-451-1777)
		Page _/_ of
	<b>ROOST TREE E</b>	EMERGENCE DATA
Project #: <u>340.01</u>	Date: Aug I Biolog	gists: Laura 1 Son
Project Name: Recorded	<u> </u>	ounty: <u></u>
GPS Unit #: 157	Waypoint:	NIA
Latitude: <u>41 ° 13 ' 39</u> .		tude: <u>}°′ '</u> "W
Roost Name/#: 225		
Radio-tagged bat present in t	en st	
Complete the following information onl	y if a radio-tagged bat is present in th	ne roost
Bat species: Eptericustus	Sex(M/F):_ ــــــــــــــــــــــــــــــــــــ	/Jv): Repro.:1
Capture date: 30 July 20	// Capture site:	Frequency: 12.235
<b>NOTE:</b> Tallies of bat exits should be made at 2-minute intervals. Use the back lighting of the setting sun to help distinguish bats as silhouettes against the sky as they exit the roost. Please ensure that you are close enough to the roost to observe all exiting bats, but not close enough to influence emergence (do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).		
Arrival time: 2030 Departure time: 2140 Total Bats:		
Emergence Time	Number of Bats	Emergence Aspect
2102	/	NË
2104	45°**	$\sim N c$
2106	13	
the second se	//	

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Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

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2131 - Wenner

2127-

ESI	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777) Page of
	7/25/11_ Biologists: A Kniovski, M. Farme
Project Name: <u>Republic</u>	
	$\frac{1}{R_{14}} = \frac{1}{2} =$
	Longitude: $82^{\circ} 54' 17.5''W$
$\sim$	
Bat Species: <u>F. Foscus</u>	. L. e
Capture Date: //24///	- /
Frequency: 72.580	Roost Name/#: <u>5 80 - 1</u>
ROOST TREE DATA	
Roost tree species: <u>Barn</u>	
	<u>20</u> (meters) Tree height (meters)
	om capture site: <u>6                                    </u>
Tree health:Live	DeadPartial
Observed roost potential:Exfoliatin	ng BarkCracks/crevassesHollowUnknown
Bat vocalizations:Yes	No
Guano on ground/foliage:Yes	No
Is guano fresh (if present)?:Yes	No
Guano volume (if present):	/
Description of surrounding HABIT Dominant Canopy Species (> 40 cm/16" dbl Mot in Farect.	
Estimated dbh range (cm): Lg: Sm: _	
Estimated canopy closure at roost:9	
	SlightNone Slope aspect:
Subcanopy Clutter:Closed	
Distance to nearest water source:	Distance to nearest flight m or km (circle one) corridor: meters
	- deserted usin ima ( upkeep
Check all that apply: Mature Upland Forest Young Upland Forest Mature Lowland Forest Young Lowland Forest Comments:	ionStream/RiverVernal Pool

.

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LINI	Page of
	· · · · · · · · · · · · · · · · · · ·
Project #: 340.001 Date: 17400	Biologists: Cauro (SUL)
Project Name: <u>Rehulu</u> State	: <u>OH</u> County: Simolusky
GPS Unit #: Way	point: <u>340 R14</u>
Latitude: <u>4(° 16', 19°6</u> "N	Longitude: <u>92 ° 59 ' 17.5 "</u> W
Roost Name/#:	
Radio-tagged bat present in tree: Yes N	OUNK- Ty Hat have a
Complete the following information only if a radio-tagged b	at is present in the roost
Bat species: EtvGocg Sex(M/F):	Age(Ad/Jv): PRO Repro.: MR
Capture date: <u>24 x Lyzo</u> ll Capture site:	<u> </u>

Arrival time:  $\frac{2028}{202}$  Departure time:  $\frac{2106}{202}$  Total Bats:  $\frac{23}{2}$ 

Emergence Time	Number o	f Bats	Emergence Aspect		
2036			Wastlet Manthe		
35					
. 10		<u> </u>	Carlos and and		
	American ve Policing end Abban en Abban en				
2/io	anna i fachar anna i fachar an		and a second and the		
	·	·			
52	Second Second	$\langle \rangle$			
54	$\square$				
56	n an				
	A				
2100	<u>s i</u>				
2102	<u>_</u>				

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

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	Property of: Environmental Solutions & Innovations, Inc.
	4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)
	Page of
	ROOST TREE EMERGENCE DATA
Project #: 340.01 Date	Biologists: Lawn Turn
Project Name: Kangebble	State: OM County: Samous Ry
GPS Unit #:7	Waypoint:340 K 14
Latitude: <u>4/ • 16 • 19.6</u> "N	Longitude: <u>82 • 54 · )785</u> "W
Roost Name/#:58	
Radio-tagged bat present in tree: Y	es NoUnR-Tynot loard
Complete the following information only if a ra	adio-tagged bat is present in the roost
Bat species: <u>Ephedicus</u> fogetsse	x(M/F): Age(Ad/Jv): Repro.:///
Capture date: <u>24 Johr201</u> Ca	pture site: 14 Frequency: 12,530

Arrival time: 2032 Departure time: 2/02 Total Bats: 23

Sec. Sec. Sec.

Emergence Time	Number of Bats	Emergence Aspect		
2036	111 (3)	1 energed there wet		
		back into bary.		
	Apple 1 Que	Di side of barn		
1 we I forme		<u>Suitaboure</u>		
<u></u>		<u>. 1002 (</u>		
	<u> </u>			
<u>see een</u>				
5 8				

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

Most circled actions times a Recenterging then Ale Worth are top of havin.

	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)			
IDSI				
RU	OST TREE EMERGENCE DATA			
Project #: 390.01 Date: 224	Augl Biologists: Lawa Tyson			
Project Name: <u>An public</u>	State: H County: State			
GPS Unit #:7	Waypoint: <u>340 R14</u>			
Latitude: <u>41 ° 16 ' 19.6</u> "N	Longitude: <u> </u>			
Roost Name/#:				
Radio-tagged bat present in tree: Yes	No_UNK Tynot lawid			
Complete the following information only if a radio-ta				
Bat species: Ephoyicus (well Sex(M/F	;): Age(Ad/Jv): <u>⊃</u> // Repro.:///∕			
Capture date: 29 5 1/26// Capture				

**NOTE:** Tallies of bat exits should be made at 2-minute intervals. Use the back lighting of the setting sun to help distinguish bats as silhouettes against the sky as they exit the roost. Please ensure that you are close enough to the roost to observe all exiting bats, but not close enough to influence emergence (do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).

Arrival time: 2011 Departure time: 2057 Total Bats: 23

Emergence Time	Number of Bats	Emergence Aspect
2034		- Casostat
36		
999.		
40	and constraints and the second se	
42		
44	<u> </u>	
46		
48		
50	<u> </u>	
÷9.	<u> </u>	
the second se		

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

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	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)
LAN	Page of
	ROOST TREE EMERGENCE DATA
Project #: 340.01 Date:	24/ Biologists: Lawa Tyson
Project Name: Republic	State: OH County: Sandusky
GPS Unit #:7	1010 P 100
Latitude: <u>41 ° 16 ' 19.6 "</u> N	Longitude: <u>82 • 54 · 175</u> "W
Roost Name/#:うるつ	
Radio-tagged bat present in tree: Y	es NoUNX-Tx vol hourd
Complete the following information only if a ra	idio-tagged bat is present in the roost
Bat species: 4tonicy fusces Sex	(M/F):_F Age(Ad/Jv):_5U Repro.:_MK
Capture date: <u>२५ ५८५२०॥</u> Cap	pture site: 14 Frequency: 12.530

Arrival time: 2014 Departure time: 2054 Total Bats: 10

Emergence Time	Number of Bats	Emergence Aspect	
2022			
2032	++++		
2034			
36			
2040	<u></u>		
G en	<u> </u>		
	<.>		
~~.p	<u></u>		
	<u></u>		
50	2		

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)
ESI	Page of ROOST TREE EMERGENCE DATA
	26Aug Biologists: Laura Tyson
Project Name: Republic	State: <u>OH</u> County: <u>Sandusky</u>
GPS Unit #:7	Waypoint:
Latitude: <u>4 ° 16 ° 196</u> "N	Longitude: <u>82 • 54 • 17.5</u> "W
Roost Name/#: 580-1	
Radio-tagged bat present in tree: Y	es NoUnk. Ty hat leard
Complete the following information only if a ra	
Bat species: <u>Efigo</u> Se	x(M/F): Age(Ad/Jv): Repro.://人
Canture date: 24 Suproll Ca	nture site: 14 Frequency: 172.580

Arrival time: 2001 Departure time: 2059 Total Bats: 222

Emergence Time	Number of Bats	Emergence Aspect
2025	·	Came out them back i
	-++ K (C)	
	the second se	Most encod anos
		5 whent of lise in
2036		Blieve (bauing
20.38	<b>1</b> (a.)	
	Strander Strander	
-A.s. 42-	Ç.,	
Joseph (k.) (k)		
3674	(and	
34248	<u>(</u> )	

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

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Page \_\_\_\_ of \_\_\_\_

### **ROOST TREE DATA**

Project #: 346.02 Date: 19 July	Biologists: <u>E.E</u>	Basiger; M. Flynn; A. Gantt
Project Name: Republic - Wind	State: 014 Cour	nty: <u>Senera</u>
GPS Unit #: Waypoint:	Camera #: Pictu	ire #: <u></u>
Latitude: <u>46°09'53, 7</u> N	Longitude: <u>82 ° 51</u> 0	' <u>[],</u> ∕/"₩
Bat Species: Ept. sicus Ascus	Sex(M/F): Age(A	Ad/Jv): <u>TV</u> Repro.: <u>NR</u>
Capture Date: 18 July 2011	Capture Site:	
Frequency: 172, 780	Roost Name/#: 780	Brance and a second sec
ROOST TREE DATA	1.	
	dbh: <u>N/A</u>	
Estimated height from ground to roost:		$M_{A} (meters)$
• • • •	ure site:m or	
Tree health:	Dead	Partial
Observed roost potential:Exfoliating Bark	. /	
Bat vocalizations:Yes	No	Tinside brick building
Guano on ground/foliage: <u>Yes - massive</u>	No	
Is guano fresh (if present)?: Yes	No	
Guano volume (if present):		
DESCRIPTION OF SURROUNDING HABITAT Dominant Canopy Species (> 40 cm/16" dbh) Acoc Sacchanum	Subdominant Canop	oy Species (< 40 cm/16" dbh)
erre and a second state and a	- market a final second s	
	Herefeldetsgenetationenter ver	
Estimated dbh range (cm): Lg: <u>40</u> Sm: <u>40</u>	Estimated dbh rang	e (cm): Lg: Sm:
Estimated canopy closure at roost: <u></u> %		1 (
Slope:SteepModerateSligh		1
Subcanopy Clutter:ClosedMod		
Distance to nearest water source:m or k		e to nearest flight r:meters
Habitat Description: <u>small town main struct</u> . P	) for the cover build	iding sunnounded by other
Check all that apply: buildings and fin	and the second se	
Mature Upland ForestRecently Logged For Young Upland ForestPine Plantation	rest <u>Crop/Pasture La</u> Stream/River	andShrub/scrub Swamp Vernal Pool
Mature Lowland ForestWoodlot/ForestEdge	eEmergent Wetla	andDeepwater Lake/Pond
Young Lowland ForestOld Field Comments:	Forested Swam	p <u>20ther small town</u> build my

	Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)
	Page of
	ROOST TREE EMERGENCE DATA
Project #:34.0 D	ate: 19 July 2011 Biologists: Alexa Gantz
Project Name: Republic	State: <u>OH</u> County: <u>Seneca</u>
GPS Unit #:	Waypoint: N/A
Latitude: <u>4 • 69</u> • 63.7	<u>"N</u> Longitude: <u>60 ° 56 ' 17,4</u> "W
Roost Name/#: 172.780	
Radio-tagged bat present in tre	
	a radio-tagged bat is present in the roost
Bat species: Ephicus Pusicus	Sex(M/F): F Age(Ad/Jv): T Repro.: NR
Capture date: 12-5 ul-11	

<b>Arrival time:</b>	2130	Departure	time:	1200	Total Bats:	14
----------------------	------	-----------	-------	------	-------------	----

Emergence Time	Number of Bats	Emergence Aspect
2130		
2137	22	
2134	<u> </u>	
2136	37	
-7.17.8	48	
2140	0°F	
212	<u>+L</u>	
2144		

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

bats	du	2	De	YS-C.	$\mathcal{O}$

transmitted but left at 2140 hours heading south

	452	Property of: Environmental S 5 Este Avenue. Cincinnati, OH 45	
ESI	ROOST TF		Page of ICE DATA
Project #: <u>340</u>	Date: <u>20 Jour 201</u> 1	Biologists: <u>A\evo</u> t	(0011A
Project Name: <u>leps blue</u>	State: <u>//</u> /	County: <u>Server</u>	λ
GPS Unit #: 151 465670	Waypoint:	N/A	
Latitude: <u>41 • 09 • 53.5</u>	/"N	Longitude: <u>b2 •</u>	56 ' 17, <u>1</u> "W
Roost Name/#: <u>740-</u>	on Col		· ·
Radio-tagged bat present in tr	ee: Yes <u> </u>		
Complete the following information only			
Bat species: Ephisius fixio	Sex(M/F):	Age(Ad/Jv): <u>◯ ∪</u>	Repro.: <u>NR</u>
Capture date: 18-5ul-11	Capture site: 24	Frequenc	y: <u>172, 780</u>
		1.1 the barbell the barbell of the second	حامط مد مبيه ممانده ماد

127.280

NOTE: Tallies of bat exits should be made at 2-minute intervals. Use the back lighting of the setting sun to help distinguish bats as silhouettes against the sky as they exit the roost. Please ensure that you are close enough to the roost to observe all exiting bats, but not close enough to influence emergence (do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).

Arrival time: <u>200</u> Departure time: <u>200</u> Total Bats: <u>93</u>

Emergence Time	Number of Bats	Emergence Aspect
2110	J	
2112		
3114		
211Le		
2118	<u>;)</u>	
2120	· -2.j	
2122	#1	
2124	2	
21210	,	
2128		
2120	63	·
2132	84	
2134	91	

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly? Ult - 2130, neaded

transmithed bat

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	45	Property of: En 25 Este Avenue. Cinc	vironmental Solutions innati, OH 45232 (Ph	
ESI	ROOST T	REE EME		e of DATA
Project #: <u>340.01</u>	Date: 21 Jul 11	Biologists:	M. Flynn	
Project Name: <u>Republic</u>	State: 🤌	H County:	Seneca	
GPS Unit #: <u>651 465676</u>	Waypoint	016		
Latitude: <u>41 ° 09 '63,7</u>	_"N	Longitude:	<u>42 ° 56 :</u>	₩" <u>, 17,4</u>
Roost Name/#: <u>172.780-/</u>		,		
Radio-tagged bat present in tre	e: Yes No			
Complete the following information only	if a radio-tagged bat is p	resent in the roost	I	
Bat species: <u>E fusus</u>	Sex(M/F):	Age(Ad/Jv):	<u>∽√</u> Repi	′o.: <u>NR</u>
Capture date: 16-5w-11				
<b>NOTE:</b> Tallies of bat exits should be r				

distinguish bats as silhouettes against the sky as they exit the roost. Please ensure that you are close enough to the roost to observe all exiting bats, but not close enough to influence emergence (do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).

Arrival time: <u>9:15</u> Depa	arture time: <u>2200</u> Total Bats:	= 190 - 2'25
Emergence Time	Number of Bats	Emergence Aspect
9:16	$(1) \qquad (a)$	
01:18	HH B	
9 20	HTH+++110	
722	14+ 14+ HHAMM	(C
924	HIT HICHHIMAN	)
926	HHT HHT HTT MO	
PER	HATHATHAT HAT GOL	
9 36	HIT HIT HIT HIT (1) (20)	
34	HH-HH- MAR(19)	
36	LAT HAALO	
36		
10	62	

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

Transmittered Bats ding west a00 PINIVANIA

Sec.			
	4525	Property of: Environmenta 5 Este Avenue. Cincinnati, OH	I Solutions & Innovations, Inc. 45232 (Phone: 513-451-1777)
			Page of
	ROOST TR	REE EMERGE	•
	Date: 22 Jul 2011		$\sim$
Project Name: Republic	State: 011	County: Serve	C Drug
GPS Unit #: <u>851 945670</u>	Waypoint:_	J 616	
Latitude: <u>41 ° 89 ' 53.7</u>		Longitude: <u>40</u> °	<u>56 '17,4 "</u> W
Roost Name/#: 172.780	NAN /		
Radio-tagged bat present in tre	e: Yes No	-	
Complete the following information only			
Bat species: Efuscus	Sex(M/F):	Age(Ad/Jv): <u> </u>	Repro.:
Capture date: 15 Jul 11	Capture site: <u>Ə</u> └	Frequer	ncy: <u>172.780</u>

**NOTE:** Tallies of bat exits should be made at 2-minute intervals. Use the back lighting of the setting sun to help distinguish bats as silhouettes against the sky as they exit the roost. Please ensure that you are close enough to the roost to observe all exiting bats, but not close enough to influence emergence (do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).

### Arrival time: <u>2100</u> Departure time: <u>2200</u> Total Bats: <u>218</u>

Emergence Time	Number of Bats	Emergence Aspect
9:14	(3)	41 F
9:16	HHT 1 CO	
9:18	H++++++++++++++++++++++++(6)	
9.20		H-H-1 (3)
9:22		HHHH (39)
9:24	HAT HE HE HE	T+HT 11 (33)
Q 2 b	HAT HIT ATT LITE LIT	
928		
930		(18)
932		
934	441 05	
936	3	
938		

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

	4525		rironmental Solutions & Inno nnati, OH 45232 (Phone: 51	
<u>IISI</u>	ROOST TR		Page RGENCE DA	
Project #:	Date: <u>24 Jul 11</u>	Biologists:_	M. Flynn	
Project Name: <u>Republic</u>	State: <u>2H</u>	County:_	Sereca	
GPS Unit #: <u>51 465671</u>	Waypoint:_	016		
Latitude: <u>41 ° 09</u> ' 63.7	"N	Longitude:	22 .56 17,	<u> </u>
Roost Name/#:				
Radio-tagged bat present in tre	e: Yes_/_ No	-		
Complete the following information only	if a radio-tagged bat is pre	sent in the roost		
Bat species: <u>E. Aus cus</u>	Sex(M/F): /	Age(Ad/Jv):	<u>∑√_</u> Repro.: <u></u> ∖	JR
Capture date: 14-5ul-11				

#### Arrival time: 3100 Departure time: 2360 Total Bats: 150

Emergence Time	Number of Bats	Emergence Aspect
2100	HT III (3)	
alba		
2104	1 months and a second sec	
2106	11/ (3)	
2109		
2110	414+++++ (11)	
2012	LH+ H+ (I)	
a14	111 411 +1++++++1/2	$\hat{\mathcal{D}}$
	HH++++++1 (6)	
2118	444 + 444 + 101 + (19)	
2120	H++ 1111 ()	
2122	HH+H+ 111 (3)	
2124	HT HT HT (2)	

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

Transmillered but did not emerge stranging barry product

Property of: Environmental Solutions & Innovations, Inc. 4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)

	4525 Este Avenue. Cincinnati, OH 45232 (Phone: 513-451-1777)
<b>ESI</b> RO	OST TREE DATA Page of
Project #: <u>340</u> Date	: 25 Jul 1 Biologists: J, Basigar
Project Name: <u>Republic</u>	State: 0 + County: Seneral
GPS Unit #:ౖౖ≲ు ీ́ Waypoint:	Camera #: <u>Can 67</u> / Picture #: <u>899-90/</u>
Latitude: <u>// 。 <u>0</u> </u>	Longitude: <u>162_° 57_' 548</u> "W
Bat Species: <u>&amp; , Juscus</u>	Sex(M/F): Age(Ad/Jv):_ <u>↓</u> ∨ Repro.: <u>N &amp;</u>
Capture Date: <u>24 Ju / 11</u>	Capture Site: <u>3</u>
Frequency: 172,500	Roost Name/#: <u>500−</u>
ROOST TREE DATA	
Roost tree species: <u>Bar</u>	dbh: cm
Estimated height from ground to roost:_	(meters) Tree_height (meters)
Exfoliating bark (%): Distanc	e from capture site:7m or km (circle one)
Tree-health:Live	DeadPartial
Observed roost-potential:Exfol	liating BarkCracks/crevassesHollowUnknown
Bat vocalizations:Yes	<u> </u>
Guano on ground/foliage:	No
Is guano fresh (if present)?: <u>/</u> Yes	No
Guano volume (if present):	<u> </u>
DESCRIPTION OF SURROUNDING HA	· · · · · · · · · · · · · · · · · · ·
Dominant Canopy Species (> 40 cm/16'	' dbh) Subdominant Canopy Species (< 40 cm/16" dbh)
Estimated dbh range (cm): Lg: Si	m: Estimated dbh range (cm): Lg: Sm:
Estimated canopy closure at roost: $\_ \bigcirc$	%
Slope:SteepModerate	SlightNone Slope aspect:
Subcanopy Clutter:Closed	ModerateOpen
	Distance to nearest flight
Distance to nearest water source: 50	mor km (circle one) corridor: <u>O</u> meters
Habitat Description:	
Young Upland ForestPine Plan	/ForestEdgeEmergent WetlandDeepwater Lake/Pond

.



			Page of
R	DOST TR	EE EMERGE	NCE DATA
Project #: <u>340,01</u> Date: <u>29</u>	July 1	Biologists:	ige/
Project Name: <u>Republic</u>	State: <u>DH</u>	_ County: <u>Sene C</u>	۶ ۱
GPS Unit #: $\underline{E577}$	Waypoint:_	NA	
Latitude: <u>41_°_09_'40,3_</u> "N		Longitude: <u>12</u>	<u>57 , 51.7</u> "W
Roost Name/#:_ <i>500- </i>			
Radio-tagged bat present in tree: Yes_	_)/_ No		
Complete the following information only if a radio-	tagged bat is pre	sent in the roost	171
Bat species: Eptesicus fuscus Sex(M	I/F): <u> </u>	Age(Ad/Jv): <u> </u> √√	Repro.:_// //
Complete the following information only if a radio- Bat species: <u>Eptesticus fuscus</u> Sex(M Capture date: <u>2976192011</u> Captu	re site: <u>30</u>	Freque	ncy: <u>/72,500</u>
NOTE: Tallies of bat exits should be made at 2-	-minute intervals	. Use the back lighting	of the setting sun to help

distinguish bats as silhouettes against the sky as they exit the roost. Please ensure that you are close enough to the roost to observe all exiting bats, but not close enough to influence emergence (do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights).

Arrival time:	<u>2045</u> De	parture time:	2200	<b>Total Bats:</b>	
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Emergence Time	Number of Bats	Emergence Aspect
2110	))	
2/12	0	
2114	11/	
2/16	0	
2122	JUH	
2124 2126		
2126	<u> </u>	

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly? ·····

Bat 500 emerged 2122. FRW SE

		rty of: Environmental Solutions & Innovations, Inc. nue. Cincinnati, OH 45232 (Phone: 513-451-1777)
ESI	ROOST TREE E	Page of EMERGENCE DATA
Project #: 340.01	Date: 8 A Uni Biolog	gists: Laura Viscon
Project Name: Republi	State: Order Co	unty: Saraca
GPS Unit #:	Waypoint:	N/A
Latitude: <u>41 • 09 • 38.</u>	"N Longi	tude: <u>82 ° 57 ' 52.6 "</u> W
Roost Name/#: <u> </u>		
Radio-tagged bat present in t	ree: Yes No	
Complete the following information on	ly if a radio-tagged bat is present in th	ne roost
Bat species: <u>Eplaices fo</u> Capture date: <u>24 76 1920 1</u>	W Sex(M/F): Age(Ad	/Jv): <u> </u>
Capture date: $24 \frac{1}{52} \frac{1}{7200}$	Capture site: <u>3</u>	Frequency:
distinguish bats as silhouettes agains the roost to observe all exiting bats, if the roost and do not make unnecessa	t the sky as they exit the roost. Plea but not close enough to influence en	e back lighting of the setting sun to help use ensure that you are close enough to hergence (do not stand directly beneath
	tura tima. 🔿 🕼 Tatal Ba	
Emergence Time	ture time: <u>219</u> Total Ba Number of Bats	
		ts:
		ts:
		ts:
		ts: Emergence Aspect
		ts: Emergence Aspect
Emergence Time		ts: Emergence Aspect

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

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ntitude: <u>4/° 09, 40</u> post Name/#: <u>500</u>		ude: <u>82 • 57 , 5/68</u> "W
mplete the following information on	ly if a radio-tagged bat is present in the	and shir head about us a roost
tenning: Faterill JG Li	SLOSANMEN / AnglAd	Why 511 Bannas NH
it species. <u>Carele Carel</u>	Je Seviuu ) vaeluuu	JV): <u>///</u> Repro.: <u>////////////////////////////////////</u>
apture date: <u>14</u> <u>50.14 2011</u> DTE: Tallies of bat exits should be	Capture site: <u>30</u> e made at 2-minute intervals. Use the	Jv): <u>50</u> Repro.: <u>MA</u> Frequency: <u>10,366</u> back lighting of the setting sun to help
pture date: <u><u><u></u><u></u><u><u></u><u><u></u><u><u></u><u><u></u><u><u></u><u></u><u><u></u><u><u></u><u></u><u></u><u></u><u></u><u></u></u></u></u></u></u></u></u></u></u>	Capture site: e made at 2-minute intervals. Use the t the sky as they exit the roost. Pleas but not close enough to influence em ry noise and/or conversation, and mini ture time: Total Bat	Frequency:
pture date: <u><u><u></u><u></u><u><u></u><u><u></u><u><u></u><u><u></u><u><u></u><u></u><u></u><u><u></u><u></u><u></u><u></u><u></u><u><u></u><u></u></u></u></u></u></u></u></u></u></u>	Capture site: <u>So</u> e made at 2-minute intervals. Use the t the sky as they exit the roost. Pleas but not close enough to influence em ry noise and/or conversation, and mini	Frequency:
<b>DTE:</b> Tallies of bat exits should be tinguish bats as silhouettes against roost to observe all exiting bats, I roost and do not make unnecessarival time: <u>2031</u> Depar	Capture site: e made at 2-minute intervals. Use the t the sky as they exit the roost. Pleas but not close enough to influence em ry noise and/or conversation, and mini ture time: Total Bat	Frequency:
apture date: <u>29</u> <u>why 2011</u> DTE: Tallies of bat exits should be stinguish bats as silhouettes against e roost to observe all exiting bats, h e roost and do not make unnecessar rrival time: <u>2031</u> Depar	Capture site: e made at 2-minute intervals. Use the t the sky as they exit the roost. Pleas but not close enough to influence em ry noise and/or conversation, and mini ture time: Total Bat	Frequency:
apture date: <u>29</u> July 2011 OTE: Tallies of bat exits should be stinguish bats as silhouettes against e roost to observe all exiting bats, I e roost and do not make unnecessar rrival time: <u>2031</u> Depar	Capture site: e made at 2-minute intervals. Use the t the sky as they exit the roost. Pleas but not close enough to influence em ry noise and/or conversation, and mini ture time: Total Bat	Frequency:
Capture date: <u>4</u> July 2011 OTE: Tallies of bat exits should be istinguish bats as silhouettes against ne roost to observe all exiting bats, I ne roost and do not make unnecessar arrival time: <u>2031</u> Depar	Capture site: e made at 2-minute intervals. Use the t the sky as they exit the roost. Pleas but not close enough to influence em ry noise and/or conversation, and mini ture time: Total Bat	Frequency:
Capture date: <u>4</u> July 2011 OTE: Tallies of bat exits should be istinguish bats as silhouettes against ne roost to observe all exiting bats, I ne roost and do not make unnecessar arrival time: <u>2031</u> Depar	Capture site: e made at 2-minute intervals. Use the t the sky as they exit the roost. Pleas but not close enough to influence em ry noise and/or conversation, and mini ture time: Total Bat	Frequency:

- ----

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly?

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ESI		
LJ	ROUSTIR	EE EMERGENCE DATA
Project #:340.01	Date: //Acq.//	Biologists: Lawra Tyson
Project Name: <u>Republic</u>	State: <u>◯ ⊬</u>	_ County:
GPS Unit #:	Waypoint:_	
Latitude: <u>41 ° 09 ' 40.3</u>	"N	Longitude: <u>82 • 57 • 51 • 8</u> "W
Roost Name/#:		
Radio-tagged bat present in tr	ee: Yes No	Try not liveris taking
Complete the following information on	-	
Bat species: E.fuscus	Sex(M/F): A	ge(Ad/Jv): <u> </u>
Capture date: Z4July 1	Capture site: 30	<u> Frequency: 2.500</u>

Arrival time: 2032 Departure time: 218 Total Bats: \_\_\_\_

Emergence Time	Number of Bats	Emergence Aspect
2050		W. Jacille door
2052	2	as Kan Ann
20 54	3	
3.054	e la companya de la c	
2058	A	
2100	<b>W</b>	
02	0	
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ole -	$\langle \rangle$	
0X	<u>ے</u>	
1		
1 2	$\bigcirc$	
/ Sect		

Describe emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. What time did the transmittered bat(s) emerge? What direction did the transmittered bat fly? Ty not heard toda, (batter dead), all build form

#### APPENDIX D PHOTOGRAPHS





Site 2





Site 4



Site 10



Site 12



Site 14



Site 23



Site 26



Site 30



Site 31



Big brown bat (Eptesicus fuscus)



Northern bat (Myotis septentrionalis)



Eastern red bat (Lasirius borealis)



Little brown bat (Myotis lucifugus)



Hoary bat (Lasiurus cinereus)



Tri-colored bat (Perimyotis subflavus)



Evening bat (Nycticeius humeralis)



Indiana bat (Myotis sodalis)



Indiana bat roost 218-1



Indiana bat roost 218-2



Indiana bat roost 218-3



Indiana bat roost 218-4



Indiana bat roost 218-5



Indiana bat roost 218-6



Big brown bat roost 740-1



Big brown bat roost 780-1



Big brown bat roost 239-1



Big brown bat roost 118-1



Big brown bat roost 500-1



Big brown bat roost 285-1



Big brown bat roost 580-1



Bat 950



Bat 740



Bat 122



Bat 118



Bat 225



Bat 239



Bat 218



Bat Acoustic Monitoring Survey Report - 2011

# Republic Wind Farm, Seneca County, Ohio



Prepared for:

Republic Wind, LLC 300 South Wacker Drive, Suite 1500 Chicago, Illinois 60606

Prepared by:

Tetra Tech, Inc. 451 Presumpscot St. Portland, Maine 04103

December 2011

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Table 3.2. Summary of total number of call sequences recorded per species – Republic Wind 2011.	Farm,

#### 1.0 INTRODUCTION

#### 1.1 Project Overview

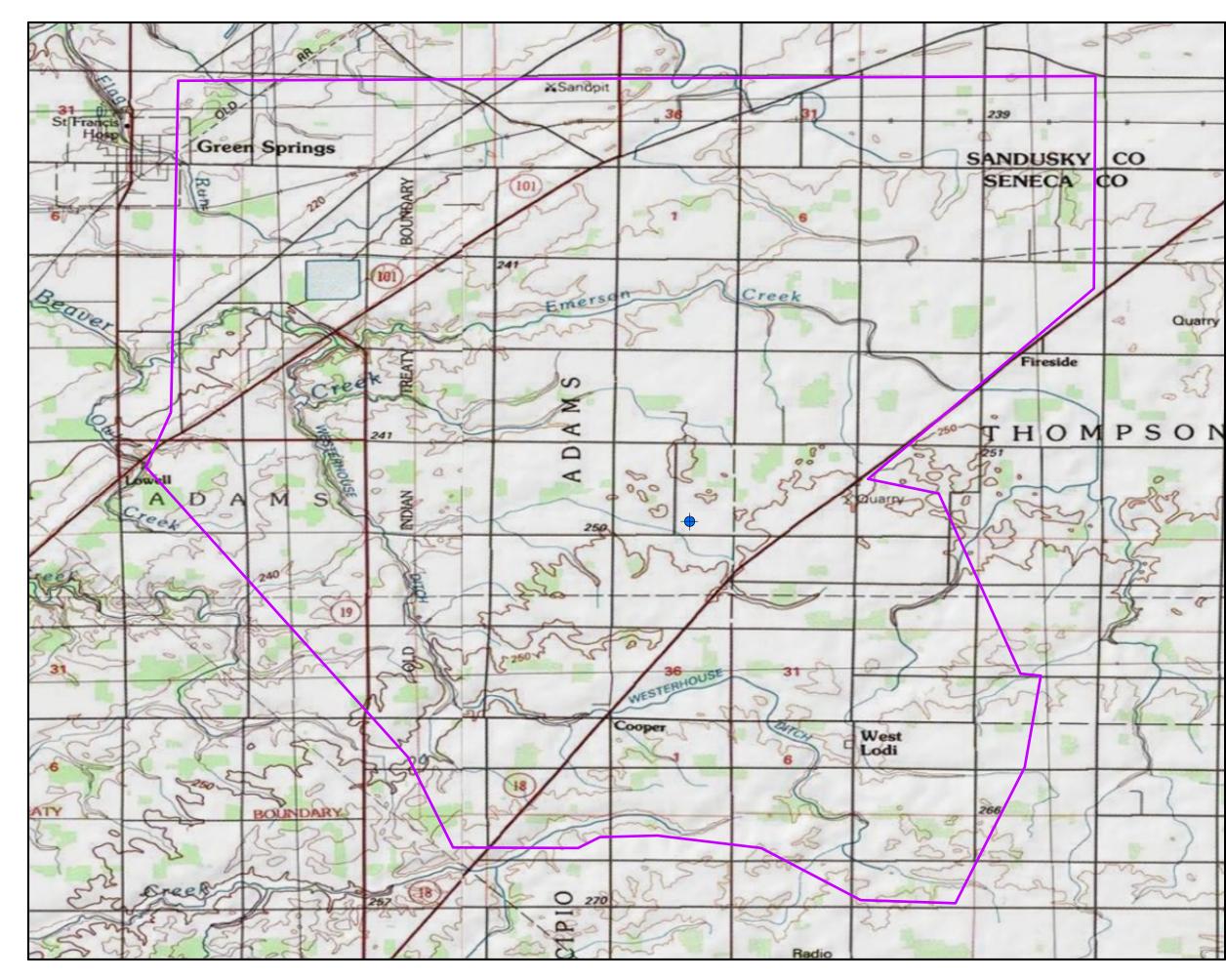
Republic Wind,LLC proposes to develop the Republic Wind Farm (Project) near Belleview, Ohio (Figure 1-1). The Project site is located in Seneca and Sandusky County in north central Ohio. Land use in the proposed Project area comprises agricultural fields interspersed with forested riparian habitat that follows streams and storm water drainage. This report presents baseline (pre-construction) bat acoustic monitoring data collected during the spring, summer, and fall 2011 migration season at the Project's meteorological tower (met tower) (Figure 1.1).

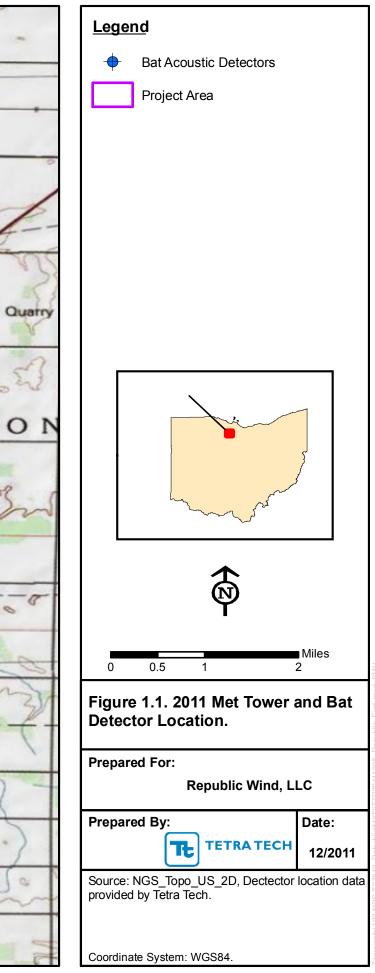
#### 1.2 Goals and Objectives

The goal of the bat acoustic monitoring survey was to assess bat phenology within the Project area, for an extended period, between March 16 and November 16, 2011. The objectives of the bat survey were to:

- 1) identify the peak activity periods for bats;
- 2) determine the bat species composition in the Project area (near the bat detectors); and,
- 3) determine an index of bat activity at different heights above ground level.

Figure 1.1. Republic Bat Acoustic Monitoring Sites – 2011.





#### 2.0 METHODS

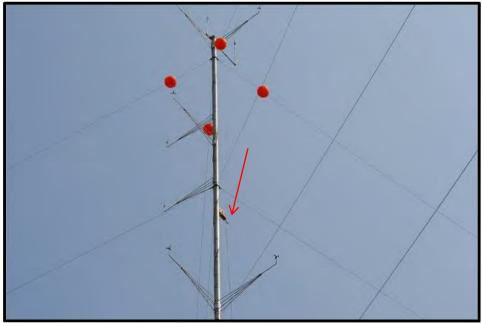
#### 2.1 Data Collection

Tetra Tech conducted bat acoustic surveys at the Project area in the spring, summer, and fall of 2011. The surveys conformed to the ODNR-On-shore Bird and Bat Pre-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio (May 2004).

Bat activity was monitored using ultrasonic acoustic recorders (Anabat SD-2, Titley Scientific, Inc.) at the Project's met tower. The area around the met tower was an agricultural field, that was used to grow corn. The nearest forested area was approximately 670 meters northeast of the met tower. This section presents the cumulative results of 245 nights of bat activity monitoring during the spring migration, summer residency period, and fall migration in 2011.

Two bat acoustic detectors were deployed at the met tower. The two detectors were suspended from the tower on March 16, 2011, at heights of 45 meters (m) and 5 m above ground level; these detectors will be referred to as the 'High' and 'Low' detectors, respectively (Figure 2.1 and 2.2). Each of the two detectors remained in the same location throughout the survey period. To ensure that the greatest period of bat activity was surveyed each night, detectors were programmed to begin recording 30 minutes before sunset and stop recording 30 minutes after sunrise. Each detector was calibrated to detect a 40 kHz tone at a distance of 20 m using a Bat Chirp (Tony Messina, Nevada Bat Technology). Acoustic monitoring at the met tower was continuous throughout the survey period.

Each detector station consisted of an Anabat SD-2 bat acoustic detector powered by a 10-watt solar panel and a 12-volt battery encased in a waterproof housing (Figure 2.1 and 2.2). A pre-amped microphone cable, pre-amped microphone, and bracket were used to suspend the Anabat microphone from the tower. A plastic deflector shield angled at 45 degrees below the microphone facilitated recording of the airspace above and adjacent to the detector. Each detector was manually checked by trained technicians approximately every 2 weeks during the survey period.



**Figure 2.1.** Photograph of the High detector suspended from the met tower guy wire array – Republic Wind Farm, 2011. The red arrow indicates the detector location.



**Figure 2.2.** Photograph of the Low detector suspended from a specialized met tower pulley system – Republic Wind Farm, 2011. The red arrow indicates the detector location.

#### 2.2 Data Analysis

Potential bat call files were extracted from data files using CFCread<sup>®</sup> software (Titley Electornics, Inc.). CFCread<sup>®</sup> software screens all data recorded by the bat detector and extracts call files using a filter. The default settings for the CFCread<sup>®</sup> software were used during the file extraction process to ensure comparability among datasets. These settings include a maximum time between calls (TBC) of 5 seconds, a minimum pulse fragment line length of 5 milliseconds, and a smoothing factor of 50. The smoothing factor refers to the degree that adjacent data points are averaged. The higher the smoothing factor, the less restrictive the filter, resulting in more noise files and poor quality call sequences retained within the dataset. A call is defined as a single pulse of sound produced by a bat. A call sequence is defined as a combination of two or more pulses recorded in a single call file. Call sequences with less than 2 pulses were not analyzed.

A qualitative visual comparison was made between recorded bat call sequences and established reference libraries of calls. This technique allowed for relatively accurate identification of bat species (O'Farrell et al. 1999; O'Farrell and Gannon 1999). All call sequences were also run through a series of conservative filters based on call sequence characteristics outlined in Szweczak et al. (2008) and from known species call sequences (hand released and zip-line individuals) from a regional call library. A call sequence was considered of suitable quality and duration to be included in data analysis if the individual

call pulse(s) exhibited the full spectrum of frequency modulation produced by a bat (i.e., consisting of sharp, distinct lines) with a minimum of two pulses.

In addition to the qualitative visual analysis, all bat calls recorded during the monitoring period were processed using an Indiana bat specific call filter. Call sequences can be difficult to definitively classify due to overlap in call pulse characteristics across species. Species such as hoary bat (*Lasiurus cinereus*) emit calls that are distinct in slope, duration, characteristic frequency, and frequency range (i.e., parameterizations). However, for other species, particularly those of the Myotis genus, it is difficult to accurately differentiate among species based on call sequence characteristics due to the similarities in call parameters. Nevertheless, it is often possible to make accurate classification inferences based on good quality calls of species including Indiana bat, little brown bat (*Myotis lucifugus*), and northern long-eared bat (*Myotis septentrionalis*). Call sequences of eastern red bat (*Lasiurus borealis*) and tri-colored bat (*Perimyotis subflavus*) are typically unique but occasionally appear similar to each other or Myotis species, especially if the recording is of poor quality. Classification is often complicated by the presence of static or incomplete call pulses within a recording. Fragments and poor quality calls are prevalent in recordings from passive detectors monitoring for a long duration.

Relative abundance, or the magnitude of each species' contribution to spatial and temporal use, was determined by calculating an Index of Activity (IA) modified from Miller (2001). The method is based on the presence/absence of a species call sequence within one-minute time increments. Thus, IA was the sum of minute-increments with a species presence divided by the unit effort (IA = # minutes / detector-nights \* 100). The IA calculations allows for samples with different levels of effort (i.e., different total number of detector-nights) to be accurately compared, thereby reducing the potential bias associated with differences in study effort. IA calculations follow those employed by Miller (2001) and O'Farrell and Shanahan (2006).

## 3.0 RESULTS

The 2011 bat acoustic monitoring survey started on March 16 and ended on November 16, 2011 (Table 2.1). During the 245-night survey period detectors operated for 490 detector-nights (number of detectors multiplied by the number of nights that detectors were operational). A total of 534 bat call sequences were recorded within 531 one-minute intervals of bat activity (number of minutes with bat call sequences present) yielding an overall IA of 108.4 (Table 3.1).

The highest IA rate (# of one minute intervals of bat activity/detector-nights \* 100) was recorded by the Low detector (IA = 197.1). The smallest IA rate (19.6) was recorded by the High Detector, which detected 50 call sequences within 48 minutes of activity (Table 3.1).

Period of Detector Operation		Detector- Nights	Number of Minutes with Bat Activity	Total Number of Call Sequences Recorded	Overall Index of Activity	
High (45 m)	Mar. 16 - Nov. 16	245	48	50	19.6	
Low (10 m)	Mar. 16 - Nov. 16	245	483	484	197.1	
	Total	490	531	534	108.4	

**Table 3.1.** Summary results of acoustic monitoring survey effort by detector – Republic Wind Farm,2011.

Bat call sequences were identified to the lowest possible taxonomic level (Table 3.2). Sixty-six (66) percent of recorded calls were classified to species (n = 354). Calls were then combined into five categories based on similarities in call sequence structure: Low Frequency Species, Middle Frequency Species, High Frequency Non-Myotis Species, High Frequency Myotis Species, and Unknown (Table 3.2). Some call sequences did not meet the parameters required for species level identification (n = 132) and were classified based on the frequency modulation exhibited in the call sequence. Some of these calls (n = 4) were classified as Unknown because they consisted of feeding buzzes that could not be accurately attributed to any single species or guild, and therefore could not be labeled as either a middle or high frequency calls [it is likely that most of these were evening bat (*Nycticeius humeralis*) calls].

Seven species were identified from the call sequences recorded during the 2011 acoustic monitoring effort. A total of 248 calls (46.4 percent of all calls recorded), were attributed to migratory bats including the hoary bat, silver-haired bat, eastern red bat, and evening bat. The greatest number (n = 125) of recorded call sequences attributable to a single species was from silver-haired bat. Silver-haired bat produce call sequences with relatively unique characteristics that can generally be accurately identified to species level, and tend to be lower in frequency than other species, and therefore do not attenuate as quickly in the atmosphere. A number of hoary bat (n = 54), eastern red-bat (n = 48), and evening bat (n = 21) were also recorded.

IA values were calculated for each species by detector. The greatest IA was for silver-haired bat at the low detector (IA = 43.7). For each of the species recorded IA values were greatest at the Low detector (Figure 2.4). Hoary bat was the second most active species overall (as measured by IA), and was the most active species at the High detector (IA = 9.4) (Figure 3.1).

No calls of federally listed bat species were positively identified during the survey. Indiana bats are known to occur in the vicinity of the Project area, and species classifications for many Myotis calls recorded during the 2011 surveys (n = 44) was not feasible; therefore it is possible that Indiana bats were recorded but not identified in the dataset. Although none of the 44 Myotis calls identified during the passive acoustic monitoring surveys at the met tower exhibited characteristics typical of Indiana bat calls. In addition, the overall low levels of Myotis species activity recorded may indicate that the type of habitat around the met tower is not frequented by Myotis. The distance from wooded areas (approximately 670 m) may make the likelihood of Indiana bat occurrence lower near the met tower. Avoidance of large open areas by Indiana bat, especially agricultural land with little forested habitat,, has been documented (Murray and Kurta 2004).

Bat activity varied throughout the monitoring period (Figures 3.2). Overall, there was no bat activity recorded before April 10, 2011. Bat activity increased slightly around April 20 but declined again in mid-May. Activity began to increase in early August until peak activity was recorded on August 13. Activity declined after August, although bats were active throughout September, and until October 12, 2011.

Group	Characteristic Frequencies*	Species	Total Call Sequences	
		Hoary bat	54	
Low Frequency	12 kHz–24 kHz	Unknown low frequency call seq.	6	
		Big brown bat	57	
		Silver-haired bat	125	
Middle Frequency	24 kHz–38 kHz	Evening bat	21	
		Unknown middle frequency call seq.	62	
High Frequency (Non-myotis		Tri-colored bat	41	
species)	44–45 kHz	Eastern red bat	48	
		Little brown myotis	8	
High Frequency (Myotis species)	46–52 kHz	Unknown <i>Myoti</i> s species	44	
		Unknown high frequency call seq.	64	
Unk	nown	Buzz	4	

 Table 3.2.
 Summary of total number of call sequences recorded per species – Republic Wind Farm, 2011.

\* Characteristic frequency (Fc) is generally defined as the frequency of the call pulse at the lowest slope, or the lowest frequency of the consistent frequency modulation sweeps. Fc represents the single most useful parameter for species identification.

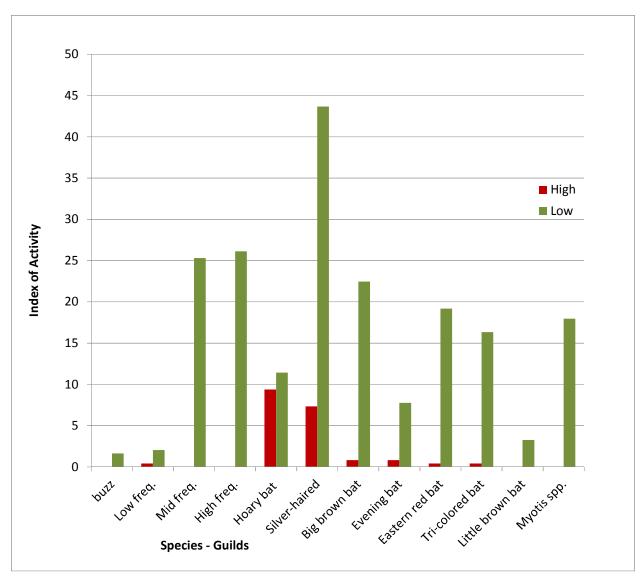
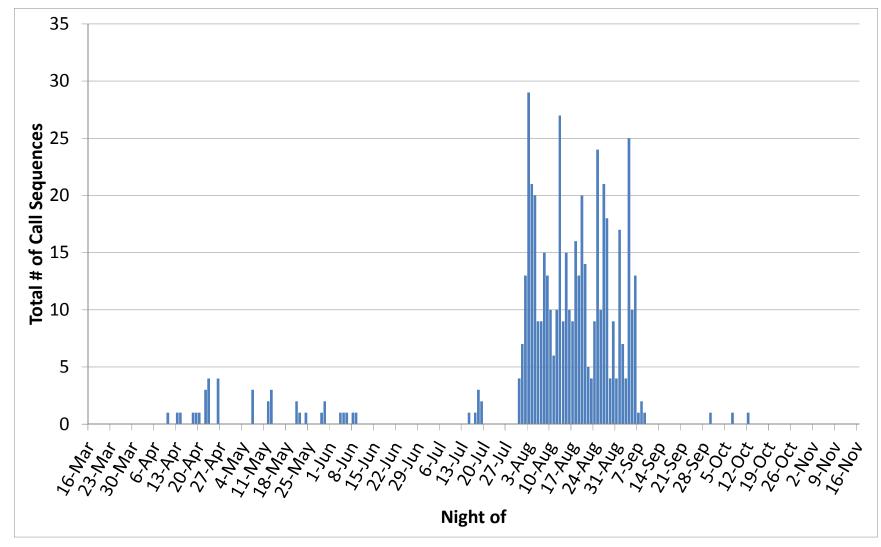
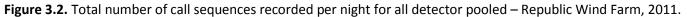
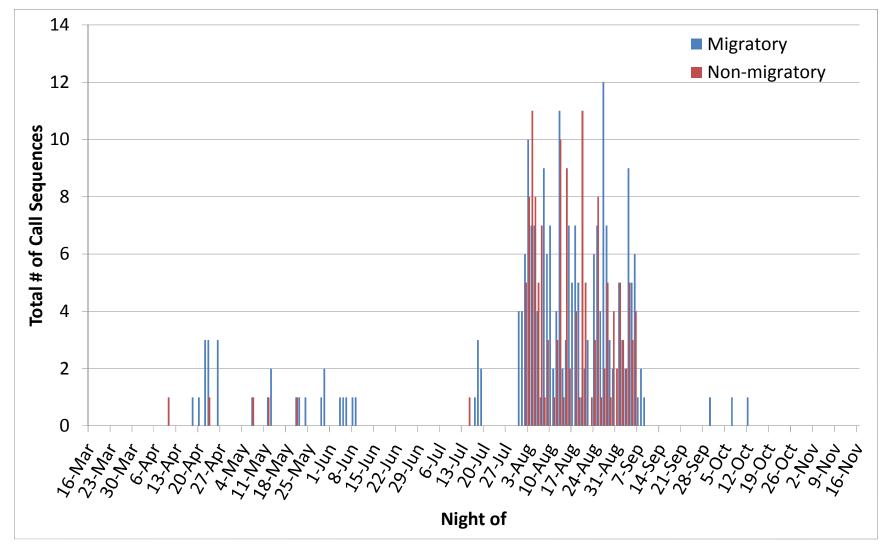


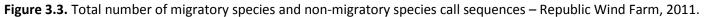
Figure 3.1. Index of Activity of migratory bat species by detector – Republic Wind Farm, 2011.





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#### 4.0 DISCUSSION

The migratory species, hoary bat, silver-haired bat, eastern red bat, as well as evening bat, were positively identified from recordings made during the 2011 survey period. Overall, there was more migratory species activity than non-migratory species activity recorded in the Project area. These results are consistent with recent research demonstrating that tree and tree-crevasse roosting migratory bats are the predominant species found during post-construction mortality studies at operational wind farms in North America (Arnett et al. 2008). Results from these mortality studies show the three bat species most commonly encountered during ground searches were long-distance (Lasiurine) migratory bats: hoary bat, silver-haired bat, and eastern red bat (Kunz et. al 2007, Arnett et al. 2008).

Non-migratory species recorded during the 2011 surveys (big brown bat, tri-colored bat, and Myotis species) were only slightly more active during August and September than were migratory species recorded (hoary bat, silver-haired bat, eastern red bat, and evening bat). Migratory species were active in August and September, as well as in the spring and fall (Figure 3.3). Overall activity of non-migratory and migratory species was highest during August and September, which is considered the "swarming period", when bats group together prior to hibernation and/or migration, and often mate (Parsons et al. 2003). The occurrence of migratory bat species during the summer demonstrates that there were likely some long-distance migratory tree and tree crevasse roosting bats spending the summer residency period at the Project area. There also appeared to be few long-distance migrants moving through the Project area during the spring and fall, as evidenced by the low number of calls recorded during those periods.

IA values for all bat species were lowest at the High detector. This indicates that bat activity nearest the rotor swept zone (RSZ) of typical modern wind energy turbines was low compared to bat activity levels below the RSZ and nearest ground level. Migratory species (hoary bat, silver-haired bat, eastern red bat, and evening bat) we recorded primarily just above ground level by the Low detectors. Myotis species exhibited low levels of activity, as measured by IA, and were not recorded at the High detector.

The ratio between the total number of call sequences recorded at each detector, and the total number of one-minute intervals with bat activity may be used as an indicator of the "concentration" of bat activity throughout time. For example, the High detector recorded 50 call sequences over the course of 48 minutes of activity. This near one to one ratio (0.96) is a function of low concentrations of bat activity at the High detector; activity events were spread out over time and rarely were two calls recorded in the same one-minute interval. Similarly the ratio between call sequences and minutes of activity at the Low detector was also slightly less than one to one (0.99). Based on these observations it seems that bat activity at the met tower was largely episodic in nature, and that extended periods of constant activity did not occur. Instead, it appears that periods of diffused and inconsistent activity occurred at both detectors. These patterns of activity are not consistent with what would be expected if the met tower location provided significant foraging habitat, or was located within a migration or transit corridor. If the area was important for foraging or migration we would expect to see high numbers of bat calls recorded during limited temporal periods. For example Racey and Swift (1985) demonstrated that foraging bats may trap-line areas where food resources are concentrated, returning to the same foraging areas nightly. High numbers of calls recorded over a short period of monitoring would be more indicative of high use by bats. Bat activity at an important migration corridor might also be more concentrated, with high numbers of passes occurring in rapid succession, as would expected if multiple individuals moved through the area during migration of transit between foraging sites.

Patterns of activity in the Project area do not suggest the presence of a large bat migration corridor in the vicinity of the met tower. If a substantial migration corridor did exist over the Project area, the data should show a higher ratio of minutes of bat activity to detector nights. The sporadic and diffused occurrence of long-distance migratory species in the recording indicates that few individuals use the open area near the met tower. There did not appear to be an episode of dramatic fluctuation in recorded activity that could be definitively attributed to large-scale migration, although an observable increase in activity during August and September was apparent; however this increase was minimal and was not indicative of a large number of bats moving through the Project area (Cryan and Veilleux 2007).

Weather conditions, including mean nightly temperature and wind speed, probably contributed to the patterns of activity recorded by the acoustic detector sets. The increase in bat call sequences recorded in August may have resulted from the following: (1) increased foraging activity near the detectors due to a rise in mean nightly temperatures (Racey and Swift 1985, O'Donnell 2000, Kusch et al. 2004); (2) increases in food resource concentrations near the detectors, (3) an episode of bats leaving a roost and transiting to an established area of concentrated food resource passing the detectors *en route*; or, (4) bat swarming near the met tower. The increase in activity of hoary bat, silver-haired bat, and eastern red bat at the met tower detectors during September was almost certainly attributable to migration and/or pre-migration staging (Cryan and Veilleux 2007).

There is inherent difficulty in attempting to interpret the number of recorded call sequences as an indication of activity levels; however, detection rates, recorded minutes of activity and IA values do provide a relative measure of bat activity near sampling locations. The limited maximum range of a single Anabat detector (approximately 30 m [100 ft]) makes the characterization of landscape-scale movements, such as migration, difficult to assess. However, a comparative assessment of the results from detectors arrayed within a tower at different elevations can facilitate the characterization of spatial distribution and phenology of bat activity.

The total number of bat call sequences and minutes of activity recorded each night by a given detector may or may not reflect the absolute level of bat activity present in the Project area, although some studies have suggested that there may be a relationship between the relative numbers of calls recorded and absolute bat activity levels (Gorresen et al. 2008). The bias in passive acoustic surveys of this type stems from the unknowns that are intrinsic to automated monitoring. For example, a single foraging individual may produce a large number of call sequences that are within the range of a given detector set. Conversely, a large number of individual bats may pass the detector set and produce an equally large number of call sequences. It is also important to note that the survey results are a sample of bat activity in the airspace surrounding the detectors and are not necessarily indicative of bat activity throughout the entire Project area.

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## Summer 2015 Bat Surveys for the Proposed Republic Wind Project, Seneca and Sandusky Counties, Ohio

USFWS No. 15-045

Completed by:

Theresa Wetzel, Piper Roby, Steve Samoray, Sean Burke, and Chris Leftwich

22 December 2015

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## 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

412- Republic Wind Project Bat Survey, Seneca & Sandusky Counties, Ohio, July 2015

## PROJECT BACKGROUND

Copperhead Environmental Consulting, Inc. (Copperhead) completed a bat mist-net and telemetry survey for the proposed Republic Wind Project (Project) in Seneca and Sandusky counties, Ohio. The Project is located approximately 11 kilometers northeast of Republic Ohio, and covers approximately 37,777 acres, the majority of which is non forested (~94%) based on estimates derived from National Land Cover Dataset (Figure 1). The goals of this survey were to document bat species diversity and abundance within the study area, and inform understanding of roosting habitat, foraging range, and spatial distribution of Indiana bats and northern long-eared bats, if captured.

## METHODOLOGY

## Level of Effort/Site Selection

Mist-net surveys were implemented in accordance with guidelines outlined in the 2015 Range-wide Indiana Bat Summer Survey Guidelines (USFWS 2015), 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). Because the survey was not a presence/absence survey for listed bats, the total number of net nights per mist-net site and specific net set requirements followed ODNR (2009). A study plan was submitted to the USFWS and the ODNR on 7 July 2015 and concurrence was received on 13 July (USFWS) and 22 July (ODNR).

The level of effort outlined in the study plan was based on the estimated amount of forested habitat within the Study Area (~4,454 ac) resulting in 36 mist-net sites surveyed from 23 July through 31 July 2015. After field work was completed, the area of the Project was reduced and is denoted as Project Area – Reduced Fall 2015 in Figure 1. The level of effort completed exceeds the level of effort required for the Project Area.

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.

## 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).

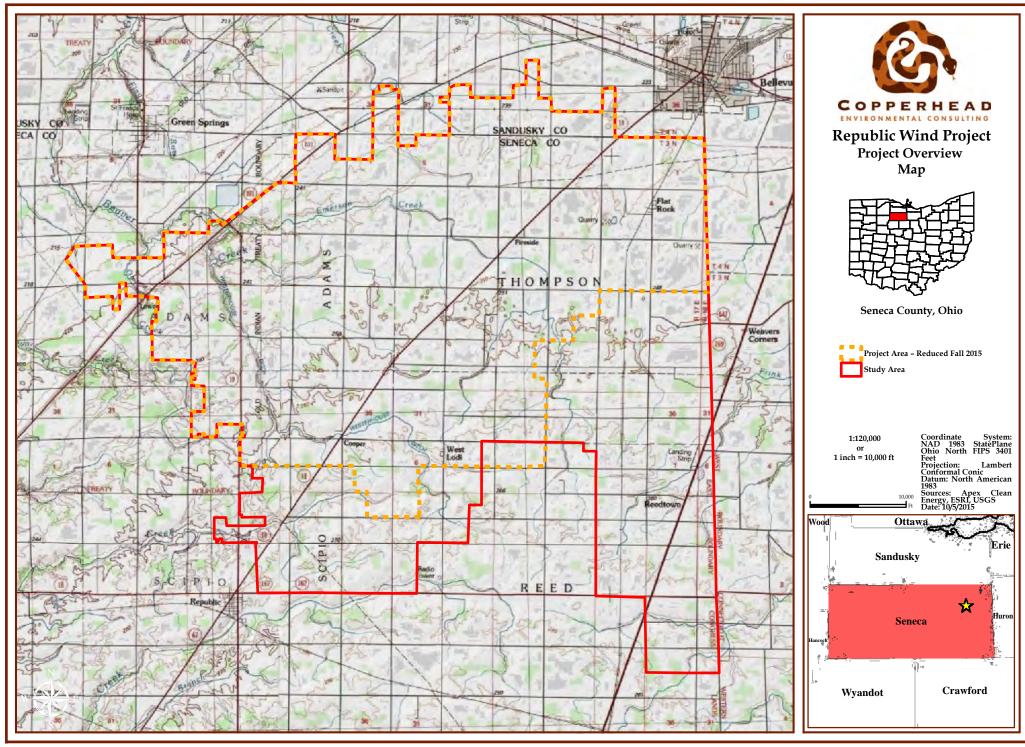


Figure 1. Proposed Republic Wind Project and bat study area overview, Seneca and Sandusky Counties, Ohio, 2015.

Each mist-net site consisted of four net sets with at least one set being a high net (three mist-nets stacked to create one set that was  $\sim$ 7.5 m tall). Mist-net sites were surveyed for two nonconsecutive nights (due to an access issue, site 3 was surveyed for only one night), totaling eight net nights per site. 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. 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 >  $50^{\circ}$ 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 individual captured. In addition, the height and the specific net set of capture were recorded for each bat. Processing of bats was completed within 30 minutes from the time the bat was removed from the net. All captured northern long-eared bats and Indiana 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 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 Used for Characterizing Wing Condition of Bats Affected by White-nose Syndrome" (Reichard and Kunz 2009).

## Radio Telemetry

### Radio Transmitter Attachment

Captured Indiana and northern long-eared bats were radio-tagged in order to locate diurnal roosts. 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

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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 radiotagged bats and locate 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 or recorded with a night vision video camera, which allowed 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 the back of the 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 the 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

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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=6) and compared them to the actual locations of those roosts as documented via ground telemetry. The resulting telemetry error from the airplane was  $340.0\pm128.0$  (SE) m (range: 91.0 - 950.0 m).

Locations of foraging bats and capture locations were pooled and examined using the fixed kernel method and a least squares cross-validation smoothing parameter conducted with Biotas<sup>TM</sup> version 2.0a 3.8 (Ecological Software Solutions LLC, Hegymagas, Hungary) to determine utilization distributions (UD) for each individual. UD's 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.

One-sample Student's t-tests were used to determine differences in foraging area sizes (50%, 75%, 95% probability contours) among individual bats and among female northern long-eared bats. Average values were reported with plus or minus standard error (±SE). Pearson's correlation tests (r) were used to determine the relationship between the number of points collected for each foraging bat and the number of nights a bat was tracked. An analysis of variance (one-way ANOVA) was used to determine differences among individual bats in distances foraged from forested habitat.

## **RESULTS AND DISCUSSION**

## Mist-Net Survey

Mist-net surveys were conducted at 36 sites from 23 - 31July 2015 (Table 1, Figure 2). A total of 429 bats of six species were captured, including one female Indiana bat and fourteen (12 female, 2 male) northern long-eared bats, over 284 net nights (Table 2). Big brown bats (*Eptesicus fuscus*) comprised 75 percent of total captures (n=320) and eastern red bats (*Lasiurus borealis*) comprised 21 percent of total captures (n=88). 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, Re	public Wind	Project,	, Ohio, 2015.
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Site No.	Latitude	Longitude	Site Location
1	41.167111	-82.884334	N. County Rd. 29, Schriner Prop., Woodlot Near Pond
2	41.115820	-82.843740	Stream Corridor Southeast Of Township Rd And Trail 0197
3	41.181645	-82.932637	Wood Lot; Saturated Mud Flats
4	41.155000	-82.855900	Woodlot Off Reedtown Rd
5	41.167295	-82.848025	Woodlot West Of CR 4 With Intermittent Stream
6	41.186530	-82.849620	Woodlot South Of CR 46
7	41.252800	-82.865720	SW Of Site 28
8	41.170720	-82.893070	Stream Off Of CR 136
9	41.143560	-82.929480	Woodlot South Of E Township Road 124
10	41.153120	-82.926210	Forest Gap; Logging Road; Pond In Forest
11	41.139200	-82.992230	CR 122
12	41.184500	-82.935600	Wooded Area Of N. CR 27
13	41.178090	-82.890620	Woodlot Logging Road Off Stream
14	41.224734	-83.028039	Woodlot SE Of Portland Rd
15	41.200800	-83.015200	Creek Along Hwy 19
16	41.157652	-82.989259	Pond In Woodlot West Of CR 28 And S Of East CR 24
17	41.175850	-82.960330	Woodlot Next To Soybean Field Off N Township Rd 183
18	41.179190	-82.928270	Woodlot And Perennial Stream
19	41.176590	-83.003480	Forest/Ag Edge, Stream, Corridor
20	41.186390	-82.931455	Wood Lot Off CR 15 S And East Of North CR 27
21	41.211200	-82.963580	Woodlot South Of Site 26

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Site No.	Latitude	Longitude	Site Location
22	41.219650	-82.944167	5425 N SR 18, Woodlot, Ziegler Property
23	41.249950	-82.962020	Township Road 78 Meacham Prop, Interior Mudflats & Trails @ deer stand
24	41.178040	-82.888610	Logging Road Through Woodlot; Open Water Of Emergent Wetland
25	41.217306	-82.908250	Decker Property Of E CR 32
26	41.218160	-82.967180	Trails Through Woods Behind "Sugar Shack"
27	41.188540	-82.986353	Snavely Property Off TR 138
28	41.253563	-82.868040	Woodlot South Of CR 62, West Of CR 68
29	41.247860	-82.937220	Woodlot Beside Lodi-Colby Road, Ag Field
30	41.182580	-83.024150	Woodlot East Of Township Road 138
31	41.155560	-82.949780	Woodlot Bordered By Bean And Corn, South Of E. County Road 24
32	41.175420	-82.922500	Woodlot South Of East Township Road
33	41.182330	-82.935820	Woodlot And Pond Near Coyote Grove Campground
34	41.153410	-82.961690	Woodlot South Of East County Rd 34 And West Of Township Rd 183
35	41.183680	-82.903440	Recently Logged Wood Lot
36	41.155480	-83.004700	Woodlot South Of County Rd. 24

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

	Adult Male		Adult Female		Juvenile					
Species	NR*	S	Р	L	PL	NR	Female	Male	Escaped	Total
Eptesicus fuscus	42	52	1	10	73	8	51	71	12	320
Lasiurus borealis	2	3	0	4	16	3	37	10	13	88
Lasiurus cinereus	0	0	0	0	0	1	1	3	0	5
Myotis septentrionalis	1	0	0	2	3	2	5	1	0	14
Myotis sodalis	0	0	0	0	1	0	0	0	0	1
Perimyotis subflavus	0	0	0	0	0	0	1	0	0	1

\* NR=non-reproductive, S=scrotal, P=pregnant, L=lactating, PL=post-lactating

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