

# Indiana and Northern Long-eared Bat Acoustic and Mist-net Survey for the Proposed Rocky Forge Wind Project, Botetourt County, Virginia

Summary Report August 2015

Rocky Forge Wind, LLC

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## **Project Background and Location**

Copperhead Environmental Consulting, Inc. (Copperhead) was contracted by Rocky Forge Wind, LLC (ROC), an affiliate of Apex Clean Energy Management, LLC, to conduct a federally listed bat presence/probable absence surveys for the proposed Rocky Forge Wind Project (project), Botetourt County, Virginia (Figure 1). Study methodology followed Copperhead's USFWS approved Study Plans (June 22, 2015 and August 6, 2015). Two study plans were approved based on the addition of lands in the western ridge portion of the project area mid-survey season, resulting in slightly different methodology used for western ridge than in the rest of the project area.

## **Acoustic Survey**

Per the methodology outlined in the USFWS approved Study Plan (22 June 2015), six acoustic sites were established throughout the project area (Table 1, Figure 1). Each site was monitored for two nights from sunset to sunrise, for a total of 12 detector nights. Acoustic site data sheets are in Appendix A and site photographs are in Appendix B.

Acoustic data were downloaded in the field and processed through the latest version of Bat Call ID East (BCID). All calls files indicated as potential federally listed bat species (site level MLE  $\leq$  0.05) based on software output were vetted manually through careful visual examination by a Copperhead biologist trained in acoustic bat identification. Manual vetting allowed recognition of obvious species identification errors (e.g., poor quality, fragmented call files) and provided more accurate characterization of the bat community present at the project. A second opinion was obtained from Ryan Allen of BCID for call files determined to be consistent with Indiana bats by Copperhead. Although neither Virginia big-eared bats (*Corynorhinus townsendii virginianus*) nor gray bats (*Myotis grisescens*) are expected to occur within the project area based on their known ranges, these species were considered in the analysis, in addition to Indiana bat (*Myotis sodalis*) and northern long-eared bat (*M. septentrionalis*), which are known to occur in the project region.

Site	Latitude	Longitude
AS1	37.72354	-79.7023
AS2	37.71091	-79.7155
AS3	37.69929	-79.7194
AS4	37.69327	-79.7219
AS5	37.67104	-79.7351
AS6	37.67775	-79.7433

Table 1. Locations of acoustic survey sites, Rocky Forge Wind Project, 2015.

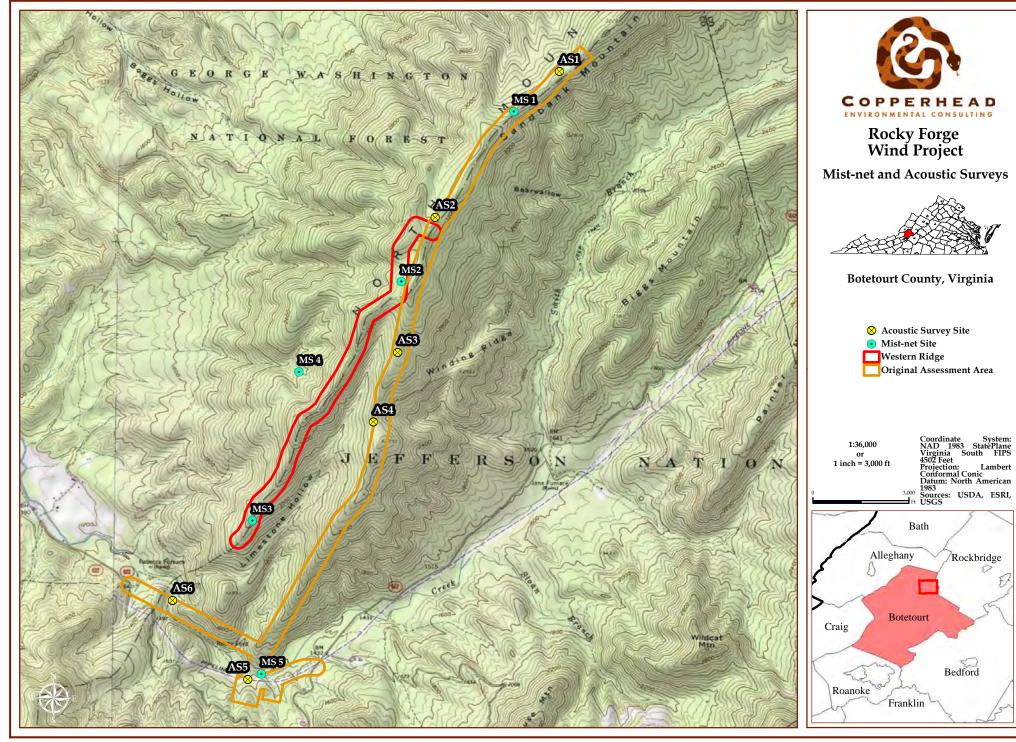


Figure 1. Mist-net and acouistic survey site locations for the Rocky Forge Wind Project, 2015.

BCID identified 79 call files as gray bat, 1 call file as a northern long-eared bat, and 13 call files as Indiana bat. Manual vetting determined that call files identified by BCID as gray bat calls were likely produced by eastern red bats (*Lasiurus borealis*). Similarly, manual vetting determined that the one call file identified by BCID as a northern long-eared bat was typical of that produced by an eastern red bat, and call files identified by BCID as Indiana bat were determined to be consistent with calls that may be produced by Indiana bat (n=5), little brown bat (*Myotis lucifugus*) (n=3), and eastern red bat (n=5). In addition, files identified by BCID as Indiana bat, gray bat, and northern long-eared bat were processed post hoc through Kaleidoscope Pro (v 3.1.1) in order to compare species identification results between the two programs (Table 2).

In summary, of the 1,498 call files collected over 12 detector nights, a total of 5 call files were identified as potential Indiana bat, and zero call files were identified as northern long-eared bat, gray bat, or Virginia big-eared bat.

Table 2. Manual vetting and Kaleidoscope Pro results of acoustic survey call files identified by
BCID as Indiana, northern long-eared, or gray bats, Rocky Forge Wind Project, 2015.

	Date Surveyed	0	BCID	Kaleidoscope	Manual Vetting
Site	(2015)	File Name	Results	Results	Conclusion
AS1	6-Jul	P7062237.56#	MYGR	LABO	LABO
AS1	6-Jul	P7062320.54#	MYGR	LABO	LABO
AS1	6-Jul	P7070105.07#	MYGR	LABO	LABO
AS1	6-Jul	P7070116.03#	MYGR	LABO	LABO
AS1	6-Jul	P7070120.29#	MYGR	LABO	LABO
AS1	6-Jul	P7070122.01#	MYGR	LABO	LABO
AS1	6-Jul	P7070126.45#	MYGR	LABO	LABO
AS1	6-Jul	P7070128.58#	MYGR	LABO	LABO
AS1	6-Jul	P7070129.35#	MYGR	LABO	LABO
AS1	6-Jul	P7070112.32#	MYGR	MYGR	LABO
AS1	6-Jul	P7070133.05#	MYGR	MYGR	LABO
AS1	6-Jul	P7062055.38#	MYSO	MYLE	consistent with MYSO
AS1	6-Jul	P7062055.53#	MYSO	MYLE	consistent with MYSO
AS1	7-Jul	P7072040.14#	MYGR	LABO	LABO
AS1	7-Jul	P7072107.08#	MYGR	LABO	LABO
AS1	7-Jul	P7072107.16#	MYGR	LABO	LABO
AS1	7-Jul	P7072107.39#	MYGR	LABO	LABO
AS1	7-Jul	P7072108.02#	MYGR	LABO	LABO
AS1	7-Jul	P7072108.17#	MYGR	LABO	LABO
AS1	7-Jul	P7072108.23#	MYGR	LABO	LABO
AS1	7-Jul	P7072108.58#	MYGR	LABO	LABO
AS1	7-Jul	P7072109.29#	MYGR	LABO	LABO
AS1	7-Jul	P7072110.35#	MYGR	LABO	LABO
AS1	7-Jul	P7072110.43#	MYGR	LABO	LABO
AS1	7-Jul	P7072113.01#	MYGR	LABO	LABO

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	Date Surveyed		BCID	Kaleidoscope	Manual Vetting
Site	(2015)	File Name	Results	Results	Conclusion
AS1	7-Jul	P7072113.35#	MYGR	LABO	LABO
AS1	7-Jul	P7072113.51#	MYGR	LABO	LABO
AS1	7-Jul	P7072114.37#	MYGR	LABO	LABO
AS1	7-Jul	P7072115.59#	MYGR	LABO	LABO
AS1	7-Jul	P7072116.37#	MYGR	LABO	LABO
AS1	7-Jul	P7072116.52#	MYGR	LABO	LABO
AS1	7-Jul	P7072117.27#	MYGR	LABO	LABO
AS1	7-Jul	P7072118.54#	MYGR	LABO	LABO
AS1	7-Jul	P7072119.50#	MYGR	LABO	LABO
AS1	7-Jul	P7072125.02#	MYGR	LABO	LABO
AS1	7-Jul	P7072313.28#	MYGR	LABO	LABO
AS1	7-Jul	P7080059.55#	MYGR	LABO	LABO
AS1	7-Jul	P7080120.38#	MYGR	LABO	LABO
AS1	7-Jul	P7080311.23#	MYGR	LABO	LABO
AS1	7-Jul	P7072109.18#	MYSO	LABO	LABO
AS1	7-Jul	P7072108.31#	MYGR	MYGR	LABO
AS1	7-Jul	P7072108.46#	MYGR	MYGR	LABO
AS1	7-Jul	P7072109.39#	MYGR	MYGR	LABO
AS1	7-Jul	P7072110.18#	MYGR	MYGR	LABO
AS1	7-Jul	P7072111.42#	MYGR	MYGR	LABO
AS1	7-Jul	P7072113.42#	MYGR	MYGR	LABO
AS1	7-Jul	P7072115.07#	MYGR	MYGR	LABO
AS1	7-Jul	P7072115.39#	MYGR	MYGR	LABO
AS1	7-Jul	P7072116.22#	MYGR	MYGR	LABO
AS1	7-Jul	P7072119.03#	MYGR	MYGR	LABO
AS1	7-Jul	P7072119.29#	MYGR	MYGR	LABO
AS1	7-Jul	P7072119.39#	MYGR	MYGR	LABO
AS1	7-Jul	P7072204.32#	MYGR	MYGR	LABO
AS1	7-Jul	P7072103.06#	MYSO	MYLU	LABO
AS1	7-Jul	P7080043.08#	MYSO	MYSO	MYLU*
AS1	7-Jul	P7080036.56#	MYGR	No ID	LABO/PESU
AS2	6-Jul	P7062113.17#	MYGR	LABO	Noise
AS2	6-Jul	P7062251.00#	MYGR	LABO	LABO
AS2	6-Jul	P7062259.49#	MYGR	LABO	LABO
AS2	6-Jul	P7062327.30#	MYGR	LABO	LABO
AS2	6-Jul	P7062123.19#	MYGR	MYGR	LABO
AS2	6-Jul	P7062134.25#	MYSO	MYLE	consistent with MYSO
AS2	6-Jul	P7062319.53#	MYGR	MYLU	LABO
AS2	7-Jul	P7072159.18#	MYGR	LABO	LABO
AS2	7-Jul	P7072217.33#	MYGR	LABO	LABO
AS2	7-Jul	P7072337.58#	MYGR	LABO	LABO

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	Date Surveyed		BCID	Kaleidoscope	Manual Vetting
Site	(2015)	File Name	Results	Results	Conclusion
AS2	7-Jul	P7072340.50#	MYGR	LABO	LABO
AS2	7-Jul	P7072356.13#	MYGR	LABO	LABO
AS2	7-Jul	P7072330.17#	MYGR	MYGR	LABO
AS2	7-Jul	P7072341.35#	MYGR	MYGR	LABO
AS2	7-Jul	P7080051.38#	MYSO	MYLU	LABO
AS2	7-Jul	P7080357.56#	MYSO	MYSO	consistent with MYSO
AS3	7-Jul	P7080405.37#	MYSE	LABO	LABO
AS4	6-Jul	P7062216.58#	MYGR	LABO	LABO
AS4	6-Jul	P7062220.47#	MYGR	LABO	LABO
AS4	6-Jul	P7062223.45#	MYGR	LABO	LABO
AS4	6-Jul	P7062224.19#	MYGR	LABO	LABO
AS4	6-Jul	P7062240.05#	MYGR	LABO	LABO
AS4	6-Jul	P7070037.37#	MYGR	LABO	LABO
AS4	6-Jul	P7062222.10#	MYSO	LABO	LABO
AS4	7-Jul	P7080043.25#	MYGR	LABO	LABO
AS4	7-Jul	P7080119.51#	MYGR	LABO	LABO
AS4	7-Jul	P7080120.35#	MYGR	LABO	LABO
AS4	7-Jul	P7080320.41#	MYGR	LABO	LABO
AS4	7-Jul	P7072345.15#	MYSO	MYLU	LABO
AS5	6-Jul	P7070048.19#	MYSO	MYLE	consistent with MYSO
AS5	6-Jul	P7070108.04#	MYSO	MYSO	MYLU*
AS5	7-Jul	P7080037.19#	MYGR	MYGR	LABO
AS5	7-Jul	P7080111.42#	MYSO	MYSO	MYLU*
AS6	6-Jul	P7062114.25#	MYGR	LABO	LABO
AS6	6-Jul	P7070003.12#	MYGR	LABO	LABO
AS6	7-Jul	P7080030.55#	MYGR	LABO	LABO
AS6	7-Jul	P7080132.23#	MYGR	LABO	LABO

<sup>1</sup> MYSO = Indiana bat, MYGR = gray bat, LABO = eastern red bat, MYLE = eastern small-footed bat, MYLU = little brown bat, PESU = tri-colored bat

\*Manual vetting conclusion by Mr. Allen of BCID

## **Mist-Net Survey**

As described in the June 22, 2015 Study Plan, follow up mist-net surveys were conducted at three sites (26 net nights) as close as possible to three acoustics sites (AS1, AS2, AS5) where BCID and manual vetting identified calls from Indiana bats. Additionally, per the methodology outlined in the August 6, 2015 Study Plan, 16 net nights were completed at two mist-net sites within the western ridge area (Table 3, Figure 1). The goal of the mist-net surveys was to capture listed bats and to attach transmitters in order to locate day roosts. Mist-net site data sheets are in Appendix C and site photographs are in Appendix D.

A total of 25 bats of four species were captured from three sites over 26 net nights within the original assessment area. A total of six bats representing two species were captured during the

additional 16 net nights completed along the western ridge. Three northern long-eared bats and zero Indiana, gray or Virginia big-eared bats were captured (Table 4).

			5 0	5
Site	Latitude	Longitude	Dates	Description
MS5	37.67153	-79.73362	13-14 July	Forested corridors along Mill Creek
MS1	37.72007	-79.70714	15-16 July	Corridor on top of ridge
MS2	37.70535	-79.71907	15-16 July	Forested corridor on ridge south of Sandbank Mountain
MS3	37.68467	-79.73482	11-12 August	Ridgeline on old mine rd., Mt. Evan
MS4	37.69749	-79.73001	13-14 August	Old mine rd.

Table 3. Mist-net site locations, Rocky Forge Wind Project, 2015.

Table 4. Total bat captures by mist-net site, species, age, sex, and reproductive status, Rocky Forge Wind Project, 2015.

Site	Species	Age	Sex	<b>Reproductive Status</b>	<b>Total Bats</b>	Notes
MS1	Eptesicus fuscus	adult	male	scrotal	2	
	Lasiurus borealis	adult	male	non-reproductive	1	
	Lasiurus borealis	-	-	-	1	Escaped
	Myotis septentrionalis	adult	female	post-lactating	1	
	Myotis septentrionalis	juvenile	female	non-reproductive	1	
	Myotis septentrionalis	adult	male	non-reproductive	1	
MS5	Eptesicus fuscus	adult	female	non-reproductive	2	
	Eptesicus fuscus	adult	female	post-lactating	2	
	Eptesicus fuscus	juvenile	female	non-reproductive	1	
	Eptesicus fuscus	adult	male	non-reproductive	1	
	Eptesicus fuscus	adult	male	scrotal	4	
	Eptesicus fuscus	-	-	-	1	Escaped
MS2	Eptesicus fuscus	adult	female	post-lactating	1	
	Lasiurus borealis	juvenile	female	non-reproductive	1	
	Lasiurus borealis	adult	male	non-reproductive	2	
	Myotis leibii	adult	male	non-reproductive	3	
MS4	Eptesicus fuscus	adult	male	non-reproductive	1	
	Eptesicus fuscus	adult	male	scrotal	1	
MS3	Lasiurus borealis	adult	female	non-reproductive	1	
	Lasiurus borealis	juvenile	female	non-reproductive	1	
	Lasiurus borealis	juvenile	male	non-reproductive	2	

## **Radio Telemetry**

Radio transmitters were attached to the three northern long-eared bats (1 adult female, 1 adult male, 1 juvenile female) in order to locate day roosts. Each individual was tracked for seven days after the night of capture. A total of twelve roost trees were located during telemetry efforts (Table 5, Figure 2). Photographs of roost trees are in Appendix E. Roost tree data sheets are in Appendix F.

No radio-tagged bats were located on 20 July due to equipment failure. The adult female was not located on 21 July even after extensive searching with the project and surrounding areas. The juvenile female was not located on 23 July due to transmitter failure.

A minimum of six roost trees were used by the adult male and no roost trees were used more than once during the tracking effort. All male roost trees, except RT 257, were north east of the area used by the adult and juvenile females and were located outside the project boundary (Figure 2). The adult female used a minimum of five roost trees, with RT 256 being used on three consecutive days. The juvenile female roosted in a minimum of five roost trees and was not found to use a roost tree more than once (Table 6).

Two emergence counts were conducted (either by a biologist or night vision video camera) at each roost tree, except RT 63 that was found on the last day of radio tracking. The maximum number of individuals counted emerging from a roost tree was 10 and the median emergence count was 1. Simultaneous emergence counts conducted at two roost trees (RT 256, RT 257) on 17 July suggest that the colony is comprised of at least 11 individuals (Table 7).

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					Estin	nated				No.
Roost					Heig	ht (m)				Calendar
Tree				DBH			Condition	Tree		Days
No.	Species	Latitude	Longitude	(cm)	Tree	Roost	2	Ranking <sup>3</sup>	Bat Use <sup>4</sup>	Used
54	Quercus montana	37.72925	-79.69673	56.5	18.0	14.0	S	С	AM	1
55	Acer rubrum	37.71965	-79.70881	55.0	17.0	5.0	LD	С	JF	1
56	unk <sup>1</sup>	37.71967	-79.70899	43.9	17.0	6.0-9.0	S	С	AF	1
57	Q. montana	37.72957	-79.69833	56.0	8.0	5.0-6.0	S	SC	AM	1
58	unk	37.72925	-79.69655	38.5	5.0	4.0	S	SC	AM	1
59	<i>Carya</i> sp.	37.72185	-79.70363	22.2	6.0	6.0	S	SC	JF	1
60	Q. montana	37.71946	-79.70795	33.9	4.0	4.0	S	SC	JF	1
61	A. rubrum	37.72937	-79.69647	15.3	5.0	4.0	S	SC	AM	1
62	Q. montana	37.72381	-79.70826	44.3	15.0	5.0	LD	С	AF	1
63	Betula alleghaniensis	37.72934	-79.69643	43.6	15.0	6.0	L	С	AM	1
256	Q. montana	37.72294	-79.70217	12.6	5.0	3.0	S	SC	AF, JF, AM	3
257	Q. montana	37.72938	-79.69632	20.0	6.0	3.0	S	SC	JF	1

Table 5. Northern long-eared bat roost trees located during telemetry efforts, Rocky Forge Wind Project, 2015.

<sup>1</sup> unk = too decayed to identify species

 $^{2}$  L = live, LD = live damaged, S = snag

<sup>3</sup> C= canopy, SC = sub canopy, U = understory

<sup>4</sup> AM = adult male, JF = juvenile female, AF = adult female

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		5	00	Ĺ	,	5 0	J	,
Bat <sup>1</sup>	16-July	17-July	18-July	19-July	20-July*	21-July	22-July	23-July
AF	RT 256	RT 256	RT 256	RT 56	-	-	RT 62	
AM		RT 256	RT 54	RT 57	-	RT 58	RT 61	RT 63
JF		RT 257	RT 256	RT 55	-	RT 59	RT 60	-

Table 6. Roost tree use by radio-tagged northern long-eared, Rocky Forge Wind Project, 2015.

<sup>1</sup> AF = adult female, AM = adult male, JF = juvenile female

Table 7. Emergence counts of northern long-eared bat roost trees, Rocky Forge Wind Project, 2015.

Roost Tree	16-July	17-July	18-July	19-July	20-July	21-July	22-July	23-July
RT 256	10	9	9					
RT 257		2	0					
RT 54			1	0				
RT 55				1	0			
RT 56				3	0			
RT 57				0*	1			
RT 58						0*		0
RT 59						2	1	
RT 60							1	0
RT 61							1	0
RT 62							0*	0
RT 63								1
Total	10	11	10	4	1	2	3	1

\* = radio-tagged bat was present in tree, but did not emerge before dark

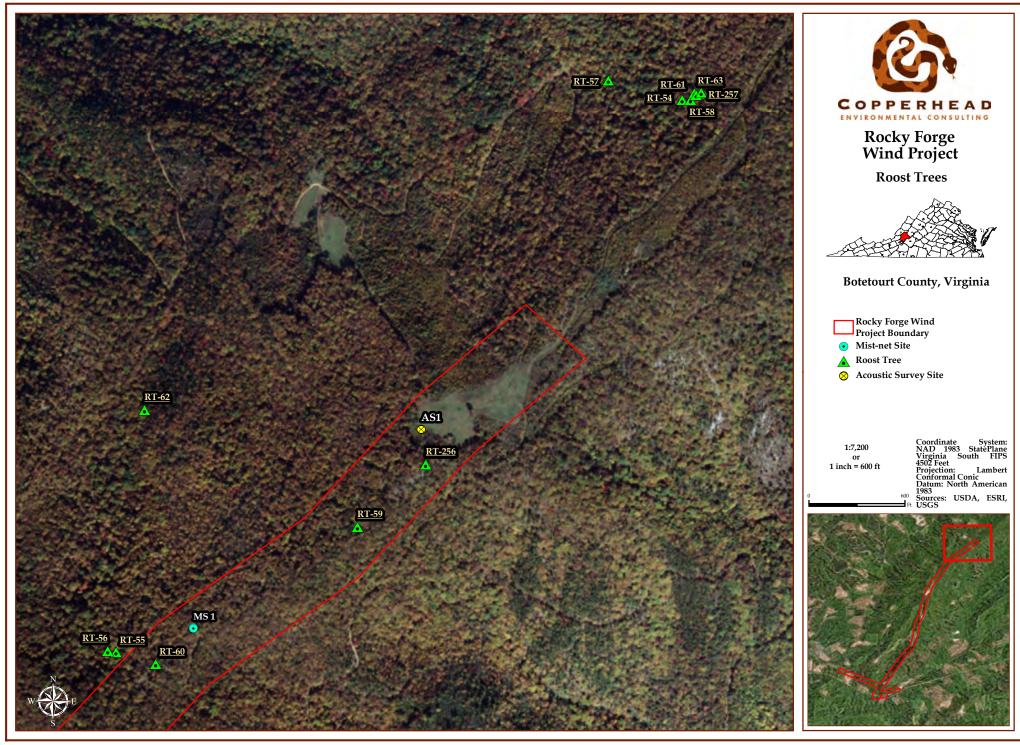


Figure 2. Northern long-eared bat roost tree locations, Rocky Forge Wind Project, 2015.

### Summary

### <u>Indiana Bat</u>

Results of the acoustic data analysis suggest that Indiana bats may be present within the project area; however, no Indiana bats were captured during the follow up mist-net survey despite placement of mist nets in optimal habitat and conditions for the species near locations where software indicated potential presence. If Indiana bats are present, the low number of acoustic calls and lack of captures suggest that a large colony is not likely roosting nearby, and Indiana bats may be using these areas as summer foraging or commuting habitat at low density.

For the western ridge portion of the project, the mist-net survey exceeded the USFWS minimum level of effort to determine presence/probable absence of Indiana bats in this part of the project area during the maternity season. Results of the survey indicate that Indiana bats are not likely present within the western ridge portion of the project.

### Northern Long-eared bat

Acoustic surveys indicted probable absence of northern long-eared bats; however three individuals were captured during mist-net efforts and radio-tracked to roosts nearby. A total of 12 roost trees were located and 24 emergence counts were completed. The maximum number of individuals counted emerging from a roost tree was 10 and the median emergence count was 1.

For the western ridge portion of the project, the mist-net survey exceeded the USFWS minimum level of effort to determine presence/probable absence of northern long-eared bats in this part of the project area during the maternity season, suggesting summer presence only on the north end of the project.



# Appendix A

Acoustic Survey Data Sheets

Field single sin	Site Map	Ite Map	ode)	<ul> <li>*Weather: Low Temp <u>S</u> Time <u>o'loo</u></li> <li>Precipitation: <u>Boy No</u> <u>Comments: <u>light air</u> <u>first to hist</u></u></li> <li>Deployment Checklist (please check each bubble after completion): <ul> <li>All cables attached and secure</li> <li>Power unit on and finger rub test performed</li> <li>Power unit off (timer should have it remain in Standby mode)</li> <li>Sensitivity Adjusted</li> <li>Turn Volume DOWN</li> <li>Confirm AnaBat unit is in standby mode</li> <li>GPS position recorded</li> <li>Pictures of and AnaBat unit site taken</li> </ul> </li> </ul>	Image: Instruction in the second secure       Time of the secure         Precipitation: Cost / A is the secure       First / A is the secure         All cables attached and secure       Power unit on and finger rub test performed         Power unit off (timer should have it remain i         Sensitivity Adjusted         Turn Volume DOWN         Confirm AnaBat unit is in standby mode         GPS position recorded         Pictures of and AnaBat unit site taken	certainty (P<0.05) AND manual vetting coprogram(s) were consistent with calls that program(s) were consistent with calls that the comments:         *Weather:       Low Temp S         Precipitation:       Doe Not the calls that the comments:         •       Precipitation:       Doe Not comments:         •       All cables attached and secure         •       All cables attached and secure         •       Power unit on and finger rub         •       Power unit off (timer should H         •       Sensitivity Adjusted         •       Turn Volume DOWN         •       GPS position recorded         •       GPS position recorded         •       Precipitation recorded	*Weather • Program(s • Al • Al • Po • Po • Se • Co • Co • Pi
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non	ures of and	GPS position recorded	ufirm AnaBat	Turn Volume DOWN	Sensitivity Adjusted	ver unit off (	ver unit on a	cables attach	Checklist (pl	Precipitation: Yey/No Comments:U	*Weather: Low Temp	MYSE Detected ic ID program(s) con ity (P<0.05) AND ma ity (s) were consisten	MYSO Detected	check): Target Spec		1812	Time Up	Habitat Description:
5	Pictures of and AnaBat unit site taken	corded	Confirm AnaBat unit is in standby mode	OWN	isted	timer should h	Power unit on and finger rub test performed	All cables attached and secure	ease check eac	" YS/No Light	85	<b>d</b> *note: pe nsidered presenc anual vetting cor nt with calls that	đ	lts (check): No Target Species Detected		1217	Time Down	edye u
Doched in Martine The	te taken		dby mode			Power unit off (timer should have it remain in Standby mode)	est performed		Deployment Checklist (please check each bubble after completion):	Light rain first 20	Time_0400	<ul> <li>MYSE Detected         *note: positive detection results indicate that automated         acoustic ID program(s) considered presence of the target specie(s) probable with high levels of         certainty (P&lt;0.05) AND manual vetting confirmed that the calls identified by the automated         program(s) were consistent with calls that may be produced by the target species.</li> </ul>				37.69327	Latitude	Lood lot
	n,	-				y mode)	0		on):	Je min Site Map	* Nightly v ensure we	dicate that automated robable with high levels of ified by the automated arget species.				-29.22189	Longitude	
	1 1	/ -	C	to hield	?		11/	13	- HAR	Map	* Nightly weather data will be downloaded from the mesowest website (http://mesowest.utah.edu) or obtained by on-site field crews to ensure weather minimums are not exceeded.		Calls	Manual Vetting Notes: Dissource	, Kpro	BCID	Program	A
1	+ /	11	///	/		A			- in	AV H	nloaded from the mesov exceeded.		calls found.	31		163	Total # Calls	Automatic Identificat
	1 1	/	11	1	/	ABINN )					vest website (ht			too la		-	# MYSO	tification Program(s) Used (circle):
	/	/	1	/			held		1	/	tp://mesowest			server		0	# MYSO # MYSE	n(s) Used (ci
1	/ /	(				/	14	/	///	Forest	.utah.edu) or obtained	8		Call too low quality for ID and literly LABO call sequence. No other Myot's		.008811(MY50)	MLE	1 6008
	1 1	/	1-1	//		1 1	1 .	/	1		l by on-site field crews			and literly	Agree Disagree	Agree Disaglee	Vetting (circle)	Kaleidoscope 113-1068)

2015 Bat Acoustic Survey Form

Time Up	Time Down	Latitude	Longitude	Program	Total # Calls	# MYSO	# MYSE	MLE	Vetting (circle)
Detector # 12:30	1039	37.69327	-79.72189	BCID	141	-	Ø	1929264	Agree
199				Kpro					Agree Disagree
Results (check):	ecies Detected				1-	consister	it wit	consistent with MYSO calls,	calls,
O MYSO Detected	ted				Likely a L	LABO.			
O MYSE Detected		sitive detection results i	dicate that automated						
-rore: positive detection results indicate that au acoustic ID program(s) considered presence of the target specie(s) probable with 1 certainty (P<0.05) AND manual vetting confirmed that the calls identified by the a program(s) were consistent with calls that may be produced by the target species.	considered present manual vetting cor	• note: positive detection results indicate that automated acoustic ID program(s) considered presence of the target specie(s) probable with high levels certainty (P<0.05) AND manual vetting confirmed that the calls identified by the automated certainty (P<0.05) and use that may be produced by the target species	rnote: positive detection results indicate that automated acoustic ID program(s) considered presence of the target specie(s) probable with high levels of certainty (P<0.05) AND manual vetting confirmed that the calls identified by the automated program(s) were consistent with calls that may be produced by the target species.						
*Weather: Low Temp_	ינפווג שונוו כמווא נוומר								
Precipitatio Comments:		Time 0330	1	* Nightly weather data will be downloaded fi ensure weather minimums are not exceeded.	* Nightly weather data will be downloaded from the mesowest website (http://mesowest.utah.edu) or obtained by on-site field crews to ensure weather minimums are not exceeded.	west website (htt	p://mesowes	utah.edu) or obtain	d by on-site field c
eployment Checklist	: Low Temp $62$ Precipitation: Yes/NO Comments:	Time_033		weather data will be do ather minimums are no $\mathcal{F}_{\mathcal{L}_{\mathcal{L}}}$	rnloaded from the meso exceeded.	vest website (htt	p://mesowes	utah.edu) or obtain	d by on-site field c
o All cables atta	p - b 2 on: Yes/NO S:	*Weather: Low Temp <u>62</u> Time <u>0330</u> Precipitation: Yes/No Comments: <u> </u>		weather data will be do ather minimums are no H/G -	exceeded.	vest website (htt bef Co but that	s://mesowes	utah.edu) or obtain f CONSIS f	d by on-site field c $\frac{1}{2}$
	er: Low Temp <u>62</u> Precipitation: Yes/No Comments: <u></u> ent Checklist (please check each All cables attached and secure	Time		weather data will be do ather minimums are no $\mathcal{T}_{1}^{\prime}$	mloaded from the mesowest website (http://mesowest.utah.edu) or obtained by or exceeded. C gray bat calls not consisting the former of the specific of the sp	vest website (htt bat Co bat Co	silimesowes Specifics	utah.edu) or obtain	d by on-site field c
<ul> <li>Power unit or</li> </ul>	Precipitation: Yes/No Comments:	Time		weather data will be do ather minimums are no $T/6 - T/6 - T/7 - $	mloaded from the meso exceeded. G g Cay With	hert Col	s://mesowes	t consister	d by on-site field c
	np <u>62</u> on: Yes/Ng S:	Introver consistent with calls that may be produced by the target spectrum   err: Low Temp	ode)	weather data will be download after minimums are not exceent $\frac{7}{6} - 0$ $\frac{7}{7} - 1$	mloaded from the meso exceeded. G g Cay	bat Co	species not	sowest website (http://mesowest.utah.edu) or obtained 1 y bat calls not consistant to that species bat calls not consistant	d by on-site field c
	np <u>62</u> on: Yes/Ng S:	Time	ode)	weather data will be do ather minimums are no $\mathcal{H}_{\mathcal{H}} - \mathcal{H}_{\mathcal{H}} - \mathcal{H}_{\mathcal{H}$	mloaded from the meso exceeded. G g Cau With G Cau With	he mesowest website (http://mesowe cay bat calls ha with that calls ha with that calls ha with that spects	pectes	utah.edu) or obtain t CONSISt	d by on-site field c
	$\frac{p_{entropy}}{p_{ease} check each}$	Time 033 ( 	ode)	weather data will be do ather minimums are no $\mathcal{T}_{\mathcal{T}}_{\mathcal{T}_{\mathcal{T}}}}}}}}}}$	exceeded. G g raw G g raw with uit	bet co bet co	peries	t Consister	d by on-site field c
	Intry were consistent with cansi that may be pro- precipitation: Yes $\widehat{\mathbb{N}}$ Comments:	Time	ode)	weather data will be do ather minimums are no ather $\mathcal{T}_{\mathcal{T}}_{\mathcal{T}_{\mathcal{T}_{\mathcal{T}}_{\mathcal{T}_{\mathcal{T}}_{\mathcal{T}_{\mathcal{T}}_{\mathcal{T}}}}}}}}}}$	mloaded from the meso exceeded. G g Cay With U g Cay With	bet co	pectes	t Consist	d by on-site field c
	$\frac{p}{chert with Carls that}$	Time	ode)	weather data will be do ather minimums are no $\mathcal{T}_{\mathcal{T}}_{\mathcal{T}_{\mathcal{T}}}}}}}}}}$	mloaded from the meso exceeded. G a cay With U a cay with	bet co	pectes	t Consist	d by on-site field c
	err: Low Temp $62$ T Precipitation: Yes $62$ T Precipitation: Yes $62$ T Precipitation: Yes $62$ P Precipitation: Yes $62$ P Prover unit of and finger rub test perf Power unit off (timer should have it re Power unit off (timer should have it re Pow	Time	ode)	weather data will be do ather minimums are no $\mathcal{H}_{\mathcal{H}} - \mathcal{H}_{\mathcal{H}} - \mathcal{H}_{\mathcal{H}$	mloaded from the meso exceeded. G a awith W a fay with	bat call	peers	t consista	d by on-site field c
	p	$\frac{p_{control transitional may be produced by the target species.}{p_{control transition transition to the produced by the target species.}$	ode)	weather data will be do ather minimums are no $\mathcal{H}_{\mathcal{H}}$ - $\mathcal{H}_{\mathcal{H}}$ - $\mathcal{H}_{\mathcal{H}}$ -	exceeded. G G Cau G Cau With	bet co	peeres	t CONSIST	d by on-site field o

COPPERHEAD

	0 Pict	o GP	o Cor	o Tur	o Sen	o Pov	o Pov	o All	Deployment		*Weather:	acoustic ID certainty (P program(s)	O MY	O No	Results (check):	346	Detector #		County <u>Botetourt</u> Habitat Description
	tures of and	GPS position recorded	nfirm AnaBat	Turn Volume DOWN	Sensitivity Adjusted	ver unit off (I	ver unit on a	cables attach	<u>Checklist (pl</u>	Precipitation Comments:	*Weather: Low Temp	program(s) co <0.05) AND m were consiste	MYSO Detected	Target Spec	check):		1828	Time Up	County Botetourt State VA Habitat Description: edge of
	Pictures of and AnaBat unit site taken	corded	Confirm AnaBat unit is in standby mode	OWN	sted	timer should ha	Power unit on and finger rub test performed	All cables attached and secure	ease check each	Precipitation: $\frac{1}{L_{gh+12M}}$	58	*note: po nsidered presenc anual vetting con nt with calls that		<ul> <li>No Target Species Detected</li> </ul>			1319	3	
·	e taken		lby mode			Power unit off (timer should have it remain in Standby mode)	st performed		Deployment Checklist (please check each bubble after completion):	tain 1st 20 min	Time_ <i>0400</i>	*note: positive detection results indicate that automated acoustic ID program(s) considered presence of the target specie(s) probable with high levels certainty (P<0.05) AND manual vetting confirmed that the calls identified by the automated program(s) were consistent with calls that may be produced by the target species.					37.67 104	Latitude	Quad Suger lost Mt. Observers: IC
Γ	/					by mode)		/	iion):		* Nightly ensure w	*note: positive detection results indicate that automated acoustic ID program(s) considered presence of the target specie(s) probable with high levels of certainty (P<0.05) AND manual vetting confirmed that the calls identified by the automated program(s) were consistent with calls that may be produced by the target species.					-79.73508	Longitude	in field hear
-	1111	cre	1 Cen			////		1		Site Map	* Nightly weather data will be downloaded from the mesowest website (http://mesowest.utah.edu) or obtained by on-site field crews to ensure weather minimums are not exceeded.		Calls	5 - 5	Manual Vetting Notes	Kpro	BCID	ram	Automatic
	////	7	For	-	> //	1	1	/			vnloaded from the mesow exceeded.		Calls boond at this site for this night.	ing prime	thing Notes:		63		
	~	-	-			1 8	1	\$		//	vest website (htt		his site	the s	foreis t		2	# MYSO	Photos taken? Yes/ No Camera htification Program(s) Used (circle).
						-	2.25	5 5	237	2	p://mesowes		6.	antic	int w		D	# MYSE	(s) Used (ci
-	/	/	/	/	>		_	_	9		.utah.edu) or obtained		his night.	it allow	ith these		.000433(M/SO)		BOIR
	/	/	/	/	/	/	/	/	/	1	l by on-site field		101	Minti	that h	Agree Disagree	(Agree) Disagree	Vetting (circle)	Kaleidoscope 113-1071)

O Pictures of and AnaBat unit site taken		o GPS position recorded	• Confirm AnaBat unit is in standby mode	• Turn Volume DOWN	o Sensitivity Adjusted																	o Fower unit off (timer should have it remain in Standby mode)	<ul> <li>Power unit off (timer should have it remain in Standby mode)</li> </ul>		<ul> <li>Power unit on and finger rub test performed</li> </ul>	• All cables attached and secure		Deployment Checklist (please check each bubble after completion):	117 give Da call not consistent	+/I = 1 alon but call and care in			*Weather: Low Temp 62 Time 0330 *Nightly weather data will be downloaded from the mesowest website (http://mesowest.utah.edu) or obtained by on-site field crews to	acoustic ID program(s) considered presence of the target specie(s) probable with high levels of certainty (P<0.05) AND manual vetting confirmed that the calls identified by the automated program(s) were consistent with calls that may be produced by the target species.				Myso Detected		O No Target Species Detected	the one call The as Mysor's can	Results (check): Manual Vetting Notes:		२५७ Kpro Agree Disagree	150 1 0 .020300	RCD . 1	Time Up Time Down Latitude Longitude Program Total # Calls # MYSO # MYSE MLE Vetting (circle)
--	--	-------------------------	--	--------------------	------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	---	----------------------------------	--	---	---------------------------------	-----------------------------------	--	--	---	--	--	--	--	---------------	--	------------------------------	---------------------------------	--	--	-------------------------	-----------------	---------	---

	0 Pict	o GPS	o Con	o Tur	o Sen	о Ром	о Ром	o All	Deployment		*Weather:	acoustic ID certainty (P program(s)		× NO	Results (check):	181	Detector #		Habitat Description:
	ures of and A	GPS position recorded	firm AnaBat ı	Turn Volume DOWN	Sensitivity Adjusted	ver unit off (ti	er unit on and	All cables attached and secure	Checklist (ple	Precipitation: Yes/No Comments:	*Weather: Low Temp_	program(s) con: <0.05) AND mai were consistent	MYSO Detected	🕺 No Target Species Detected	check):		8181	Time Up	
	Pictures of and AnaBat unit site taken	rded	Confirm AnaBat unit is in standby mode	WN	ted	mer should ha	Power unit on and finger rub test performed	d and secure	ase check each	VES/No Light rain	85	*note: po sidered presence nual vetting com t with calls that r		es Detected			1344	Time Down	Road Cor
	taken		by mode			Power unit off (timer should have it remain in Standby mode)	st performed		Deployment Checklist (please check each bubble after completion):	rain first 20 min	Time 0400	*note: positive detection results indicate that automated acoustic ID program(s) considered presence of the target specie(s) probable with high levels certainty (P<0.05) AND manual vetting confirmed that the calls identified by the automated program(s) were consistent with calls that may be produced by the target species.					37.67775	Latitude	Corriders through wood
			/			y mode)			on):	Site Map	* Nightly w ensure wea	*note: positive detection results indicate that automated acoustic ID program(s) considered presence of the target specie(s) probable with high levels of certainty (P<0.05) AND manual vetting confirmed that the calls identified by the automated program(s) were consistent with calls that may be produced by the target species.					-79.74332	Longitude	hood lot
	11/		-	1		12/	22	1	Z	Map 20	eather data will be dov ther minimums are not				Manual Ve	Kpro	BCID	Program	A
			1			) "	n'd	(0)	ba	Ro	vnloaded from the mesc exceeded.	2			Manual Vetting Notes:		254	Total # Calls	Automatic Identifica
	1	/			/	- Asiso	8	7	$\left( \right)$	7	owest website (htt		$\sim$				ע	# MYSO	Identification Program(s) Used (circle): BCID/
-	-			/		50		/	/	~	p://mesowest.		$\mathbf{X}$				Ø	# MYSE	n(s) Used (ci
		/	/				/		/		utah.edu) or obt						155182 1	MLE	d (circle): BCID
	11	/ /	/	/	/	/	/	/	/	/ /	* Nightly weather data will be downloaded from the mesowest website (http://mesowest.utah.edu) or obtained by on-site field crews to ensure weather minimums are not exceeded.					Agree Disagree	Agree Disagnee	Vetting (circle)	/ Kaleidoscope 113-1074)

	Time Up	Time Down	Latitude	Longitude	Program	Total # Calls	# MYSO	# MYSE	MLE	Vetting (circle)
Detector #	1353	4411	54449.48	- 79. 74332	ecip	たた	Ø	Ø	+ +	Agree
081					Kpro					Agree Disagree
Results (check):	heck):				Manual V	Manual Vetting Notes:				
X No T	🗙 No Target Species Detected	es Detected								
O MYS	MYSO Detected				2		$\times$			
O MYS	MYSE Detected						1			
acoustic ID p certainty (P< program(s) w	rogram(s) cons 0.05) AND mar vere consistent	*note: pr idered presen- uual vetting cou with calls that	*note: positive detection results indicate that automated acoustic ID program(s) considered presence of the target specie(s) probable with high leve certainty (P<0.05) AND manual vetting confirmed that the calls identified by the automated program(s) were consistent with calls that may be produced by the target species.	*note: positive detection results indicate that automated acoustic ID program(s) considered presence of the target specie(s) probable with high levels of certainty (P<0.05) AND manual vetting confirmed that the calls identified by the automated program(s) were consistent with calls that may be produced by the target species.						
*Weather: Low Temp_										
P P	Low Temp_	62	Time 0330	A set	* Nightly weather data will be downloaded fr ensure weather minimums are not exceeded.	* Nightly weather data will be downloaded from the mesowest website (http://mesowest.utah.edu) or obtained by on-site field crews to ensure weather minimums are not exceeded.	west website (ht	tp://mesowes	.utah.edu) or obtaine	d by on-site field c
Deployment C	: Low Temp <u>62</u> Ti Precipitation: Yes/No Comments: <u>kecorded</u>	62 Yes/Na Reco.	P	el trae.	weather data will be de eather minimums are n	t exceeded.	gray 5	tp://mesowes	.utah.edu) or obtain	d by on-site field c
	Low Temp_ recipitation: omments: _	62 Yes/NG <u>Leco</u>	N P	time.	weather data will be do	t exceeded.	gray be	tp://mesowes	n the mesowest website (http://mesowest.utah.edu) or obtained by on-site field crews 2 graybat calls Not Consistent with that species	d by on-site field c
o All c	Ier: Low Temp       62         Precipitation: Yes/No         Comments:       2000         Comments:       2000         Ent Checklist (please check eac         All cables attached and secure	62 Yes/NG <u>Leco</u> Ise check eac	Time 0330	time	weather data will be do	t exceeded.	gray be	tp://mesowes	utah.edu) or obtaine	d by on-site field c
<ul><li>All c</li><li>Powe</li></ul>	Low Temp_ recipitation: omments: _ <u>hecklist (ple</u> ables attache	4 2 Yes/NG Leco. Ise check eac d and secure	er: Low Temp       62       Time       0334         Precipitation: Yes/No       in (14)         Comments: <u>kecorded</u> in (14)         Comments: <u>kecorded</u> in (14)         All cables attached and secure       Power unit on and finger rub test performed	time	eather data will be de	t exceeded.	gray 5	tp://mesowes	.utah.edu) or obtaine .utah.edu) or obtaine .uts wat .uts wat	d by on-site field c
<ul> <li>All c</li> <li>Powe</li> <li>Powe</li> </ul>	Low Temp_ recipitation: omments: _ <u>hecklist (ple</u> ables attache er unit on an	Yes/NO Leco se check eac d and secure d and secure l finger rub t ner should h	ler: Low Temp $62$ Time $0330$ Precipitation: Yes/No       in (enclosed)       in (enclosed)         Comments: <u>kecorded</u> in (enclosed)       h         ent Checklist (please check each bubble after completion):       h       h         All cables attached and secure       Power unit of finger rub test performed       h         Power unit off (timer should have it remain in Standby mode)       h       h	time.	eather minimums are n	t exceeded.	gray 50 Gray 50 With	tp://mesowes	graybat calls not consistent graybat calls not consistent with that species with that species.	d by on-site field c
o All c o Powa o Powa o Sens	ler: Low Temp Precipitation: Ye Comments: ent Checklist (please all cables attached a All cables attached a Power unit on and fi Power unit off (time Sensitivity Adjusted	4 2 Yes/NO <u>Leco</u> I se check eac and secure d and secure f finger rub t i finger rub t ner should h	Time 033 ( ded in 104) h bubble after comple est performed ave it remain in Stand	t're.	eather minimums are n	t exceeded.	gray be gray be	tp://mesowes	.utah.edu) or obtains 115 Not ( 115 Not ( 5 pecies.	onsiste field c
o All c o Pow o Pow o Sens o Turn	er: Low Temp Precipitation: Yes Comments: ent Checklist (please c all cables attached an All cables attached an Power unit on and fin Power unit off (timer Sensitivity Adjusted Turn Volume DOWN	4 C Yes/NG Reco. Reco. Reck eac d and secure d and secure d and secure finger rub t finger rub t ied wN	Time 0330	time.	eather minimums are n	t exceeded.	gray be gray be with	tp://mesowes	utah.edu) or obtaine 15 mat ( 15 mat ( 15 mat ) 5 pecies.	onsisterielde Onsister
<ul> <li>All c</li> <li>Powe</li> <li>Powe</li> <li>Sens</li> <li>Turn</li> <li>Conf</li> </ul>	Image: Instruction is the second of the s	4 2 Yes/NG <u>Feco</u> <u>reco</u> d and secure d and secure d and secure finger rub t finger rub t finger rub t finger should h ner should h ner should h	Time 0330	time.	eather minimums are n	t exceeded.	gray be Gray be	tp://mesowes	.utah.edu) or obtaine .utah.edu) or obtaine .t Species .t Species.	onsiste field c
<ul> <li>All c</li> <li>Powe</li> <li>Powe</li> <li>Sens</li> <li>Sens</li> <li>Conf</li> <li>GPS</li> </ul>	er: Low Temp( Precipitation: Yes/ Comments:/ ent Checklist (please ch all cables attached and All cables attached and fing Power unit on and fing Power unit off (timer s Sensitivity Adjusted Turn Volume DOWN Confirm AnaBat unit i	Yes/NG <u>Peco</u> , <u>res check eac</u> and secure d and secure d and secure finger rub t finger rub t ner should h ner should h ner should h ner should h red	Time 033 ( ded in 1993) h bubble after comple est performed ave it remain in Stand dby mode	time.	eather minimums are n	t exceeded.	gray 5 Gray 5 with	tp://mesowes	.utah.edu) or obtaine 15 Not 15 Not 115 Not specits.	onsiste field c
<ul> <li>All c</li> <li>Powe</li> <li>Powe</li> <li>Sens</li> <li>Sens</li> <li>Conf</li> <li>GPS</li> <li>Pictu</li> </ul>	Ier: Low Temp       62       T         Precipitation: Yes/No       T         Comments:       Recorded         Comments:       Recorded         All cables attached and secure         Power unit on and finger rub test perfi         Power unit off (timer should have it re         Power unit off (timer should have it re         Sensitivity Adjusted         Turn Volume DOWN         Confirm AnaBat unit is in standby mo         GPS position recorded         Pictures of and AnaBat unit site taken	<u>Yes/NG</u> <u>Peco</u> , <u>se check eac</u> and secure d and secure d and secure d and secure d and secure d and secure d and secure is in stan rded rded naBat unit si	Time 033 ( ded in 104 f h bubble after comple est performed ave it remain in Stand ave it remain in Stand te taken	time.	eather minimums are n	t exceeded.	gray 5 Gray 5 with	tp://mesowes	.utah.edu) or obtaine 15 Not 15 Not 115 Not Specifs.	onsiste field c

Copperhead Environmental Consulting Inc. P.O. Box 73, 11641 Richmond Rd., Paint Lick, Kentucky 40461 (859) 925-9012



# Appendix B

Acoustic Site Photographs



AS1





AS 3



AS 4



AS 5





# Appendix C

**Mist-net Site Data Sheets** 

L L	Site Location	Logainer ro	road or	ad on forested	1	1: dae to	.00		C								9	1
unt	T			State	NA.			2040		Time Down							J	*
t/L	Lat/Lon; UTM: N/E_		57.72007	+	N/M	-+-	+0+14		Zone		Datum	Datum MAD 83	_ Observers_	rs CrJanos N Kovacs	305	0	PPER	HEAD
#	Time	Species	Age	Sex	Repr.	Mass (g)	FA (mm)	Net	Height (m)	IGM	G/H/B/T	Band# TypeCC	Freq. [72.	Moon Phase	se ] %		И	Wax / Wane
1	2135	AYSE	A	5	PL	1. a	36.5	8	0.5	0	1	00000	1584			Rise		Set
5	2149	1480	4	K	NP		0.24	A	4.5	0	1	1	)	Sun		0608	~	1402
3														Moon		550	S	2013
4																		
2														Time	Temn (F)	Skv	Wind	No. Bats
9														TITIC	( ) dimat		-	
7														2100	66	0	2	2
8														2200	66	0	2	0
6														2 300	99	0	2	0
10														0000	65	0	2	0
11														0100	64	0	2	0
12														0 2 0 0	64	0	3	0
13																		
14													+					
15																		
16																Sky Code		
17														0	Clear			
18														1	Few Clouds	ids		
19														2	Partly Cloudy	oudy		
20														3	Cloudy o	Cloudy or overcast		
21														4	Fog or smoke	ake		
22														5	Drizzle o	Drizzle or light rain		
23														9	Heavy ra	Heavy rain - thunder storm	r storm	
4																		
2															Bea	<b>Beaufort Wind Scale</b>	I Scale	
26														0	Calm: <1 mph	hqm		
1														1	Light air: 1-3 mph	1-3 mph		
28														2	Light bre	Light breeze: 4-6 mph	h	
29														3	Gentle br	Gentle breeze: 7-10 mph	nph	
30														4	Moderate	Moderate breeze: 11-16 mph	-16 mph	
peci	es Abbrev lis (LABO),	Species Abbreviations: Corynorhinus rafinesquii (CORA); Corynorhinus t. virginianus (COVI); Eptesicus fuscus (EPFU); Lasiurus borealis (LABO); Lasiurus cinereus (LACI); Lasiurus seminolus (LASE); Lasionycteris noctivagans (LANO); Myotis austroriparius	rhinus ra eus (LAC	finesqu T); Lasiu	ii (CORA irus semi	(); Coryn nolus (L	orhinus t. v ASE); Lasic	/irginiar	us (COVI) i noctivage	); Eptesici ans (LAN	us fuscus ( O); Myoti	EPFU); Lasiu i austroripari	rus us	Please R	Please Return to:			
MYA MYS	AU); Myotic O); Nyctice	(MYAU); Myotis grisescens (MYGR); Myotis leibii (MYLE); Myotis lucifugus (MYLU); Myotis septentrionalis (MYSE); Myotis sodalis (MYSO); Nycticeius humeralis (NYHU); Perimyotis subflavus (PESU); Tadarida brasiliensis (TABR)	YGR); My NYHU);	otis leit Perimy	iii (MYLF otis subfl	E); Myoti lavus (PE	s lucifugus SU); Tadaı	(MYLU rida bras	); Myotis s iliensis (T	eptentrio ABR)	malis (MY	SE); Myotis so	odalis	P.O. Box 73, Pa (859) 925-9012	P.O. Box 73, Paint Lick, KY, 40461. (859) 925-9012	Lick, KY	, 40461.	

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County Bole tour					1-1 - 10 101	4							1			0	1
IT O LOU , OII	E 37.	72007	State VA		bt.	Time Up	2041	Zone	Time Down	Datum AIAD	IAD \$3	Observers	T 5	1 2010		৩	6
										t			2	Kovacs	0	COPPER	CONSULTING
# Time	Species	Age	Sex	Repr.	Mass (g)	FA (mm)	Net	Height (m)	IQM	G/H/B/T	Band# Type <u>し</u> ら	Freq. 173.	Moon Phase	ise Ø %		3	Wax / Wane
1 2155	MYSE	Ч	L	NR	5.2	35.5	8	2.0	0	1	24000	782			Rise		Set
2 2200	MYSE.	A	W	NR	6.5	35.0	J	2.5	0	١	CCOLYG	1687	Sun		060	60	2040
3 2315	LABO	ESCA	996	from	het ,	1	U U	5.0	1	1	1	1	Moon		061	49	2055
1 3335	EPFU	A	W	S	18.5	024	β	0.5	0	1	)	1					
5 2335	EPFU	A	W	S	17.25	76.5	8	1.0	0	ι	1	1	Time	Temn (F)	Sku	Wind	No Bate
														n' dura t	÷.,		INU. Data
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15																	
16															Sky Code		
7													0	Clear			
18													1	Few Clouds	spr		
19													2	Partly Cloudy	oudy		
0													3	Cloudy c	Cloudy or overcast		
1													4	Fog or smoke	noke		
2													2	Drizzle o	Drizzle or light rain		
3													9	Heavy ra	Heavy rain - thunder storm	r storm	
24 25														Bea	Beaufort Wind Scale	Scale	
9													0	Calm: <1 mph	ham		
2													1	Light air:	Light air: 1-3 mph		
8													2	Light bre	Light breeze: 4-6 mph	h	
6													e	Gentle br	Gentle breeze: 7-10 mph	hqn	
30													4	Moderate	Moderate breeze: 11-16 mph	-16 mph	
oustic Sur	Acoustic Survey: Unit type	De		Unit #		Date		Start time	e		Stop time						
						Date		Start time_	e	I	Stop time_	Ì	Please Return to:	eturn to:			
						Date	- 1	Start tim	e	I	Stop time_		P.O. Box	73, Paint	P.O. Box 73, Paint Lick, KY, 40461.	, 40461.	
Weatherproofing	fing					Coordin	rdinates					ſ	(859) 925-9012	-9012			

(past net D)

A government	Height L						
		-		Domin	Dominant Vegetation	ation	
	Net (m) (m)	Dates	-		4. A rub	rubrum	
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• / /	B 5.2 6	711E - SVE	3. P Strobus		6.		
	C 5.2 12	SILE					
	D 5,2 9	91/t-51/t		Net S	Net Set by Habitat	itat	
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10 1	F		River				
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	Site Photographs		Corridor X	×		××	
	Camera: Fujifilm	n (Gregg)	Cave				
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I I I I I I I I I I I I I I I I I I I			Forest				
1 THE domain			Gap		×		
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trail to I trail			Curici			_	_
1 10 1						-	
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic)           3         Roost habitat: 1. Poor: No or few snags >= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc)	core for each habita sloughing bark or othe	it characteristic) er usable roost feat	ures (cracks, crevic	es, etc)			
<ol> <li>Moderate: Snags with sloughing bark or other roost features present 5-15 inch DBH within 1000 feet of forested areas.</li> <li>Optimal: Snags with sloughing bark or other roost features present &gt;15 inch DBH within 1000 feet of forested areas.</li> </ol>	tures present 5-15 inch tres present >15 inch Г	DBH within 1000 fe	feet of forested area	as.			
Water Resources: 1. Poor: bat drinking resources not present at the site.	sent at the site.						
2. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canony gaps allow hate even access to the mean and the mean access to th	l areas present but too	cluttered to allow	many bats to drink	easily or simul	taneously.	No corrido	S,
Tormage of the majority before the summer of the resource. 3. Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are	t that appear to offer d	lrinking resource tl	hroughout the majo	ority of the sum	mer. Flywa	ys to resou	ces are
Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, and unternationally analign and to monot	tor if stand is monoc	motion coac outifu	an and il anno 11 fear an	- 1. month			
1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging	5 inch DBH. Understo	ory growth cluttere	ed and restricts flyi	a 1. pout). ng/foraging			
2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous.	rees 5 to 15 inches pres	sent. Understory c	lutter dominant bu	t not ubiquitous	s. Trees gre	Trees greater than 15" DBH	" DBH
may be present but rare. 3. Obtimal: Mahure forest Diverse are classes of trees me	sont Trace > 15 inch I	In from the	an their print of the	melle elleteret b	the ferrer	and Homester	free contraction
gaps that facilitate bat foraging.		out nequent. Var	נאחוצ תבב זובוצווו מוו		v ror rrequei	nt small ope	enings and
Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees.	predominantly un-fore	sted. Few mature	trees present not co	innected to othe	er areas of tr	ees.	
<ol> <li>Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas.</li> <li>Optimal: Area is largely forested. Wooded stands are connected to other wooded stands via wooded strong force row or other wooded consider.</li> </ol>	and wooded fence row	s. Little connection	n to adjacent forest	ed areas.	moo popoon	a close	
			voucu su cant, tenec				
Total Habitat Score (Should be between 4 & 12)			Please return to:			0	G
			P.O. Box 73, Paint Lick, KY. 40461	Lick, KY. 40461		IJ	,
			859-925-9012		U	COPPERH	HEAD

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0035       LABO       H       M/K       10.5       21       D       -       -       -       Sum         10130       LABO       H       N       NK       10.5       21       D       -       -       -       Sum         10130       LABO       H       N       NK       10.5       21       D       -       -       -       Sum         10130       LABO       H       N <th>Time</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>(u</th> <th>1.25</th> <th>Height (m)</th> <th>IDM</th> <th>G/H/B/T</th> <th>H</th> <th>1</th> <th>Moon Pha</th> <th>0</th> <th></th> <th>2</th> <th>Wax / Wane</th>	Time						(u	1.25	Height (m)	IDM	G/H/B/T	H	1	Moon Pha	0		2	Wax / Wane
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January       January		t					-							Moon		053	5.3	2013
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	17													0	Clear			
	18													1	Few Clou	ds		
	19													2	Partly Clo	ybud		
	20													3	Cloudy o	r overcast		
	21													4	Fog or sm	ioke		
	22													5	Drizzle o	r light rain	100	
	23													9	Heavy rai	in - thunder	storm	
	24			+	-													
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	26				-									0	Calm: <1	mph		
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3	28						12	1						2	Light bree	eze: 4-6 mpł		
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4	30													4	Moderate	Moderate breeze: 11-16 mph	16 mph	
esicus fuscus (EPFU); Lasiurus ANO); Myotis austroriparius htrionalis (MYSE); Myotis sodalis	Species Abbreviatio borealis (LABO); Lasi (MYAU); Myotis gris	ins: Corynorhi iurus cinereus sescens (MYGI	inus rafii s (LACI); R); Myot	nesquii ( Lasiun is leibii	(CORA); is semine (MYLE); 1	Corynorł Jus (LAS Myotis lu	ninus t. vii E); Lasion tcifugus (h	rginianu iycteris 1 AYLU);	s (COVI); noctivaga Myotis se	Eptesicu ns (LAN ptentrior	is fuscus (I O); Myotis nalis (MYS	EPFU); Lasii austroripar E); Myotis s	urus ius odalis	Please R P.O. Box	eturn to: 73, Paint	Lick, KY,	40461.	
(MYSO); Nycticeius humeralis (NYHU); Perimyotis subflavus (PESU); Tadarida brasiliensis (TABR)	(MYSO); Nycticeius I	humeralis (N)	(UH); P	erimyot	is subflav	rus (PESL	J); Tadaric	la brasil	iensis (1.A	(BR)	ļ			(859) 925	-9012			\$

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Time Up       2030       Time Down       Old C       Observers       P. Roby         79.       79.       70.       Zone       Datum       Mod       Sobservers       P. Roby         Mass       FA (mm)       Net       Height       WDI       G/H/B/T       Band#       Freq.       Moon Phase         (g)       32       E       1.0       O       -       -       -         5.5       23       A       1.5       O       -       -       -         5.7       31       C       1.5       O       -       -       -       -         5.5       23       A       1.5       O       -       -       -       -         5.7       31       C       1.5       O       -       -       -       -         10.0       4/1       D       3.5       O       -	A       Time Up       Zone       Datum       Mode       Respectives       Relation       A. Cale I. & Control         rs       (a)       (b)       (c)       (c)<	WN       70       Time Up       2030.       Time Up       2030.       Time Up       Wold       Robervers       Robervers <t< th=""><th>Mon         Time Up         20.30         Time Up         20.30         Time Up         Mon         Mon</th><th>Mon       71       Time Up       20.300       Time Up       20.300       Time Up       About the field of the the the the the the the the the the</th><th>JAC 25</th><th>1/.01</th><th>Zidge S</th><th>Atr</th><th>Ē</th><th>d bank</th><th>C Mau</th><th>217</th><th></th><th>Date</th><th>10/01 0</th><th></th><th>1</th><th></th><th>٩</th><th>1</th></t<>	Mon         Time Up         20.30         Time Up         20.30         Time Up         Mon	Mon       71       Time Up       20.300       Time Up       20.300       Time Up       About the field of the	JAC 25	1/.01	Zidge S	Atr	Ē	d bank	C Mau	217		Date	10/01 0		1		٩	1
Mass (g)       Fa (mm) Net (m)       Height (m)       WDI       G/H/B/T       Band#       Freq.       Moon Phase         5.0       32       E       1.0       O       —       —       5.0       32       E       1.0       0       —       5.1       5.5       33       A       1.5       0       —       —       5.1       5.5       33       A       1.5       0       —       —       5.1       5.1       5.1       5.1       5.1       5.1       5.1       5.1       5.1       5.1       5.1       5.1       5.1       5.1       5.1       5.1       5.1       7.1	r.       Mass       FA (mm)       Net       Height (m)       WDI $G/H/B/r$ Band#       Freq.       Moon Phase $r.$ $60$ $32$ $E$ $1.0$ $0$ $$ $  -$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Mass (g)         FA (mm)         Net         Height (m)         WD1         C/H/0/T         Type         Moon Phase           5.5         2         2         1.5         0         -         -         -         5.0           5.5         2         1.5         0         -         -         -         5.0         -         -         -         5.0         -         -         -         5.0         -         -         -         5.0         -         -         -         5.0         -         -         -         5.0         -         -         -         10         0 <td< th=""><th></th><th></th><th>N/M</th><th></th><th>00</th><th>2030</th><th>e Time Do</th><th>Datu</th><th>7</th><th>83 Obs</th><th>ervers P</th><th>Roby ,</th><th>A.Cak</th><th>00</th><th>J</th><th>L E A</th></td<>			N/M		00	2030	e Time Do	Datu	7	83 Obs	ervers P	Roby ,	A.Cak	00	J	L E A
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Site Diagram:	State VA Quad UN YON LOOK 110	Mountain	ansi.	Stap + H + Capito	alab		Observers Y. Roby, A. Cable Mountain	
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Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic)	re for each habitat characteristic)							
<ul> <li><u>Roost habitat</u>: 1. Poor: No or few snags &gt;= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc)</li> <li>2. Moderate: Snags with sloughing bark or other roost features present 5-15 inch DBH within 1000 feet of forested areas.</li> <li>3. Optimal: Snags with sloughing bark or other roost features present 5-15 inch DBH within 1000 feet of forested areas.</li> </ul>	ughing bark or other usable roost featu es present 5-15 inch DBH within 1000 f erresent 515 inch DBH within 1000 fea	res (cracks, cr eet of forested	revices, etc 1 areas.	(2				
Water Resources: 1. Poor: bat drinking resources not present at the site.	it at the site.	n ni miesien e	11 643.					
2. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource.	eas present but too cluttered to allow r ce.	nany bats to c	łrink easil	y or simu	ltaneously	y. No co	rridors,	
3. Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available.	at appear to offer drinking resource th	roughout the	majority o	of the sum	ımer. Fly	ways to 1	esources	are
Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor).	r if stand is monoculture, area automa	hically qualifie	es as a 1: p	001).				
1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging	nch DBH. Understory growth cluttere	and restricts	s flying/fc	oraging	F			
- represent some diversity in age of these and the static. These a to 12 micries present. Understory clutter dominant but not upiquitous. Trees greater than 15' UBH may be present but rare.	s 2 to 13 micries present. Understory cu	utter dominar	tou ind it	notinbian	s. Irees	greater tr	an lo L	Hg
st. Diverse age classes of trees	present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and	ring tree heigl	ht and tree	efalls allov	v for freq	uent sma	Il openir	igs and
gaps that facilitate bat foraging.								,
<ul> <li>Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees.</li> <li>2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas.</li> <li>3. Optimal: Area is largely forested. Wooded stands are connected to other wooded stands via wooded stream, fence row, or other wooded corridor.</li> </ul>	dominantly un-forested. Few mature t wooded fence rows. Little connection nected to other wooded stands via woo	tees present n to adjacent fo ded stream, f	ot connect prested are ence row,	ted to oth eas. or other v	er areas o wooded c	f trees. orridor.		
<b>Total Habitat Score</b> (Should be between 4 & 12)		Please return to:	ij				6	
Comments:	I	P.O. Box 73, Paint Lick, KY. 40461	aint Lick, ]	KY. 40461			5	
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Night 1

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nsh	Acoustic Survey: Unit type	e e		Unit #		Date	Š	Start time		1	Stop time						
0					/	Date	S	Start time			Stop time_		Please Return to:	eturn to:	10.0	and the second	
					Y	Date		tart time		1	Stop time.		P.O. Box	P.O. Box 73, Paint Lick, KY, 40461	Lick, KY	,40461.	
ath	Weatherproofing			X		Coordinates	Hes						(859) 925-9012	-9012			

		Tot Zone		Observers	C. LeP	Hanch				Ĩ
atum:	Datum: NAD 85 County BOT POUNT State VA	14 Quad Sugar	rlaaf water.		J. Boul	\$				
Site Diagram:	gram:	Height L				Domin	Dominant Vegetation	tation		
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(	in the set	Site Photographs		Corridor	X	X	X	X		
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	Redselvere _	Photo Log:		Mine						
	Lot st			Forest						
				Gap						
				Other						
diana	Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic) Roost habitat: 1. Poor: No or few snags >= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc) 2. Moderate: Snacs with slouching bark or other roost features present 5-15 inch DBH within 1000 feet of forested areas.	core tor each habitat sloughing bark or othen ures present 5-15 inch l	it characteristic) er usable roost feat DBH within 1000	ures (cracks, feet of forest	crevices, el ed areas.	tc)				
1.	3. Optimal: Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas.	res present >15 inch Di	<b>JBH within 1000 fe</b>	set of forested	l areas.					
+	<u>Water Resources</u> : 1. Poor: bat drinking resources not present at the site. 2. Moderate: Enhemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors,	sent at the site. areas present but too c	cluttered to allow	manv bats to	) drink easi	lv or simul	taneously.	No corr	idors,	
	openings or canopy gaps allow bats easy access to the resource.	urce.	P	,				on of other		
P	<ol> <li>Optimal: Streams or ponds (including road ruls) present that appear to other drinking resource unroughout the majority of the summer. Fryways to resources are available.</li> </ol>	t that appear to offer u	irinking resource u	nrougnout u	ie iliajority	on me ann	mer. riyw	at of exp	sources	arc
0	Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor).	it or if stand is monocu	ulture, area autom	atically quali	fies as a 1:	poor).				
	1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging	5 inch DBH. Understo	ory growth clutter	ed and restric	cts flying/f	foraging	F	A. A. A.		110
	2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. I rees greater than 15 UBH	rees 5 to 15 inches prest	sent. Understory c	clutter domin	lant but not	t ubiquitou	is. Irees gi	reater tha	I CT U	Ч
	may be present but rare. 3 Ontimal: Mature forest Diverse age classes of trees mesent Trees > 15 inch DBH frequent. Varving tree height and treefalls allow for frequent small openings and	sent Trees > 15 inch D	JBH frequent. Var	rving tree hei	ight and tre	sefalls allov	v for freque	ent small	openin	es an
~	gaps that facilitate bat foraging.		F	0 1	D		-			
0	Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees.	redominantly un-fores	sted. Few mature	trees present	t not conne	cted to oth	er areas of	trees.		
1 0	<ol> <li>Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas.</li> <li>Optimal: Area is largely forested. Wooded stands are connected to other wooded stands via wooded stream, fence row, or other wooded corridor.</li> </ol>	and wooded fence rows onnected to other wood	rs. Little connectio oded stands via wc	on to adjacent ooded stream	t forested a	reas. /, or other v	wooded co	rridor.		
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+	Total Habitat Score (Should be between 4 & 12)			Please return to:	n to:			2	ŝ	
Comments:	nts:			P.O. Box 73, Paint Lick, KY. 40461	Paint Lick,	, KY. 40461				
				859-975-9017				INVINO NUMBER	LAN CONTAIN	WITTEN M

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pecies Ab orealis (L <sup>A</sup> MYAU); M AYSO); N <sub>j</sub>	Species Abbreviations: Corynorhinus rafinesquii (CORA); Corynorhinus t. virginianus (COVI); Eptesicus fuscus (EPFU); Lasiurus borealis (LABO); Lasiurus cinereus (LACI); Lasiurus seminolus (LASE); Lasionycteris noctivagans (LANO); Myotis austroriparius (MYAU); Myotis grisescens (MYGR); Myotis leibii (MYLE); Myotis lucifugus (MYLU); Myotis septentrionalis (MYSE); Myotis soda (MYSO); Nycticeius humeralis (NYHU); Perimyotis subflavus (PESU); Tadarida brasiliensis (TABR)	norhinus lereus (LA MYGR); M s (NYHU)	rafinesqu (CI); Lasit Iyotis leib ); Perimy	ii (CORA urus semi ni (MYLE otis subfl.	); Coryno nolus (LA ); Myotis avus (PES	rhinus t. v SE); Lasio lucifugus (U); Tadari	irginianu nycteris r MYLU); da brasili	s (COVI); noctivagai Myotis se iensis (TA	Eptesicu: ns (LANC ptentrion (BR)	s fuscus (E )); Myotis ; alis (MYSF	s t. virginianus (COVI); Eptesicus fuscus (EPFU); Lasiurus asionycteris noctivagans (LANO); Myotis austroriparius gus (MYLU); Myotis septentrionalis (MYSE); Myotis sodalis adarida brasiliensis (TABR)	us Is Jalis	Please Return to: P.O. Box 73, Pain (859) 925-9012	Please Return to: P.O. Box 73, Paint Lick, KY, 40461 (859) 925-9012	Lick, KY,	40461.	
her Abbre	Other Abbreviations: Male: M; Female: F; Pregnant: P; Lactating: L; Post Lactating: PL; Scrotal: S; Non Repro: NR	t; Female:	F; Pregna	nt: P; Lac	tating: L;	Post Lacta	ting: PL;	Scrotal: S	Non Rep	Dro: NR							p. 1

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	atherpro nments:	ofing				1	Coordina						ļ	(859) 92	5-9012			D. 2

Site Diagram:	Height Length	Concel 1		
Z		1111	Dominant Vegetation	u
	Net (m) (m) Dates	1. A. rubrum	4. 7	
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torst	C 5.2 Y 8/13: 9/14			
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and and a string	Site Photographs	Corridor X	XXX	
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T C	Photo Log:	Mine		
/ First / Larch		Forest		
		Gap		
101		Other		
at Habitat Characterization (Choose annronriat				
Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic)           Roost habitat:         I. Poor:         No or few snags >= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc)           2. Moderate:         Snags with sloughing bark or other roost features present 5-15 inch DBH within 1000 feet of forested areas.           3. Optimal:         Snags with sloughing bark or other roost features present >15 inch DBH within 1000 feet of forested areas.	te score for each habitat characteristic) ith sloughing bark or other usable roost featt features present 5-15 inch DBH within 1000 fe eatures present >15 inch DBH within 1000 fe	tes (cracks, crevices, etc et of forested areas. t of forested areas.		
<ul> <li>Water Resources: 1. Poor: bat drinking resources not present at the site.</li> <li>2. Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource.</li> <li>3. Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the maiority of the summer. Flyways to resource areas are</li> </ul>	present at the site. ded areas present but too cluttered to allow r resource. sent that appear to offer drinking resource th	any bats to drink easily our hout the maiority o	q or simultaneously. No of the summer. Flyways	) corridors, to resources are
available.				
Forest Structure: (if hardwoods are absent or nearly absent or if stand is monoculture, area automatically qualifies as a 1: poor). 1. Poor: Habitat even aged and young. Trees smaller than 5 inch DBH. Understory growth cluttered and restricts flying/foraging 2. Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquite	bsent or if stand is monoculture, area automatically qualifies as a 1: poor). nan 5 inch DBH. Understory growth cluttered and restricts flying/foraging l. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15″ DBH	ically qualifies as a 1: p l and restricts flying/fo utter dominant but not u	oor). raging ubiquitous. Trees greate	er than 15" DBH
may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and	present. Trees > 15 inch DBH frequent. Var	ing tree height and tree	falls allow for frequent :	small openings and
gaps that facilitate bat foraging.				
Land Cover: 1. Poor: Square kilometer surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees. 2. Marginal: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas. 3. Optimal: Area is largely forested. Wooded stands are connected to other wooded stands via wooded stream, fence row, or other wooded corridor.	ite predominantly un-forested. Few mature t ots and wooded fence rows. Little connection ire connected to other wooded stands via wo	ees present not connect to adjacent forested are ded stream, fence row,	ed to other areas of tree as. or other wooded corrid	s. or.
<b>Total Habitat Score</b> (Should be between 4 & 12)		Please return to:		6
Comments:		P.O. Box 73, Paint Lick, KY. 40461		
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	5			5											0.11	PPER	HEAD
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pecies Abbr orealis (LAB	Species Abbreviations: Corynorhinus rafinesquii (CORA); Corynorhinus t. virginianus (COVI); Eptesicus fuscus (EPFU); Lasiurus borealis (LABO); Lasiurus cinereus (LACI); Lasiurus seminolus (LASE); Lasionycteris noctivagans (LANO); Myotis austroriparius	orhinus r reus (LA)	afinesqu CI); Lasiu	ii (COR/ 1rus sem	A); Corync inolus (Lz	ASE); Lasi	virginian onycteris	us (COVI) noctivaga	); Eptesicu uns (LAN	is fuscus (F O); Myotis	SPFU); Lasiu austroripari	rus us	Please Return to:	sturn to:		*	
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at/L	N/E C	L	Observers (5.	. Janos,	N.	KOVACS			Ĩ
Site Diag	Datum: <u>W4D 83</u> County <u>Bote tourt</u> State <u>V</u> Site Diagram:	14 Quad Sugarloat Mountain	Crit		Domin	Dominant Vegetation	otation		
			Trenda			0 .7.	eter buc		
	- Fa	(m) (m)	1 2 Carlourness				Chero		
		B 5.2 9 7/13-7/14	L. tu	fera					11
	in the second se	C 5.2 6 7/13-7/14							
-	F	D 5.2 6 7/13-7/14			Net Se	Net Set by Habitat	bitat		
1	10 10	ш	Habitat	A	8	υ	D	ш	-
1	A T TA	F	River			1			
P	the they want		Stream	1	>				
-			Pond			-	-	1	
_	Roed	Site Photographs	Corridor	>		>	>	1	
	t-iRe 1	Photo I og: 2040 - 2047	Mine						
			Forest						
			Gan				11		
			Other						
							1	-	
ndia	Indiana Bat Habitat Characterization (Choose appropriate score for each habitat characteristic)	ore for each habitat characteristi	c)						
a m	<ul> <li><u>Roost habitat</u>: 1. Poor: No or few snags &gt;= 5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc)</li> <li>2. Moderate: Snags with sloughing bark or other roost features present 5-15 inch DBH within 1000 feet of forested areas.</li> <li>3. Optimal: Snags with sloughing bark or other roost features present &gt;15 inch DBH within 1000 feet of forested areas.</li> </ul>	loughing bark or other usable roost four the present 5-15 inch DBH within 10 res present >15 inch DBH within 1000 res present >15 inch DBH within 1000 rest of the other set.	eatures (cracks, c 00 feet of foreste 1 feet of forested	revices, et d areas. areas.	c)				
	<ol> <li>Moderate: Ephemeral or intermittent streams or present at the stre.</li> <li>Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource.</li> <li>Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available.</li> </ol>	eru at the sue. areas present but too cluttered to allo arce. that appear to offer drinking resourc	w many bats to e throughout the	drink easi majority	y or simul of the sum	taneously mer. Fly	y. No cor ways to re	ridors, sources a	Ie
S	0 0	ent or if stand is monoculture, area automatically qualifies as a 1: poor). in 5 inch DBH. Understory growth cluttered and restricts flying/foraging	matically qualifiered and restrict	ies as a 1: J s flying/f	oor). oraging	T*one	the second	15" DR	Ξ
	may be present but rare. 3. Optimal: Mature forest. Diverse age classes of trees present. Trees > 15 inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and and the facilitate hat foraging.	eent. Trees > 15 inch DBH frequent. V	/arying tree heig	ht and tre	efalls allow	v for freq	uent smal	l opening	s and
3	lometer surrounding site e form of small woodlots sted. Wooded stands are	predominantly un-forested. Few mature trees present not connected to other areas of trees. and wooded fence rows. Little connection to adjacent forested areas. connected to other wooded stands via wooded stream, fence row, or other wooded corridor.	re trees present 1 tion to adjacent f wooded stream,	not connec orested ar fence row	ted to othe eas. , or other v	er areas o vooded c	f trees. orridor.		
1	Total Habitat Score         (Should be between 4 & 12)		Please return to:	to:			C	Ś	1.
Omr	Comments:		P.O. Box 73, Paint Lick, KY. 40461	Paint Lick,	KY. 40461			1	1
			859-975-9012				000	ERHE	4



## Appendix D

Mist-net Site Photographs





MS 1 Net B



MS 1 Net C



MS 1 Net D



MS 2 Net E



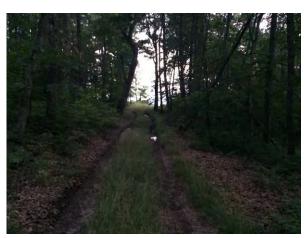
MS 2 Net A



MS 2 Net B



MS 2 Net C



MS 2 Net D



MS 2 Net E



MS 3 Net A





MS 3 Net C

MS 3 Net D



MS 4 Net A

MS 4 Net B



MS 4 Net C

MS 4 Net D



MS 5 Net A





MS 5 Net C

MS 5 Net D



# Appendix E

**Roost Tree Photographs** 



RT 55





RT 57





RT 59



### **COPPERHEAD** ENVIRONMENTAL CONSULTING



RT 61



RT 62

**COPPERHEAD** ENVIRONMENTAL CONSULTING



RT 63





RT 257



# Appendix F

**Roost Tree Data Sheets** 

County 80	County Boletourt	5262t to	925		W/N - 79, 6	4A 47		Zone –	Id Sugarle	loaf NHN.	Ohservers: A/ K	Kourt T Rouche
Tree Tag		DBH	Height	Height ft of			% Bark Cover**	Tree	Available			
0 #	Species	(cm)	Tree	Roost	Condition*	Usable	Total	Ranking***	Roost/ Observation	Interior	Edge	Open
54 0	2 montana	5.95	02	15	5499.	Н	Ħ	0	back		þ	
1	A rubun	30.5	02	I	live	7	H	2	1	Cano	Canopy Cover at Roost	t
1	A where	14.6	15	1	1100	٢	H	25	1	Open	Intermediate	Closed
4	Arubium	2.8.2	151	١	live	7	H	0	1			
0	inbra	86.1	32	1	live	W	4	V	1		Basal Area	
A	10	2.2.8	.61	4	Snag	t	H	25	crevice	Live Trees	Snags	All Trees
A	1 rubum	48.4	13	I	Snag	H	4	Sc	crevices cavity	011	30	040
0	Q montona	59.5	23	1	live	1	Ħ	U	1			
1	A rubrum	30.2	20	1	live	7	H	2	١	I	Roost Location	
(T) Q	Balleahaniensis	Σ	00	4	live	1	Ħ	SC	1	Bark	Cavity	Crevice
Ø	Q montana	SI.I	22	١	live	W	H	C	crevice	)		
Ø	montana	1.2F	22	1	live - clamaged	W	H	C	cavity	<b>QUICK REFERENCE</b>	ERENCE /	CIRCLE
Ø	Q montena	1.14	19		live- damaged	1	H	0	bark			
0	Qmontana	t.st	20	1	live - damaged	H	H	C	yark / Crevice		*Condition	
										Snag	Live	Live-Damaged
										*	**% Bark Cover	
										High = > 25%	Moderate = $\geq$	Low =
										-	10-<25%	< 10%
-										**	***Tree Ranking	
										Canony	Sub-Canony	Linderstory

...

Roost Tree # 54

Bat Species/Sex/Frequency: MYSE/M/172.687 Band# CC0646

where we H<sub>2</sub>O Level Observations Sark/crevice **Opening Measurements** Ground Cavity or Crevice Characteristics Height Sex of Bat ٤ Bat Days CCO646 Bat Band # Width Aspect £89. Bat Freq. Black bay -> Camera 2 81/t Nature Date No. 10 12 13 6 11 14 No. 3 5 9 00 2 4 2 2 3 Personnel/ Comments forest video 0229 Focal Bat exit # (71/19) emergence video recorded. Field Tagged Bat 5ho2 1:074 VTA Time Bats End 2049 152 1 2 0 CH Location Diagram: 12 B Bats 2049 Emergence Count 2038 Sunset 7.039 # of Bats -C feu clouds few clouds Weather the etit 4.000 Temp St 52 Roost Tree Diagram: 811t Comments: Date 61/t Second No. 2 -3 4

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Roost Tree # Location $\mathcal{E}_{s}$	Forest off	of man	oject No	Project No./ Project N	ame	2			0			
County_	Botetourt				State	AA		Quad	Sugar	act Mth.		
/Suor	Lat-Long/UTM: N/E	34.71	71965		bt- N/M	\$80t.	_	Zone	Datum: NA	0 63	Observers: <u>N Ko</u>	KOVACS, J BOUTH
Tree Tag		DBH	Heigh	Height ft br m		% Bark	% Bark Cover**	Tree	Available		Habitat	
#	sanade	(cm)	Tree	Roost	Condition	Usable	Total	Ranking***	Koost/ Observation	Interior	Edge	Open
55	A rubrum	45.1	55	15	Camaged	Н	H	2	Courta!			
	A rubium	24.8	25	ŀ	1.46	7	H	SC	ľ	Cano	Canopy Cover at Roost	L.
51	A rubium	55.3	60	20	Snora	Н	H	V	Lewise Lewise	Open	Intermediate	Closed
	a montane	6 F.H.	59	ľ	1.201	7	H	0	I			
	Q WARHARE	56.6	00	*	1,40	W	Н	C	1		Basal Area	
	Q nothing	20	65	1	1 26	W	H	2	I.	Live Trees	Snags	All Trees
	O rubro	2.8.8	50		1.46	7	H	J	1	96	30	120
	B montake	40.01	SS	1	1:10	7	H	2	Ĩ			
	Q montaina	45.3	60	1	1,40	7	H	0	Ţ	ž	Roost Location	
	UNKNOUL	2.4.2	30	50	Shag	Ŧ	7	25	(LUNG	Bark	Cavity	Crevice
	Q monthing	トンとと	65	1	1100	W	t	U	l	)		
56	we KhOWK	43.9	25	20.40	Shan	Ŧ	W	2	courds, LIPEUTLE	<b>QUICK REFERENCE</b>	+ 1	CIRCLE
					~							
								1			*Condition	
										Snag	Live	Live-Damaged
										Ŧ	**% Bark Cover	
										High = > 25%	Moderate = >	Low =
											10-<25%	< 10%
										*	***Tree Ranking	

7

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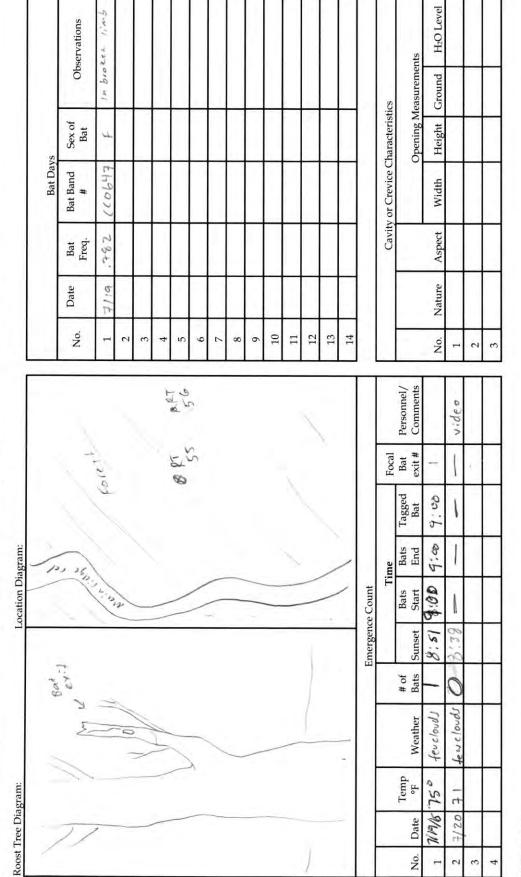
ø

COPPERHEAD

Roost Tree # 55

Bat Species/Sex/Frequency:  $M \forall 5E \mid f \mid 172, 752$ 

Band# 660643



Comments:

2 0 4

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COPPERHEAD

N Black bag > Camera recorded. U;deo PMEraPhile (02/E) 1:042 501000

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1

yoy	es	rest att	at main	main ridge	in ridge trail	hear	RT 55)		E OLKY T	r urge			non d con
Col	County	- N		-		State	-		Quad	Sugar	th.		
at	-Long/	Lat-Long/UTM: N/E	37.71967	14		6t- N/M	1.70899		Zone	- Datum:	NAD 83 Obs	Observers: <u>N A</u>	Kover
#	Tree Tag	Cruciae	DBH	Heigh	Height Dor m	*****	% Bark	% Bark Cover**	Tree	Available		Habitat	
	#		(cm)	Tree	Roost	Condition"	Usable	Total	Ranking***	koost/ Observation	Interior	Edge	Open
-	56	UNKNOUL	43.9	55	20 40	Shay	H	W	0	carity Crevile			
3		A rubium	t.8	07	}	tive	7	H	50	ĩ	Cano	Canopy Cover at Roost	st
3		A rubium	19.5	02	)	1,00	7	H	50	1	Open	Intermediate	Closed
4		A rubum	25	20	15	1140	X	H	U	creute			
5		Q montana	56.1	60	1	1:40	7	H	2	1		Basal Area	
9		Unknowh	56.7	45	35	Shay	H	L	C	cauf ereu.	Live Trees	Snags	All Trees
~		A rubium	18.9	20	20	live / damage	W	H	50	trevice	110	30	0/11
80		Q Montener	51.3	5%	1	live	7	H	v				
6		A which	18	45	1	live	7	H	2			Roost Location	
10		A rubium	5.12	Sh	1	live	7	Н	2	3	Bark	Cavity	Crevice
11		A ubium	24.6	22	1	29.1	7	H	50	1		)	
12		A wbrum	523	60	20 40 2	Shad	Ħ	Н	J	crevice	QUICK REFERENCE	RENCE /	CIRCLE
13		A permanel vanica	14.5	20	1	live	7	H	5C	1			
14	55	Aubum	H5.1	55	15	1: Vermaged	H	H	ς	buck		*Condition	
15											Snag	Live	Live-Damaged
16													
17											*	**% Bark Cover	
18											Uich - \ 75%	Moderate = $\geq$	Low =
19				Í							****	10-<25%	< 10%
20													
21											*	***Tree Ranking	
00	I,												11.4.1.1.1.1.1

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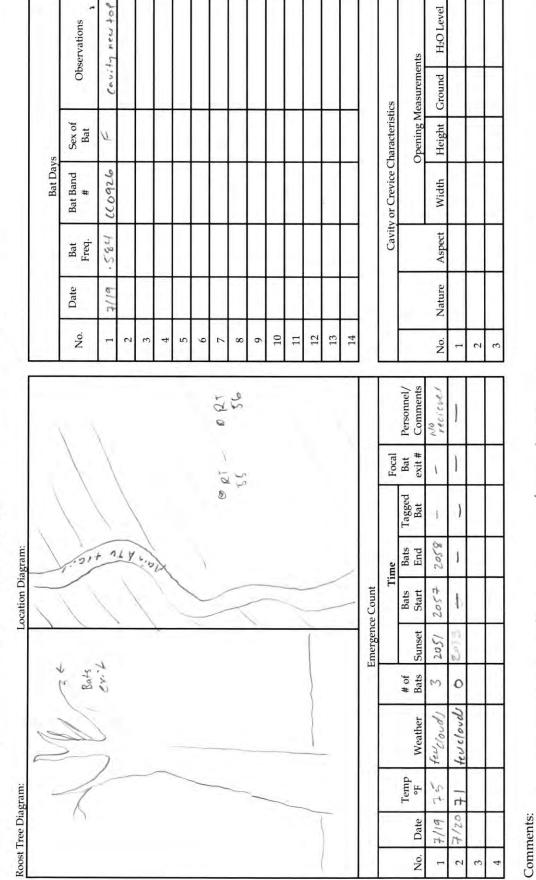
24

Roost Tree # 5 lo

Bat Species/Sex/Frequency: MYSE/F/172.584

Band # 6 6 0926

F



Checked with receiver

COPPERHEAD

ofter court and but left (7119)

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Location 0	È	152	410	NIL	L'M E C	- 1 14 100	43 1X7	1 27				
County S	Botchow	+			Stat	VA		Quad	Jury	were horn.		
Lat-Long/UTM: N/E	N/E	4.40	42624		bt- N/M	.69833	10	Zone	Datum:	MAD 83	Observers: No	COVALS J
Tree Tag	Species	DBH (cm)	Heigh	Height ft or m	Condition*	% Bark	% Bark Cover**	Tree	Available Roost/		Habitat	
-		him	Tree	Roost		Usable	Total	Kanking	-	Interior	Edge	Open
57 0%	Q montone	56	25	202	Snag	H	W	50	Laik leau			
An	rubium	18.2	35	ł	1.00	7	H	2	Ţ	Can	Canopy Cover at Roost	st
1.1	white	19.4	dh	1	1: UL mugge	W	#	5	'eur le	Open	Intermediate	Closed
01100	8 Olleyhummers? 1	38.6	45	)	1.00	7	H	C	1			
Arv	rubum	32	oh	1	1. Ve Noman C	7	H	2	)		Basal Area	
	rbun	1.12	40	1	lice	7	H	>	١	Live Trees	Snags	All Trees
Balles	B Ileghaniensi's	29.9	20	1	live	7	H	v	1	100	01	0/1
541	Sylvatica	10.1	36	1	30:1	7	H	50				
24	sy luchter	40	45	1	live	7	H	C	1		Roost Location	
N 1 NS	N sulvated	23.6	No	4	live	L	H	J	١	Bark	Cavity	Crevice
0,	rubia	37.5	40	ĩ	live	7	H	2	ï			
										QUICK REFERENCE	ERENCE /	CIRCLE
-											*Condition	
-										Snag	Live	Live-Damaged
											A STATE OF	
_											**% Bark Cover	
-										$High = \ge 25\%$	Moderate = $\geq$	Low =
_											% C7>-01	< 10%
_										*	***Tree Ranking	
										Canony	Sub-Canomy	Inderstory

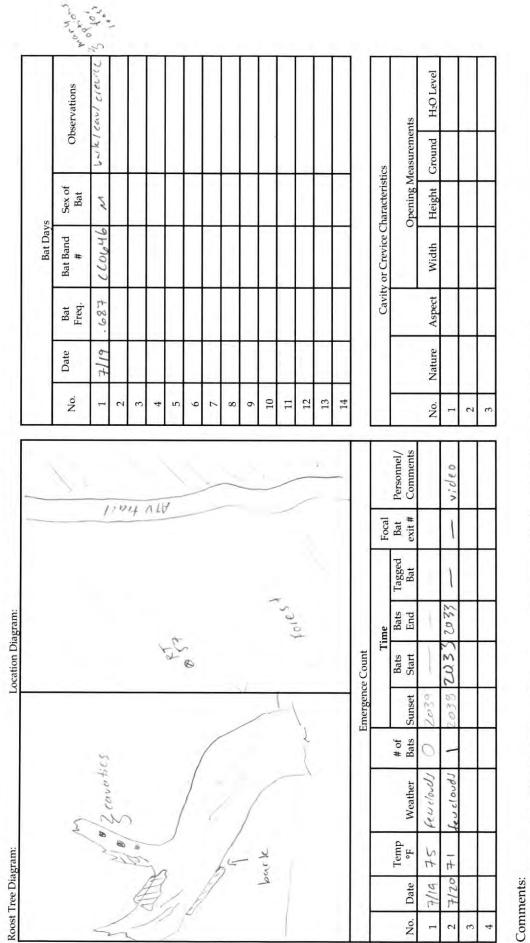
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45 Roost Tree #

Bat Species/Sex/Frequency: M YS E / M / 172 .667

Band # 200646

W.



Red bag 7 comera (7/20) charache video recorded. 1.10:0 CILORD

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Roost Tree Data Form (2014)	Bat Spec
SG	
Ronet Tran # 00	Duringt No / Du
Direct Incom	TTOILTNO'LT

2. Ye

fores!

Location

of Page

					Paur-					
	of	July 2015			UNICS JU		Open			τ
	Page	Date First Found 2			Observers: N. KOLMES	Habitat	Edge		Canopy Cover at Roost	
	1.2	Date First		and a	5.63		Interior		Canop	
	Band #	me		d Cusarlant	Datum: Matu	Available	Koost/ Observation	Cavity	crewite.	j
(1983)	6.64	2 4 M 12	54	Ouad	Zone	Tree	Ranking***	SC	C	
	111/12	1	true			Cover**	Total	Т	Н	Н
	A Y = E /I	106.23	20054	NA.	-79.69655	% Bark Cover**	Usable	H	W	1
	Bat Species/Sex/Frequency: //	-	1.074	State	W/N -79.	*	Condition	Shan	1.00	1240
	: Species/Se	Project No./Project Name	int 1		V	Height (ft or m	Roost	14	45	1
	Bat	ject No	A.A.		57	Height	Tree	18	55	50
		Pro	1		262	3H	(u	5	M.	14

Ŧ	/guor	Lat-Long/UIM: N/E_3	7.7276	3		NI/W	10010.		Zone	Datum:
F #	Tree Tag		DBH	Heigh	Height (ft)or m	•	% Bark	% Bark Cover**	Tree	Available
	# "	sanade	(cm)	Tree	Roost	Condition.	Usable	Total	Ranking***	Roost/ Observation
	58	UNKNOWL	39.5	18	14	Shag	H	L	SC	cavity
2		B Montary	59.3	25	45	live	W	Н	C	crew/12
3		Q montany	61.7	50	1	live	7	H	C	Ì
4		a montana	t:20	Sh	)	):	7	Ħ	2	1
2		O rubia	36.1	2/2	ł	1100	7	Ħ	2	1
9		Qrubia	29.1	40	1	1.00	7	Н	2	).
~		ELDXINUISON	25.8	30	1	1:00	7	H	35	V.
80		Nsylvahca	59.6	50	1	1:06	7	H	C	1
6		Q rubia	32,3	45	1	3021	7	H	2	١
10		Q inbia	24.2	40	)	1100	7	Ħ	J	1
11		A which	22.5	30	1	1,00	7	Н	5.5	I
12		Q MOINTAND	58.7	25	26-	Snag	W	H	50	cul dev.
13		@ montana	6.th	207	01	Saay	V	Н	5 5	Crevile
14		a rubia	5.98	60	25	1,06	W	Н	C	LIEULLE
15	54	a montany	75.7	00	HS	Shad	н	H	2	buik/ Cievice
16						~				
17										
18										
19										
20										
21	Ĩ									

Closed	
Intermediate	Basal Area
Open	

Live Trees	Snags	All Trees
110	10	150

CONT	VOUSI LOCATION	
Bark	Cavity	Crevice

# QUICK REFERENCE / CIRCLE

	Live-Damaged
*Condition	Live
	Snag

$Moderate = \geq Low = 1025\% < 10\%$	Table Control	C NAIINIIN
High = $\geq 25\%$		IT

\*\*% Bark Cover

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Sub-Canopy Understory

Canopy

\$89.2E1 . bait in pund \*

Сорревнело

Province of the second of the	Bat Davs	No. Date Bat Band Sex of Observations Freq. # Bat	1 7/21 . 687 66064 6 m contro	2		* ιΩ	6	2	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	9 10	11	12	13	14 14		Cavity or Crevice Characteristics	Opening Measurements	No. Nature Aspect Width Height Ground H2O Level		2	3	ravel at .688 and when we closed in on
Pretty clouds O 2033 - Time Pretty clouds O 2033 - Time Pretty clouds O 2033 - Time Pretty clouds O 2033 - Time	Field AB site 1						\$				, , ()	1010				Focal	Tagged Bat Bat exit #	1	- V:010			1 found her
P Weather Pectily clouds				F NII	7	1							-		Emergence Count	Tin	Bats Sunset Start	2033 -	- 9202 (			+ lister +
		~ ~ ~	1 / 200	1 20	00	/				/	-(						Weather	<u> </u>	46° portly cloudy C			in hat

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23 11 11 1

Location 2	Small clear	10	UJACE IN	rtojectivo./ rrojectivame	11 e	t Main	1 ridge	LIAN O	orac Juand	it whi	Date First Found 2	20142015
1/Buc	Lat-Long/UTM: N/E_	37.72	2185		64- N/M	04 .	363	Zone	D	NAD 53	Observers: A Cou	KOUNES, J Bau
Tree Tag	Species	DBH	Heigh	Height for m	Condition*	% Bark	% Bark Cover**	Tree	Available Dooot /		Habitat	
#		(cm)	Tree	Roost	COMMINI	Usable	Total	Ranking***		Interior	Edge	Open
59	Caryaspy	22.2	20	20	Shag	W	H	5C	Crevicer cavity			
	alba	63.9	60	1	live	7	Н	C	1.	Cano	Canopy Cover at Roost	
	Colabia	15	02	i	lawaged	٢	H	SC	1	Open	Intermediate	Closed
	Cglubien	11.3	02	t	live	7	H .	SC	1			
	Qalba	36	20	)	1:00	7	H	J	ĩ		Basal Area	
	adlon	48.2	50	1	live	1	H	c	)	Live Trees	Snags	All Trees
	Qalba	5.t.E	45	1	live	7	H	J	1	071	20	160
7	Q montano	0 51.6	55	١	live	L	H	c	sievier			
	Orubia	32.7	50	1	1:00	٢	H	C	x	M	Roost Location	
	Qiubia	38.4	50	١	1:00	7	H	C	1	Bark	Cavity	Crevice
-	Unknoun	24	20	4	Sharg	H	T	SC	crevice	į		
	Q rubia	56.1	55	1	1.06	7	H	C	1	<b>QUICK REFERENCE</b>	+/	CIRCLE
	Pserotine	29.5	40	50	live clamened	W	H	2	CONTRY			
	P 52104100	24	40	15	damaged	W	H	0	LUNDO		*Condition	
)	a albu	4.84	50	20	damayer	7	H	C	crevict	Snag	Live	Live-Damaged
	Calabia	h'27	35	1	live	L	H	56	1			
	-									**	**% Bark Cover	
										High = > 25%	Moderate = >	Low =
										0	10-<25%	< 10%
1										*	***Trao Rankino	
											0 	Indonetomi

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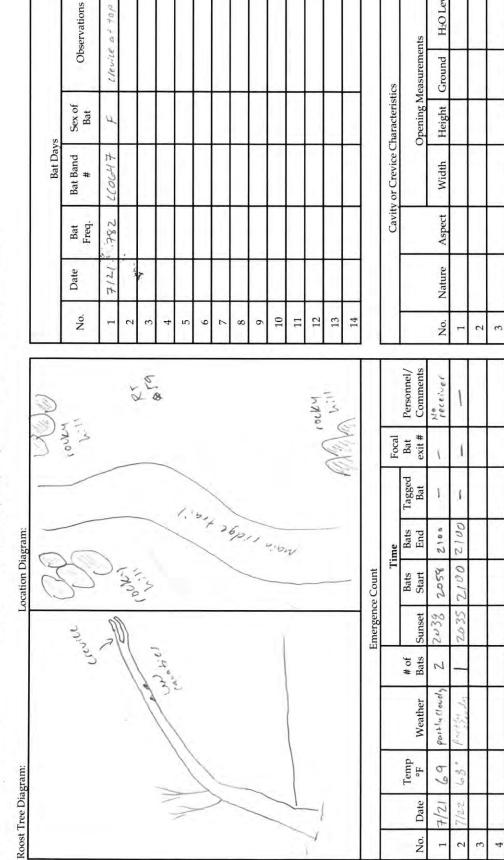
COPPERHEAD

Roost Tree # RT 59

(783) Bat Species/Sex/Frequency: MT5 E / F / 172. 782

Band # 66 0647

100



COPPERAD

23E'2EI

Had to use

bat .782 on the correct frequences

pick

Comments: (21 July) (ouldof

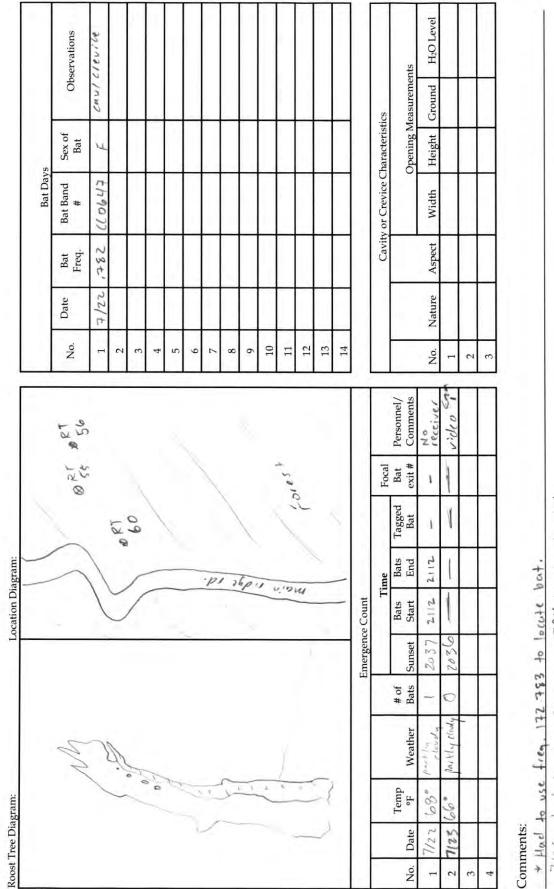
Copperhead Environmental Consulting Inc. P.O. Box 73, 11641 Richmond Rd. Paint Lick, KY 40461 (859) 925-9012

H<sub>2</sub>O Level

) Ca	Roost Tree # Location <u></u>	mall	rlearing 1	roject N	Project No./Project Name		HEDE Ma	1 110	idge rel:	pige (nee	10.	st Found	slot flar
F C	Lat-Long/1	Lat-Long/UTM: N/E	37.71946	1946		W/N - 79.	10795	50	Zone	ad	NAD83	Observers: NKc	ovacs. J BOULAC
F	Tree Tag		DBH	Heigh	Height ft or m		% Bark	% Bark Cover**	Tree	-		at	
#	#	species	(cm)	Tree	Roost	- Condition*	Usable	Total	Ranking***	Roost/ Observation	Interior	Edge	Open
-	60	Q montona	33.9	ī	13	Shag	H-	H	56	cav.l crevice			
·		Q montana	54	55	1	live	T	H	2	1	Cano	Canopy Cover at Roost	
		Q montance	48.6	50	)	live	7	H	2	)	Open	Intermediate	Closed
		A rubrum	28.3	90	1	1:00	7	H	Sc	I	)		
		A rubium	15.4	30	1	1.60	T	H	sc	١		Basal Area	
		a montana	47.6	40	25	Shag	W	H	U	CONITY	Live Trees	Snags	All Trees
1.1		A rubium	45.34	40	١	1:UE Jamased	7	H	V	courty	0 e	09	120
		a montana	7.84	35	1	Shay	L	H	0	1			
1.1		A wbear	40,4	50	ı	Snag	7	H	c	1	R	Roost Location	
1.1.1		UNKADLA	37.9	30	10-	Snacy	H	T	υ	caul cieviti	Bark	Cavity	Grevice
11.5		Nsu/vatica	20.9	02	)	live	7	H	SC	-	·		
1921		Q montena	34.1	22	1	Shag	T	H	50	1	QUICK REFERENCE	+ /	CIRCLE
1						1							
								-				*Condition	
15											Snag	Live	Live-Damaged
1000											**	**% Bark Cover	
1.1.1											$H_{1,\alpha h} = > 25\%$	Moderate = >	Low =
											al construction	10-<25%	< 10%
											**	***Tree Ranking	

Roost Tree # 60

Bat Species/Sex/Frequency: MYSE/E/172.782 Band# ((0647



7/25 bod to use from 172, 784 to locate but

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Location	Forest of	1	Net	E ANY THEIR AND	1	Runst -w	5 23	- 1				
Lat-Long/U	Lat-Long/UTM: N/E_3	21.72	121		W/N 79.	69 CH	-	Zone	ad Datum:	1/AD 93	Observers: N.	Kounes, J.
Tree Tag		DBH	Heigh	Height ft or m		% Bark	% Bark Cover**	Tree	Available		Habitat	
#	species	(cm)	Tree	Roost	Condition*	Usable	Total	Ranking***	Roost/ Observation	Interior	Edge	Open
61 F	A rubium	15.3	15	14	Shan	Н	Н	50	burk			
-	A rubrum	16.0	25	•	Snag	7	H	52	1	Cano	Canopy Cover at Roost	st
A	rubium	19.3	35	1	1:4.6	L	H	2	١	Open	Intermediate	Closed
810	e	6.2h	50	1	11:00	7	H	2	bark			
0	Q rubia	33.9	45	1	live	7	H	S	1		Basal Area	
~	N Sul watica	19	25	Ŀ	1:00	7	H	Sc	ı	Live Trees	Snags	All Trees
0	Q montang	29	35	35	1: UC clamoard	W	H	2	erevice	120	20	ohl
1	Q montana	43.Z	45	22	live	W	H	2	buck			
0	Q montours	5.83	60	1	live	W	H	J	Lark	4	Roost Location	
0	Qmontana	54.9	55	30	1:00	W	H	C	bark	Bark	Cavity	Crevice
.0	Qrubia	18	35	1	1.UE	7	H	V	١	7		
2	Q rubia	39.5	50	ſ	live	7	Н	c	1	<b>QUICK REFERENCE</b>	ERENCE /	CIRCLE
<	N Sylvetica	59.5	20	1	live	7	H	C	1			
0	a rubia	49.9	55	1	1:40	7	Н	2	ł		*Condition	
_		Ĩ								Snag	Live	Live-Damaged
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_											10-<25%	< 10%
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										·······	Cub Concourt	Indeedom

 $\dot{\mathbf{w}}$ 

Roost Tree # ( |

Bat Species/Sex/Frequency: MYSE / M/ 172.687 Band # CC0646

H<sub>2</sub>O Level Observations Bark **Opening Measurements** Ground Cavity or Crevice Characteristics Sex of Bat Height 5 Bat Days Bat Band # Width CCOGYC +89. Aspect Bat Freq. 22/E Nature Date No. No. 10 12 11 13 14 3 5 9 8 6 2 4 5 2 3 ÷ 2 CAWRUS. Comments Personnel/ white ( fores Focal Bat exit # .389.7EI Lielo 1.101 110 Tagged Bat 20102 2055 Bats End +requency Location Diagram: 0 Time 2055 Bats Emergence Count 0 2035 Sunset 2036 20 Baik up bat # of Bats 0 3 Weather part 1 years Pick ġ ANA 1 Temp 7 000 100 Roost Tree Diagram: \* Had Comments: Date ьł 21/23 ĩ No. 2 3 4 -

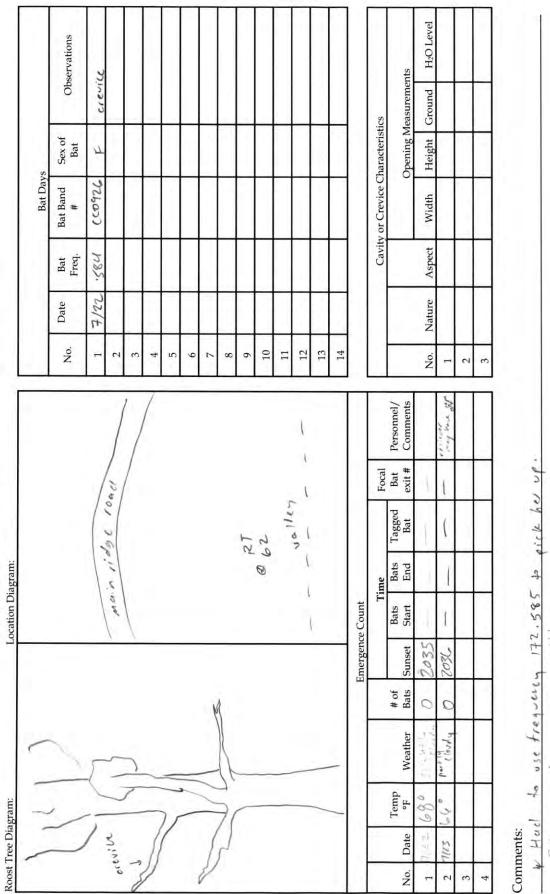
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Location	Valley doiel	4	110	01 1103	v				2			
County	County Botetourt	14.42	72381		W/N -74.	JA TO 82	9	Zone .	ad Sugarload	AD53	Observers: Al +	KOUNCJ
Tree Tag		DBH	Heigh	Height ft or m		% Bark	% Bark Cover**	Ттее	Available		at	
D	Species	(cm)	Tree	Roost	Condition*	Usable	Total	Ranking***	Roost/ Observation	Interior	Edge	Open
2	Q montang	44.3	50	15	dumented	H	H	J	Crevice			
	NSylvatica	8.1	15	1	live	7	H	0	1	Can	Canopy Cover at Roost	
	Pines ser.	50	ch	ł.	1:00	7	H	C	١	Open	Intermediate	Closed
	Pievs SIP.	13.3	35	i.	live	7	H	2	)			)
	2 nonterney	31.3	50	x	Nee	W	H	C	weite		Basal Area	
	O montling	30	50	3	lice	7	Н	0	1	Live Trees	Snags	All Trees
	A rubium	15	25	Ì	1.40	7	H	25	)	130	0	130
	Quentury	51.8	60	52	Jomanol	V	H	J	cavity			
	O montaina	30.7	55	ì	lier	7	H	υ	۱		Roost Location	
	Q montana	52.9	50	1	live	W	H	C	Crewill	Bark	Cavity	Creviee
	NI sylvation	2.11	13	)	1: ve damaged	7	H	2	ï	i		
	N S 4 1 Uchice	-i	2	i	1.46	7	H	С	1	QUICK REFERENCE	+ /	CIRCLE
	N Sylvation	1.4	21	x	live	7	Н	с	)			-
(											*Condition	
										Snag	Live	Live-Damaged
											**% Bark Cover	
										1 2E0	Moderate = >	Low =
										% C7 7 = USIH	10-<25%	< 10%
										*	***Tree Ranking	
										Canony	Sub Canony	Thderstory

Roost Tree # 6 2

Bat Species/Sex/Frequency: MYSE 1/ 172.584 Band # (10926



2120 40 HUM 2ª Runshed Tart.

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COPPERAD

Location lus	401 po	off of ATU	TU tra	ATU trail Inear &	01	ET 25 Fetc		NOCKY IS	ande	המוב הו		200
County_		2			S	1 1		Quad	ad Sugar	loat wta		
/Buor	Lat-Long/UTM: N/E_3	37.72934	934		62- N/M	1969.	43	Zone	— Ďatum:	NAD83	Observers: N	Kovacs
Tree Tag	Sneries	DBH	Height	Height (ft) m	Condition*	% Bark	% Bark Cover**	Tree	Available		Habitat	
#	comdo	(cm)	Tree	Roost	CONTINUOU	Usable	Total	Ranking***	N005t/ Observation	Interior	Edge	Open
63	& lashaberasis	. 43.6	50	20	live	W	H	2	bark! c			
	Q rubia	29.9	45	ļ	live	7	Н	v	1	Can	Canopy Cover at Roost	st
	B Milaslaneins'S	. 22.3	04	)	1:40	7	H	J	1	Open	Intermediate	Closed
	Q rubia	49.4	50	ł	1.12	7	Н	2	)			
	A rubium	19.6	35	1	live	7	Н	2	J		Basal Area	
	Q Lyca	4.04	55	1	lice	7	H	U	i	Live Trees	Snags	All Trees
	@ Montana	58.4	50	202	live damaged	W	H	J	buile	130	0	130
	Q 14614	34	40	)	live	7	н	2	)			
	Q montane	57.5	50	20 -	clamaned	W	H	J	back leven		Roost Location	
	@ rub/on	18.5	Чo	3	live	7	H	C	~	Bark	Cavity	Crevide
	Q which	32.9	27	1	hue.	T	Н	0	5	ŀ		
	N sulvation	59.6	50	1	1.00	7	H	C	١	<b>QUICK REFERENCE</b>	ERENCE /	CIRCLE
	3 where	49.6	50	1	live	7	H	c	١			
											*Condition	
										Snag	Live	Live-Damaged
										*	**% Bark Cover	
										High = > 25%	Moderate = >	Low =
											10-<25%	< 10%
										*	***Tree Ranking	
T							1		İ	Canony	Sub-Canony	Understory

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COPPERMEAD

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Image: End BatsFocalFocalDateTemp# ofTempFocalBatsFocalBatsTaggedBatsTaggedBatPersonnel/ $M^{*}$ $P^{*}$ $M^{*}$ $P^{*}$ $M^{*}$ $P^{*}$ $M^{*}$ $P^{*}$ $M^{*}$ $P^{*}$ $M^{*}$ $P^{*}$ $M^{*}$ $M^{*}$ $P^{*}$ $M^{*}$ <td< td=""><td></td><td>Fre</td><td>-</td><td>Î</td><td>14</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>		Fre	-	Î	14						
Temp         # of or         # of weather         # of Bats         Tame         Focal         Focal         Focal         Bats         Focal         Bats         Focal         Bats         Bats         Tagged         Bat         Personnel/         Personnel/	Emergence Count										
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Mr.       Prill       M.       Prill       M.       Prill       Mo.       Nature       Aspect       Width       Height       Ground         Mr.       Mr.       Prill       2058       -       -       -       No.       Nature       Aspect       Width       Height       Ground         Mr.       Mr.       Print       2       -       1       - </td <td>Temp # of Bats °F Weather Bats Sunset Start</td> <td>d ts</td> <td>Bat exit #</td> <td>Personnel/ Comments</td> <td></td> <td></td> <td></td> <td></td> <td>Opening N</td> <td>easurements</td> <td></td>	Temp # of Bats °F Weather Bats Sunset Start	d ts	Bat exit #	Personnel/ Comments					Opening N	easurements	
	1/23 64. Pritidy 1 2036	-	1	1	No.	Nature	Aspect	Width	Height	Ground H <sub>2</sub> O L	Level
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	3				2						
	4				3						

Location Forest		ontors	is of ridge	Fidge								
nty Bo	County Botetourt		1.1	7	State	14		Qué	Quad Sugarloaf	of Mountain		
Long/	Lat-Long/UTM: N/E 37.	7.73294	4		W/N - 79.	71202		Zone		Datum: NA 0 83 Obs	Observers: 6. Janos,	nos, N. Kovacs
Tree Tag	Smartine	DBH	Heigh	Height ft or m	Condition*	% Bark	% Bark Cover**	Tree	-		Habitat	
#		(cm)	Tree	Roost	Condition	Usable	Total	Ranking***	Koost/ Observation	Interior	Edge	Open
256	Q. montana	12.6	6	20	Snea	p	<i>p</i>	5-C	Carity			
	Q. montana	46.3	9	1	Snag	T	Ŧ	5-C	1	Canc	Canopy Cover at Roost	Ŧ
	Q. montana	58.2	20	1	Snag	7	H	J	1	Open	Intermediate	Closed
	Q. montana	14.6	01.	1	Snea	4	4	5-5	1			
	a	33.3	81	)	1, 20	7	0HC	0	1		Basal Area	
	Q. cubra	O'HE	18	)	1:40	7	H	2	1	Live Trees	Snags	All Trees
	Q. rubra	25.1	121	1	live	4	H	2	I	30	80	120
	Q. montana	26.3	6	T	Snag	111	×	2-5	1			
	Q. montono	370	14	١	live -damaged	W	4	S-C	1		Roost Location	
	Q. montana	25.0	12	ī	Snag	H	EL.	2-5	1	Bark	Cavity	Crevice
	Q. montana	11.1	4	1	Sneq	Ł	4	2-C	t		)	
	Q. montana	28.5	S	ł	Snag	F	H	2-5	1	QUICK REFERENCE /	0.000	CIRCLE
											*Condition	
							1			Snag	Live	Live-Damaged
									1			
										*	**% Bark Cover	
										Hich - ~ 76%	Moderate = $\geq$	Low =
										w cz Z - ugu	10-<25%	< 10%
										*	***Tree Ranking	
										Canopy	Sub-Canopy	Inderstory

Paint Lick, KY 40461 (859) 925-9012

Observations	s Sex of Bat	26 46 Bat Bat Band Freq. Bat Band Freq. # .584 CC0926 .584 CC0926 .584 CC0926 .584 CC0926 .584 CC0926 .584 CC0926	26 46 .584 .584 .584 .584	Band # CC 0926 C C 0 646 I 7/16 58 Band # CC 0926 I 7/16 58 Band I 7/16 58 Band I 7/16 58 I 7/16 58 I 7/16 58 I 7/17 55 I 7/17 55 Band I 7/16 58 I 7/17 55 Band I 7/17 55 I 7/17 55 I 7/17 55 Band I 7/17 55 Band I 7/17 55 I 7/17 55 Band I 7/17 55 I	Band # No. No. No. 1 1 2 2 5 5 5 6 6 6 11 11 11 11 11 11 11 11 11 11 11	MYSE MYSE	Bat S Emerge	21.2	tes -	256	Roost Tree # 256	Roo
cs	haracteristic	Cavity or Crevice Characteristics	Cavity			Time Focal						
						nce Count	Emerge.	$\mathbf{F}$				
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1. 11 -1	٢	50047	.782	81/4E	5					1		
	F	110926		-	4					1		
	W	049077		-	3					2	-	
	F	60926	185.	_	2	-12				-		
Woodpecker carity	F	cc0926	1		1	1.00				1		
Observations	Sex of Bat	Bat Band #	Bat Freq.	Date	No.	1.						
	s	Bat Day										_
			26	1000	Band #	pecies/Sex/Frequency: CMTSE/F/172, MYSE/M/ 17: Location Diagram:	Bat S			256 jagram:	st Tree #st Tree D	Roo
						MYSE / FI 172				i		

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ter carity

night (7/18) emergence video recorded black bay 7 Comments: Third

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Camera

H<sub>2</sub>O Level

Height Ground

Width

Aspect

Nature

No.

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few clovels Few clouds

65

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2

No No	Location 6	pen	tsa	0100 0	area oft of ATV +	ATV tra.	1:							
ou at-	County B	County Sotetourt Lat-Long/UTM: N/F	ct . t2	77938		W/N - 39 . 69	State VA - 39. 69632	~	Zone -	2 pe	Datim 110 83		Observers: 6 Tonos	and N Kould
-	Tree Tao	11	DRH	Heigh	Height ft or (0)		% Bark	% Bark Cover**	Trac	Avail			Hahitat	
#	9 #	Species	(cm)	Tree	Roost	Condition*	Usable	Total	Ranking***	Roost/ Observation		Interior	Edge	Open
1	£52	Q montang	20	4	3 2	Snag	Ì	1.H.	SC	Bark	ſ			
5		Q montana	60.2	30m	1	Live	W	2.4	U	Bark		Cano	Canopy Cover at Roost	tt.
3		A. rubrum	17.3	9	1	7	7	e H	2	1		Open	Intermediate	Closed
4	,	a. montana	43.9	24	١	7	7	Ħ	SC	Crevice				
5	9	Q. montana	48.5	hC	1	7	7	ŧ	J	Cavity			Basal Area	
9		Q. rubra	-	-	1	7	7	100	5	1		Live Trees	Snags	All Trees
~		Q. montana	42.8	2	1	5	7	H	25	CVENICE		100	20	120
00		Q. montana	55.5	35	1	7	7	H	U	1				
6		N. Sogalvatica	9.1	9	1	7	7	I	SC	١	_		Roost Location	
10	2	2. montana	31.7	28	١	7	7	44	C	١		Bark	Cavity	Crevice
11		A. rubra	27.1	14	1	7	7	I	SC	١				
12		N. Svalvatica	60.4	12	١	7	7	H	S	1	<b>→</b>	QUICK REFERENCE /	+	CIRCLE
13														ii.
14			-								-		*Condition	
15												Snag	Live	Live-Damaged
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17										3		*	**% Bark Cover	
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20											ap.	ś		
21											3	*	***Tree Ranking	
R	Ī													

àt.

Roost Tree # 257

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Bat Species/Sex/Frequency: MYSE/F/172,752 Band# CC0C47

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Image: Find the first termImage: Tagged BatImage: Tagged BatImage: FocalTempFocalFocalFocalTemp# ofTimeFocalFocalFocalFocal $^{\circ}$ FWeatherBatsBatsTaggedBatPersonnel/Cavity or Crevice Characteristics $^{\circ}$ FKeuclovdsZ20321032103751No.NatureAspectWidthHeightGround $^{\circ}$ Fteveto-ofO203811No.Nature1No.	}			1	/	A S	5	[ tai	20	13						
Emergence CountTemp $I = 0$ $^{\circ}F$ $W = 0$ $U = 0$ <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td>-</td> <td>11</td> <td>/</td> <td>14</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						1	-	11	/	14						
Temp $^{\circ}F$ # of weatherTimeFocal BatsFocal BatsFocal BatsFocal BatsFocal BatsFocal BatsFocal BatsFocal 		1	ш.	mergenc	e Count											
Temp $^{oF}$ # of WeatherBats BatsBats BatsTagged BatBat exit #Personnel/ CommentsPersonnel/ AndPersonnel/ AndPersonnel/ AndPersonnel/ And $^{oF}$ WeatherBatsStartEndBatexit #Comments $^{oF}$ Keucloudly $\mathcal{Z}$ $203g$ $2103$ $.7g$ $.7g$ $1$ No.NatureAspectWidthHeightGround $65$ Feucloudly $0$ $203g$ $$ $$ $$ $$ $$ $1$ $$				ħ	T	ime		Focal		1		Cavit	y or Crevice (	Characterist	tics	
68 Fructords Z 2039 2103 2109 .782 1 No. Nature Aspect Width Height Ground 65 Fructords 0 2038 1 1 1	Temp °F	Veather		Sunset	Bats Start	Bats End	Tagged Bat	Bat exit #	Personnel/ Comments					Opening N	Aeasuremen	ts
65 Feverands 0 2038 1 - 1	68	uclouds	2	2039		2109	28t.	-		No.	Nature	Aspect	Width	Height	Ground	H <sub>2</sub> O Level
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COPPERHEAD

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