

Enclosure

Indiana Bat Mist Net Survey at the Proposed Bell Bend Nuclear
Power Plant, Luzerne County, Pennsylvania, Revision 1



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Submitted to:
PPL Bell Bend, LLC
Two North Ninth Street
Allentown, PA 18101

NAI 22932.001A, Revision 1
April 7, 2014

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APPENDICES

- Appendix A. Correspondence with the United States Fish and Wildlife Service (USFWS) and Pennsylvania Game Commission (PGC) regarding the Indiana Bat Mist Net Survey at the Proposed Bell Bend Nuclear Power Plant.
- Appendix B. Bat Mist Net Survey Data Forms for the Bell Bend Nuclear Power Plant Project.
- Appendix C. Copy of PA Game Commission Special Use Permit.

INTRODUCTION

Development activities such as mining, construction and transmission line installation may adversely affect the Indiana bat (*Myotis sodalis*) which is a federally listed endangered species. Indiana bats typically hibernate in mines or caves in the winter then migrate to forested areas to feed and reproduce during the spring, summer and fall. Small cavities created under the exfoliating bark of large live trees (>5 inches in diameter at breast height), or beneath the peeling bark of dead trees, provide important habitat for maternity rearing sites and roost sites for Indiana bats (USFWS 2007). Construction or development between April and November that results in the disturbance or removal of mature trees, which provide this important habitat, can negatively impact roosting and maternity rearing sites of Indiana bats. Accordingly, the United States Fish and Wildlife Service (USFWS) often requires mist netting surveys to be conducted at proposed development sites which may disturb or remove trees between April and November in or near the known range of the Indiana bat. The purpose of the mist net survey is to document whether Indiana bats are present and potentially using the area in or near the proposed development site.

Indiana bats have been located in 18 counties in the State of Pennsylvania including Luzerne County where the proposed Bell Bend Nuclear Power Plant is located. These include Adams, Armstrong, Beaver, Bedford, Berks, Blair, Butler, Centre, Elk, Fayette, Green, Huntingdon, Lawrence, Luzerne, McKean, Mifflin, Somerset, and York. (Figure 1) (Ibid, 2007).

PROJECT DESCRIPTION

PPL Bell Bend, LLC (PPL) proposes to build the Bell Bend Nuclear Power Plant (BBNPP) near the north branch of the Susquehanna River in Luzerne County, Pennsylvania. Construction related activities will result in the disturbance of 246 acres of potential Indiana Bat habitat.

An Indiana bat survey was performed at BBNPP in 2008. The USFWS Indiana Bat Draft Recovery Plan states that results of Indiana bat surveys are only valid for five years (USFWS, 2007). Therefore, the USFWS required a new Indiana bat mist net survey during 2013 before proceeding with construction plans at BBNPP.

PPL contracted Normandeau Associates (Normandeau) to write an Indiana bat survey plan and to conduct the 2013 survey. Normandeau wrote the Indiana bat mist net survey plan and PPL submitted it to the USFWS State College, Pennsylvania office during April 2013. The USFWS performed a project area visit and proposed bat sample site inspection on May 8, 2013. As a result, Jennifer Siani of the USFWS made suggestions for bat sample site placement (Appendix A). Modifications of the study plan were accepted by Jennifer Siani on May 13 2013. Normandeau finalized the study plan on May 14 (Appendix A) which was submitted to the USFWS by PPL on May 21. Work was performed in May and June. The purpose of this report is to present the results of this survey.

METHODS

The objective of the survey was to check for the presence of Indiana bats in the proposed disturbance area. General guidelines for the Indiana bat mist net survey were provided by the USFWS 2013 Revised Range-wide Indiana Bat Summer Survey Guidelines (USFWS 2013). The survey was conducted by Qualified Indiana Bat Surveyor (QIBS), Michael O'Mahony, between May 19 and June 5, 2013, starting at dusk and running for a minimum of five hours (usually until about 2am)

each night. Surveys were not run when temperatures dropped below 50 degrees F (10 degrees C), during precipitation events, or during windy conditions because of the reduction of bat activity during cold, wet, or windy weather.

For nonlinear projects in the northeast region, such as the BBNPP project, the USFWS requires a minimum of 24 net nights per 123 acres of suitable summer bat habitat (USFWS 2013). A “net night” is defined as one net set up for one night. The proposed BBNPP project is expected to impact 246 acres of Indiana bat habitat. Therefore, 48 net nights were required. This was achieved by running 12 sample sites, all having two nets (at least 30 meters apart), for a minimum of two nights. See Figure 2 for the locations of the 12 bat mist net sites used for the BBNPP project.

Net placement was selected in the field by the QIBS in the best habitat that could be netted within each section of impact area. Nets were placed perpendicular to bat travel corridors, such as streams or woodlot trails, and as much as possible, positioned to fill the corridor from side to side and from the ground (or water surface) to the overhanging canopy. If the area did not support bat habitat and there were no suitable netting locations within the limit of disturbance, nets were located outside of the disturbance foot print but within 500 meters of the disturbance area. The locations of net sites were documented using GPS units. A summary of information for each of the 12 mist net sites is supplied in Table 1. This includes the net site number, location, dimensions of mist nets used, dates of the survey, weather conditions, and description of each net site and surrounding habitat.

Specific data associated with net sites, weather conditions during the survey, and information on captured bats were recorded on the required PGC data sheets and are provided in Appendix B. These bat capture data will be submitted to USFWS and PGC.

A Special Use Permit is required from the PGC in order to capture bats in Pennsylvania and to conduct an Indiana Bat Mist Net Survey. We obtained the required permit for the BBNPP Project, a copy of which is provided in Appendix C.

RESULTS

A total of 35 bats representing three different species were captured at the 12 net sites on the proposed BBNPP project area between May 19 and June 5, 2013 (Figure 3). The big brown bat (*Eptesicus fuscus*) was the most common bat species encountered with 29 captures (83%) followed by 4 (11%) eastern red bat (*Lasiurus borealis*) captures, and 2 (6%) tri-colored bat (*Perimyotis subflavus*) captures. No Indiana bats (*Myotis sodalis*) or any other federally or Pennsylvania listed bat species were captured during this mist net survey.

Sex and age were determined for all of the captured bats. A detailed sex and age breakdown of bat captures, by species, is supplied in Table 2. Adults made up 100% of the bats captured. Females made up 71% (25/35) of the total captures of adult bats and were more abundant than males for all three species captured (Table 2). A graphical representation of the sex and age composition for the 35 bat captures is provided in Figure 4.

Twenty-five adult female bats were captured at the BBNPP Project and their reproductive conditions were determined: 23 (92%) were pregnant, 1 (4%) was lactating, none were post-lactating, and 1 (4%) was non-reproductive. A breakdown, by species, for reproductive condition of captured adult

females is supplied in Table 3. A graphic representation illustrating the numbers and percentages of adult females in the three represented reproductive conditions is provided in Figure 5.

DISCUSSION

The primary objective of this survey was to determine the extent of Indiana bat activity in the BBNPP Project area, with particular attention to summer habitat for roosting and reproduction. Despite potentially suitable habitat for both roosting and foraging, there were no Indiana bats captured during this survey. Indiana bat capture rates have often been relatively low in bat studies (e.g. Callahan et al., 1997; Kurta et al., 1996) presumably due to the behavioral response of Indiana bats to often roost singly or in small groups in hollow trees or underneath loose bark during the summer. However, there was certainly potential for capture of Indiana bats moving through the habitat if these bats were present in any reasonable number, as would be expected of resident bats.

The members of a maternity colony of Indiana bats typically roost in 10-20 trees each summer (Callahan et al., 1997; Kurta et al., 1996). Although some colonies restrict roosting to an area of only a few acres, other Indiana bats use trees that are about 5 miles apart (Kurta et al., 1996). Radio-tracking studies of the Indiana bat (Murray and Kurta, 2004) show that these bats do not fly over open fields but travel along wooded corridors, even though such behavior may increase commuting distance by over 50 percent. Given this variability, it is difficult to predict the movements of bats within any one colony, but the failure to capture any Indiana bats despite suitable roosting and foraging areas provides evidence that Indiana bats are not likely present in the project area.

Accordingly, based on the results of this mist netting survey, particularly the failure to capture any Indiana bats, it is our opinion that the clearing of trees proposed for the BBNPP Project is unlikely to have a significant direct impact on the summer roosting or foraging activity of Indiana bats in this area.

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- USFWS, 2013. Update of the Summer Survey Guidelines originally published in the USFWS agency draft document titled Rangewide Indiana Bat Summer Survey Guidance Draft- February 3, 2012.

TABLES

Table 1. Location and characteristics of bat net sites at the proposed Bell Bend Nuclear Power Plant, May 19 through June 5, 2013.

Net Site	Nad 27 Latitude N Longitude W	Dimension of Mist Nets Used	Survey Dates	Begin Temp, End Temp (°C), Cloud Cover, Wind (Night 1/Night 2/Night 3-if delayed by weather)	Description of Net Site and Dominant Tree Species
1	41°4'14.6" 76° 8'48.0"	3H x 12m 3H x 18m	5/19/2013 5/20/2013	18.8, 16.7, Mostly Cloudy, Breezy/ 22.9, 17.2, Clear, Calm	Transmission line corridor at wooded edge with small pond. Oak, hickory, maple
2	41°4'49.4" 76° 9'7.5"	3H x 12m 3H x 12m	5/19/2013 5/20/2013	18.8, 16.7, Mostly Cloudy, Breezy/ 22.9, 17.2, Clear, Calm	Forested edge of field near wetland red maple, oak, beech, blackgum
3	41°5'5.1" 76° 10'1.8"	3H x 12m 3H x 18m	5/31/2013 6/1/2013	17.9, 15.1, Clear, Calm/ 21.9, 23.7, Clear, Calm	Farm pond and small stream in overgrown field at treeline Black oak, red maple, river birch
4	41°4'56.1" 76° 9'36.7"	3H x 12m 3H x 12m	6/2/2013 6/3/2013 6/4/2013	23.9, 19.4, Mostly Cloudy, Calm/ 15.4, 9.8, Partly Cloudy, Calm/ 15.0, 10.2, Partly Cloudy, Calm	Forested edge of farm field Black cherry, ash, red maple
5	41°5'6.6" 76°9'10.7"	3H x 9m 3H x 12m	6/2/2013 6/3/2013 6/4/2013	23.9, 19.4, Mostly Cloudy, Calm/ 15.4, 9.8, Partly Cloudy, Calm/ 15.0, 10.2, Partly Cloudy, Calm	Forested driveway and forested edge of meadow Black cherry, red oak, white pine
6	41°5'10.9" 76°8'26.9"	3H x 9m 3H x 9m	5/19/2013 5/20/2013	19.1, 16.8, Cloudy, Calm/ 19.0, 14.8, Clear, Calm	Forested farm road Gently rolling river bottom Locust, cherry, honeysuckle
7	41°5'27.1" 76°8'1.4"	3H x 6m 3H x 12m	5/19/2013 5/20/2013	19.1, 16.8, Cloudy, Calm/ 19.0, 14.8, Clear, Calm	Forested dirt road in woodlot Near river and canal Locust, maple
8	41°5'21.5" 76°10'10.0"	3H x 6m 3H x 6m	5/31/2013 6/1/2013	17.9, 15.1, Clear, Calm/ 21.9, 23.7, Clear, Calm	Forested stream in woodlot Red maple, poplar
9	41°5'35.3" 76°9'34.3"	3H x 12m 3H x 18m	5/21/2013 5/29/2013	21.8, 19.3, Clear, Calm/ 17.8, 14.7, Clear, Calm	Forested clearing with wetland and pond Cherry, ash, goldenrod
10	41°5'21.3" 76°9'40.1"	3H x 12m 3H x 9m	5/21/2013 5/29/2013	21.8, 19.3, Clear, Calm/ 17.8, 14.7, Clear, Calm	Farm road through woodlot With small low slope stream Poplar, cherry, white oak
11	41°6'1.0" 76°9'18.3"	4H x 18m 3H x 18m	5/21/2013 5/30/2013	24.3, 21.4, Clear, Calm/ 23.3, 19.5, Clear, Calm	hilltop transmission line with wooded area on both sides red maple, hickory, oak, black cherry
12	41°6'7.4" 76°8'7.5"	3H x 18m 3H x 9m	5/21/2013 5/30/2013	24.3, 21.4, Clear, Calm/ 23.3, 19.5, Clear, Calm	canal and walking path through woodlot riverbottom maple, spicebush, poison ivy

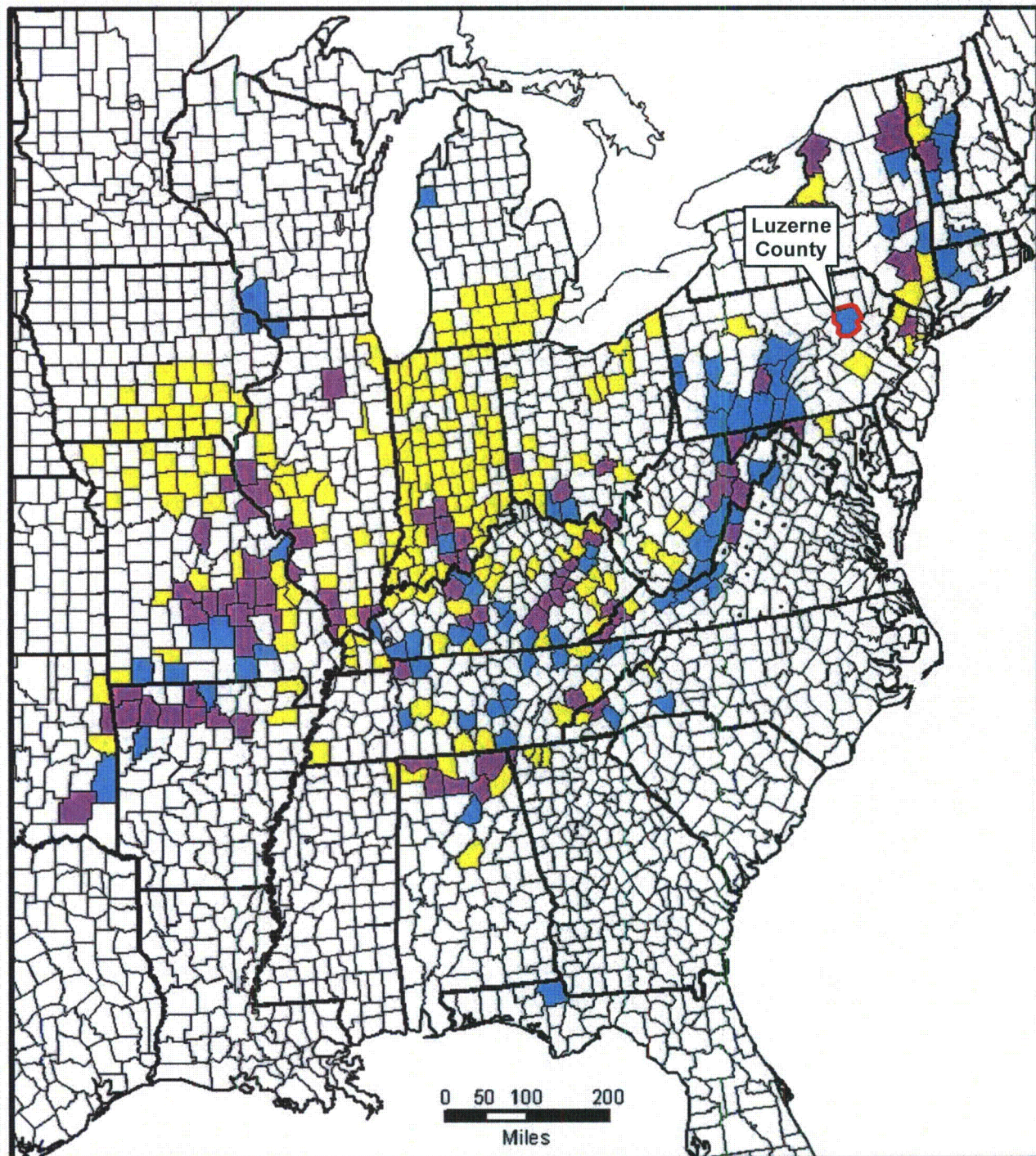
Table 2. Sex and age composition of 35 bats captured at the proposed Bell Bend Nuclear Power Plant, May 19 through June 5, 2013.

Species	Adult			Juvenile			Totals			
	Male	Female	Total	Male	Female	Total	Male	Female	Unknown	Grand
Big Brown	9	20	29	0	0	0	9	20	0	29
Eastern Red	1	3	4	0	0	0	1	3	0	4
Tri-colored	0	2	2	0	0	0	0	2	0	2
Total	10	25	35	0	0	0	10	25	0	35

Table 3. Reproductive condition of 25 adult female bats captured at the proposed Bell Bend Nuclear Power Plant, May 19 through June 5, 2013.

Species	Female Reproductive Condition				Total
	Pregnant	Lactating	Post-Lactating	Non-reproductive	
Big Brown	19	0	0	1	20
Eastern Red	2	1	0	0	3
Tri-colored	2	0	0	0	2
Total	23	1	0	1	25

FIGURES



Base Map: Albers Projection, NAD 83, Scale: 1:12,800,000, Created in ArcGIS using ArcMap 9.1 by R. Andrew King, USFWS, Bloomington, IN.
Data courtesy of Indiana Bat Recovery Team, BHE Environmental Inc., and additional coordination with USFWS biologists and others range-wide. Updated 11/1/2008.



USFWS, 2007. Indiana Bat Mist Netting Guidelines. United States Fish and Wildlife Service publication. Website: <http://www.fws.gov/northeast/nyfo/es/2007Mistnetting.pdf>

Date accessed: June 27, 2011

Adapted from Figure 3 USFWS, 2007



Date:
7/16/2013

Revised:

Figure 1.
Distribution of counties with known
summer and winter records
of Indiana Bat.
Luzerne County, PA outlined in red.

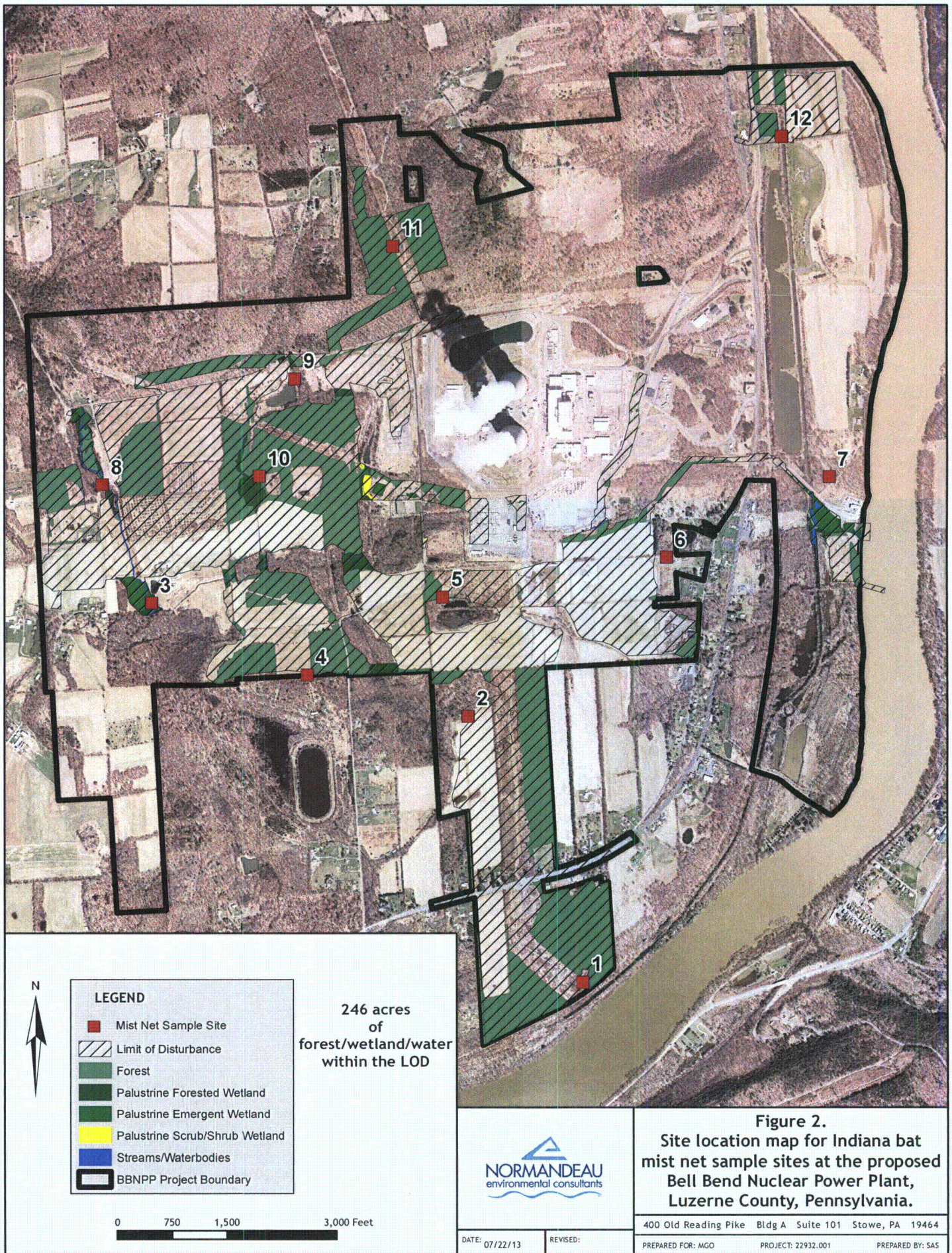
400 Old Reading Pike Bldg A Suite 101 Stowe, PA 19464

PREPARED FOR: GLA

PROJECT: 22932.001

PREPARED BY: SAS

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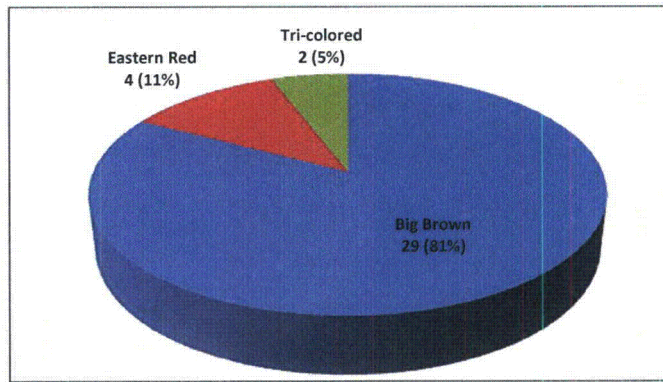


Figure 3. Species composition of bats captured at the proposed Bell Bend Nuclear Power Plant, May 19 through June 5, 2013.

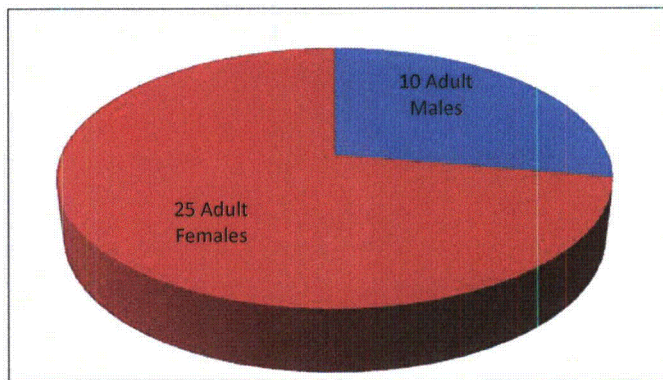


Figure 4. Sex and age composition of bats captured at the proposed Bell Bend Nuclear Power Plant, May 19 through June 5, 2013.

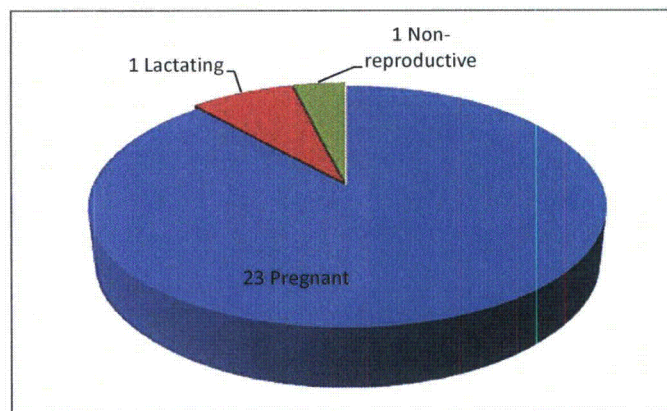


Figure 5. Reproductive condition of adult female bats captured at the proposed Bell Bend Nuclear Power Plant, May 19 through June 5, 2013.

APPENDIX A

Gary Alt

From: Michael OMahony
Sent: Saturday, May 11, 2013 10:58 PM
To: Gary Alt
Subject: FW: FW: Indiana Bat Summer Survey Plan and Site Visit

From: Siani, Jennifer [mailto:jennifer_siani@fws.gov]
Sent: Friday, May 10, 2013 4:50 PM
To: Wise, Bradley A
Cc: [Robert M Anderson@fws.gov](mailto:Robert_M_Anderson@fws.gov); Calvin Butchkoski (cbutchkosk@state.pa.us); Grturner@pa.gov; Amy Elliott; Laura.Quinn-Willingham@nrc.gov; Michael OMahony; omowery@pa.gov; Petrewski, Gary; Paul Harmon; Chris Roche
Subject: Re: FW: Indiana Bat Summer Survey Plan and Site Visit

On May 8, 2013, I visited the Bell Bend nuclear power plant project site to discuss protocols to survey for Indiana bats in potential summer habitat and visually inspect 12 proposed mist-net site locations. During this time, representatives for Bell Bend requested to move proposed site 11 to an alternative site near the Teardrop Wetland feature to avoid the need for township approval of a road closure. Site 11 is the only mist net survey location in the northwest portion of the project boundary. Eliminating site 11 decreases the probability of detecting an Indiana bat both within that section of the project boundary and within the northwest portion of the action area. The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action [50 CFR §402.02].

Mist net sites are generally selected based upon expectation of bat activity and an effort to provide coverage of the action area in potentially suitable habitat for Indiana bats. The alternative site 11 contains large trees with exfoliating bark and other habitat features that make it an area suitable for Indiana bat roosting activities and ideal for surveying. Therefore, I offer the following suggestions:

- a) Keep site 11 where it is and add the teardrop wetland site for a total of 13 sites.
- b) Move site 11 to another area within the same forest fragment area and add the teardrop wetland site for a total of 13 sites.
- c) Keep site 11 where it is, add the teardrop wetland site, and remove one of the other survey sites in close proximity to the teardrop (such as site 10 or 5) for a total of 12 sites.
- d) Move site 11 to another area within the same forest fragment area, add the teardrop wetland site, and remove one of the other survey sites in close proximity to the teardrop (such as site 10 or 5) for a total of 12 sites.

Please let me know which option is preferable.

Jennifer Siani, PhD
U.S. Fish and Wildlife Service
315 South Allen Street, Suite 322
State College, PA 16801

APPENDIX B

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-14-13 2. Company Name: Normandeau
3. Bat Identifier: Jayne Schaeffer 4. Assistants: Ryan Bauman
(Responsible Recorder)
5. Site Name and/or Number: Bell Bend - 1
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
Transmission Line corridor along forested edge with small pond
8. County LUZERNE 9. 7.5' Quad.: BERWICK
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 04' 14.61"N, Longitude: 76° 08' 47.98"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.)
PPL- LLC 38 Bombay Lane Berwick, PA 18603
13. Time (military) & Temperature: Start Time 2040 h Stop Time 0140 h Total Minutes: 300
Start Temp. 18.8 °C End Temp. 16.7 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	Nets	3	12m x 2.6m	Stacked along pond edge	93.6 sq. m
2	Nets	3	18m x 2.6m	Stacked over trail at edge of clearing	140.4 sq. m

Total Capture Area: 234.0 sq. m

(Site Survey Record – Continued) Site Name/No.: 1 Date: 5-19-13**17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)**15% gradient hillside on transmission line corridor
with small pond and associated wetland
Dominant species oak and Red Maple
Understory oak, hickory + maple saplings**18. Was reproductive status checked?** YES / NO (if "NO" only enter numbers in Total columns)***CAPTURE RESULTS**

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>		1				1					1
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total <u>1</u>

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-20-13 2. Company Name: Normanbear

3. Bat Identifier: Jayne Schoeffel 4. Assistants: Ryan Bauman
(Responsible Recorder)

5. Site Name and/or Number: Bell Bend-1

6. Site is (circle one): hibernation site summer habitat

7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____

7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
Transmission Line corridor along forested edge with small pond

8. County: LUZERNE 9. 7.5' Quad.: BERWICK

10. Was site GPS'd (required)? YES - NO

11. Geographic Coordinates (D-M-S): Latitude: 41° 04' 14.61"N, Longitude: 76° 08' 47.98"W

Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____

12. Ownership and Access: (Who owns site or controls access? Give name and address.)

PPL- LLC 38 Bomboy Lane Berwick, PA 18603

13. Time (military) & Temperature: Start Time 2040 h Stop Time 0140 h Total Minutes: 300
Start Temp. 22.9 °C End Temp. 17.2 °C (must stay ≥ 10 °C for summer netting)

14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____

15. General Wind Conditions (circle one): Calm; Breezy (Leaves Rustling); Windy (Trees Swaying).

16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	Nets	3	12m x 2.6m	stacked along pond edge	93.6 sq. m
2	Nets	3	18m x 2.6m	stacked over trail at edge of clearing	140.4 sq. m

Total Capture Area: 234.0 sq. m

(Site Survey Record – Continued)

Site Name/No.: _____

Date: 5-20-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

15% gradient hillside on transmission line corridor
with small pond and associated wetland
Dominant species Oak and Red maple
understory oak, hickory, maple saplings

18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in **Total** columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 0

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-19-13 2. Company Name: Normandeau
3. Bat Identifier: Jayne Schaeffer 4. Assistants: Keith Maurice, Charles Dix
(Responsible Recorder)
5. Site Name and/or Number: Bell Bend-2
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
Forest edge and clearing adjacent to wetland
8. County: LuZerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 04' 49.41"N, Longitude: 76° 09' 07.50"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.)
PPL-LLC 35 Bamboy Lane Berwick, PA 18603
13. Time (military) & Temperature: Start Time 2040 h Stop Time 0140 h Total Minutes: 300
Start Temp. 18.8 °C End Temp. 16.7 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	Nets	3	12m x 2.6m	Stacked across forest clearing	93.6 sq. m
2	Nets	3	12m x 2.6m	Stacked over tractor path	93.6 sq. m

Total Capture Area: 187.2 sq. m

(Site Survey Record – Continued)

Site Name/No.: 2Date: 5-19-1317. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)
Forest clearing along ag. field with adjacent wooded wetlandDominant tree is red maple with oak, beech, and black gum
understory is green holly, multi-flora rose and Russian olive18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in **Total** columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>		1				1					1
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total <u>1</u>

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-20-13 2. Company Name: Normandeau
3. Bat Identifier: Jayne Schaeffer (Responsible Recorder) 4. Assistants: Keith Morice, Charue Dey
5. Site Name and/or Number: Bell Bend - 2
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel, other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
Forest edge and clearing adjacent to wetland
8. County Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 04' 49.41" N, Longitude: 76° 09' 07.50" W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.)
PPL- LLC 38 Bomboy Lane Berwick, PA 18603
13. Time (military) & Temperature: Start Time 2040 h Stop Time 0140 h Total Minutes: 300
Start Temp. 28.9 °C End Temp. 17.2 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm; Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	Nets	3	12m x 2.6m	stacked across forest clearing	93.6 sq. m
2	Nets	3	12m x 2.6m	stacked over tractor path	93.6 sq. m

Total Capture Area: 187.2 sq. m

(Site Survey Record – Continued)

Site Name/No.:

2

Date:

5-20-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

Forest clearing along ag. field with adjacent wooded wetland
 Dominant tree is Red maple with white oak and black gum and beech
 Understory is green briar, multi flora rose and russian olive

18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in Total columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>		///				3					3
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 3

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-31-13 2. Company Name: Normandeau
3. Bat Identifier: M. O'Mahony (Responsible Recorder) 4. Assistants: K. Maurice
5. Site Name and/or Number: Bell Bend 3
6. Site is (circle one): hibernation site ☐ summer habitat ☒
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel, other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
farm pond and small stream at tree line
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 5' 5.1" N, Longitude: 76° 10' 1.8" W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bombay Lane Berwick PA 16003
13. Time (military) & Temperature: Start Time 20:55 h Stop Time 01:55 h Total Minutes: 300
Start Temp. 17.9 °C End Temp. 15.1 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	4	18m x 2.6m	stacked over pond	187.2 m ²
2	nets	3	12m x 2.6m	stacked over stream	93.6 m ²

Total Capture Area: 280.8 sq. m

(Site Survey Record – Continued)

Site Name/No.: Bell Bend 3Date: 5-31-13


17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

flat land, overgrown farm field with pond and small stream
entering mature wood lot
black oak, red maple, river birch

18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in Total columns)

NA

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 6-1-13 2. Company Name: Normandeau3. Bat Identifier: M. O'Mahony 4. Assistants: K Maurice
(Responsible Recorder)5. Site Name and/or Number: Bell Bend 36. Site is (circle one): hibernation site ☐ summer habitat ☒7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
farm pond and small stream at treeline8. County: Luzerne 9. 7.5' Quad.: Berwick10. Was site GPS'd (required)? YES - NO11. Geographic Coordinates (D-M-S): Latitude: 41° 5' 5.1" N, Longitude: 76° 10' 1.8" WDatum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC38 Bomboy Lane Berwick PA 1860313. Time (military) & Temperature: Start Time 2100 h Stop Time 0200 h Total Minutes: 300Start Temp. 21.9 °C End Temp. 23.7 °C (must stay ≥ 10 °C for summer netting)14. General Weather (circle one): Clear, Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).

16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	4	18 x 2.6m	stacked over pond	187.2 m ²
2	nets	3	12 x 2.6m	stacked over stream	93.6 m ²

Total Capture Area: 280.8 sq. m

(Site Survey Record – Continued)

Site Name/No.: Bell Bend 3Date: 6-1-12

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

flatland, overgrown farm field with pond and small stream
entering mature woodlot
black oak, red maple, river birch

18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in **Total** columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>			1			1					1
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 1

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 6-2-13 2. Company Name: Normandean
3. Bat Identifier: M. O'Mahony (Responsible Recorder) 4. Assistants: K. Marburger
5. Site Name and/or Number: Bell Bend 4
6. Site is (circle one): ☐ hibernation site ☒ summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested edge of farm field
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? ☒ YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41°-4'-56.1"N, Longitude: 76°-9'-36.7"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bomboy Lane Berwick PA 18603
13. Time (military) & Temperature: Start Time 20:55 h Stop Time 01:55 h Total Minutes: 300
Start Temp. 23.9 °C End Temp. 19.4 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	12m x 2.6m	stacked in field	93.6m ²
2	nets	3	12m x 2.6m	stacked in field	93.6m ²

Total Capture Area: 187.2 sq. m

9/1

(Site Survey Record – Continued) Site Name/No.: Bell Bend 4 Date: 6-2-11

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

gently rolling farm land and wood lots
black cherry, ash, red maple18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in Total columns)

NA *CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 0

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 6-3-13 2. Company Name: Normandeau
3. Bat Identifier: M. O'Mahony 4. Assistants: K. Marburger
(Responsible Recorder)
5. Site Name and/or Number: Ball Bend 4
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested edge of farm field
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 4' 56.1"N, Longitude: 76° 9' 36.7"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bombay Lane Berwick PA 18603
13. Time (military) & Temperature: Start Time 20:55 h Stop Time 00:45 h Total Minutes: 230
Start Temp. 15.4 °C End Temp. 9.8 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm; Breezy (Leaves Rustling); Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	12m x 2.6m	stacked in field	93.6m ²
2	nets	3	12m x 2.6m	stacked in field	93.6m ²

Total Capture Area: 187.2 sq. m

(Site Survey Record – Continued)

Site Name/No.: Bell Bond 4Date: 6-3-11

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

gently rolling farm land and wood lots
black cherry, ash, red maple18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in Total columns)

NA

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 0

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

cold-out

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 6-4-13 2. Company Name: Normandean
3. Bat Identifier: M. O'Malley (Responsible Recorder) 4. Assistants: K. Markburger
5. Site Name and/or Number: Bell Bend 4
6. Site is (circle one): ☐ hibernation site ☒ summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested edge of farm field
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? ☒ YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41°-4' 56.1"N, Longitude: 76°-9' 36.7"W
Datum (circle one): ☒ NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bombay Lane Berwick PA 18603
13. Time (military) & Temperature: Start Time 2100 h Stop Time 0200 h Total Minutes: 300
Start Temp. 15.0 °C End Temp. 10.2 °C (must stay ≥10°C for summer netting)
14. General Weather (circle one): Clear; ☒ Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): ☒ Calm Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	12m x 2.6m	stacked in field	93.6 m ²
2	nets	3	12m x 2.6m	stacked in field	93.6 m ²

Total Capture Area: 187.2 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 4 Date: 6-4-11

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

gently rolling farm land and wood lots
black cherry, ash, red maple18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in Total columns)

NA

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total
											0

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 6-2-13 2. Company Name: Norman Dean
3. Bat Identifier: M. O'Mahony 4. Assistants: K. Maurice
(Responsible Recorder)
5. Site Name and/or Number: Roll Bend 5
6. Site is (circle one): hibernation site ☐ summer habitat ☒
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested driveway and forested edge of meadow
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? ☒ YES ☐ NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 5' 6.6" N, Longitude: 76° 9' 10.7" W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bomboy Lane Berwick PA 18603
13. Time (military) & Temperature: Start Time 2055 h Stop Time 0155 h Total Minutes: 300
Start Temp. 23.9 °C End Temp. 19.4 °C (must stay ≥10°C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	9m x 2.6m	stacked over driveway	70.2 m ²
2	nets	4	12m x 2.6m	stacked over meadow	124.8 m ²

Total Capture Area: 195 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 5 Date: 6-2-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

gently rolling overgrown farmland and wood lot
black cherry, red oak, white pine18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in **Total** columns)

NA

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 0

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 6-3-13 2. Company Name: Normandeau
3. Bat Identifier: M. O'Mahony 4. Assistants: K. Maurice
(Responsible Recorder)
5. Site Name and/or Number: Bell Bend 5
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested driveway and forestal edge of meadow
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 5' 26.6" N, Longitude: 76° 9' 10.7" W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bombay Lane Berwick PA 17603
13. Time (military) & Temperature: Start Time 20:55 h Stop Time 00:45 h Total Minutes: 230 cold out
Start Temp. 15.4 °C End Temp. 9.8 °C (must stay ≥ 10°C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm; Breezy (Leaves Rustling); Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	9m x 2.6m	stacked over driveway	70.2 m ²
2	nets	4	12m x 2.6m	stacked over meadow	124.8 m ²

Total Capture Area: 195 sq. m

(Site Survey Record - Continued)

Site Name/No.: Bell Bend 5

Date: 6-3-73

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

gently rolling overgrown farmland and woodlot
black cherry, red oak, white pine18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in Total columns)

NA *CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other - specify:											
Other - specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

cold-out

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 6-4-13 2. Company Name: Norman Clean
3. Bat Identifier: M. O'Mahony 4. Assistants: K. Maurice
(Responsible Recorder)
5. Site Name and/or Number: Bell Bend 5
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested driveway and forested edge of meadow
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° - 5' - 6.6"N, Longitude: 76° - 9' - 10.7"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bombay Lane Berwick PA 18603
13. Time (military) & Temperature: Start Time 2100 h Stop Time 0200 h Total Minutes: 300
Start Temp. 15.0 °C End Temp. 10.2 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	9m x 2.6m	stacked over driveway	70.2 m ²
2	nets	4	12m x 2.6m	stacked over meadow	124.8 m ²

Total Capture Area: 195 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 5 Date: 6-4-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

gently rolling overgrown farm land and wood lot
black cherry, red oak, white pine18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in **Total** columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>								1		1	1
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete <u>Measurement and Capture Data Form</u> for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 1

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-19-13 2. Company Name: Normandeau
3. Bat Identifier: M. O'Mahony (Responsible Recorder) 4. Assistants: M. Vukovich
5. Site Name and/or Number: Bell Bend 6
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested farm road
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 5' 10.9"N, Longitude: 76° 8' 26.9"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bombay Ln Suite 2 Berwick PA 18603
13. Time (military) & Temperature: Start Time 20:45 h Stop Time 01:45 h Total Minutes: 300
Start Temp. 19.1 °C End Temp. 16.8 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	9m x 2.6m	stacked over farm road	70.2 m ²
2	nets	3	9m x 2.6m	stacked over farm road	70.2 m ²

Total Capture Area: 140.4 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 6 Date: 5-19-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

recovering farm land with mature tree row and grassy road
gently rolling river bottom locust, cherry, honeysuckle18. Was reproductive status checked? YES ☒ / NO ☐ (if "NO" only enter numbers in Total columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>								1		1	1
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-20-13 2. Company Name: Normandeau
3. Bat Identifier: M. O'Mahony (Responsible Recorder) 4. Assistants: M. Vukovich
5. Site Name and/or Number: Bell Bend 6
6. Site is (circle one): hibernation site ☒ summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested farm road
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? ☒ YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 5' 10.9"N, Longitude: 76° 8' 26.9"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bomboy Lane Suite 2 Berwick PA 18603
13. Time (military) & Temperature: Start Time 20:50 h Stop Time 01:50 h Total Minutes: 300
Start Temp. 19.0 °C End Temp. 14.8 °C (must stay ≥ 10°C for summer netting)
14. General Weather (circle one): Clear Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	9m x 2.6m	stacked over farm road	70.2 m ²
2	nets	3	9m x 2.6m	stacked over farm road	70.2 m ²

Total Capture Area: 140.4 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 6 Date: 5-20-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

Recovering farm land with mature tree row and grassy road
gently rolling river bottom
locust, cherry, honeysuckle18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in **Total** columns)

NA

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total
											0

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-19-13 2. Company Name: Normandeau
3. Bat Identifier: M. O'Mahony 4. Assistants: K. Marburger
(Responsible Recorder)
5. Site Name and/or Number: Bell Bend 7
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested dirt road
8. County: LuZerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 5' 27.1"N, Longitude: 76° 8' 1.4"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PFL LLC
38 Bomboy Ln Suite 2 Berwick PA 18603
13. Time (military) & Temperature: Start Time 20:45 h Stop Time 01:45 h Total Minutes: 300
Start Temp. 19.1 °C End Temp. 16.8 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	6m x 2.6m	stacked over dirt road	46.8 m ²
2	nets	3	12m x 2.6m	stacked over dirt road	93.6 m ²

Total Capture Area: 140.4 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 7 Date: 5-19-10

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

woodlots and fields near canal and river
flood plain
locust, maple18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in **Total** columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>								1			1
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total
											1

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-20-15 2. Company Name: Normanclan
3. Bat Identifier: M. O'Mahony 4. Assistants: K. Marburger
(Responsible Recorder)
5. Site Name and/or Number: Bell Bend 7
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested dirt road
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° - 5' - 27.1"N, Longitude: 76° - 8' - 1.4"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bomboy Lane Berwick PA 18603
13. Time (military) & Temperature: Start Time 20:50 h Stop Time 01:50 h Total Minutes: 300
Start Temp. 19.0 °C End Temp. 14.8 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	6m x 2.6m	stacked over dirt road	46.8 m ²
2	nets	3	12m x 2.6m	stacked over dirt road	93.6 m ²

Total Capture Area: 140.4 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 7 Date: 5-20-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

woodlots and fields near canal and river
flood plain
locust, maple18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in Total columns)

NA

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-31-13 2. Company Name: Normandeau

3. Bat Identifier: M. O'Mahony 4. Assistants: K. Marburger
(Responsible Recorder)

5. Site Name and/or Number: Bell Bend 8

6. Site is (circle one): hibernation site ☐ summer habitat ☒

7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____

7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested stream

8. County: Luzerne 9. 7.5' Quad.: Berwick

10. Was site GPS'd (required)? YES - NO

11. Geographic Coordinates (D-M-S): Latitude: 41° 5' 21.5"N, Longitude: 76° 10' 10.0"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____

12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bombay Lane Berwick PA 18603

13. Time (military) & Temperature: Start Time 2055 h Stop Time 0155 h Total Minutes: 300
Start Temp: 17.9 °C End Temp: 15.1 °C (must stay ≥ 10 °C for summer netting)

14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____

15. General Wind Conditions (circle one): Calm Breezy (Leaves Rustling), Windy (Trees Swaying).

16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	6m x 2.6m	stacked over stream	46.8 m ²
2	nets	3	6m x 2.6m	stacked over stream	46.8 m ²

Total Capture Area: 93.6 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 8 Date: 5-31-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

Gently rolling farm land and woodlots with small stream
red maple, poplar18. Was reproductive status checked? ☒ YES / NO (if "NO" only enter numbers in Total columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>							1				1
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 1

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 6-1-13 2. Company Name: Normandeau
3. Bat Identifier: M. O'Mahony 4. Assistants: K. Marburger
(Responsible Recorder)
5. Site Name and/or Number: Bell Bend 8
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested stream
8. County: LuZerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° - 5' - 21.5"N, Longitude: 76° - 10' - 10.6"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bomboy Lane Berwick PA 18603
13. Time (military) & Temperature: Start Time 2100 h Stop Time 0200 h Total Minutes: 300
Start Temp. 21.9 °C End Temp. 23.7 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear, Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	6m x 2.6m	stacked over stream	46.8 m ²
2	nets	3	6m x 2.6m	stacked over stream	46.8

Total Capture Area: 93.6 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 8 Date: 6-1-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

gently rolling farm land and woodlots with small stream
red maple, poplar18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in Total columns)

NA

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-21-13 2. Company Name: Normandeau
3. Bat Identifier: M. O'Mahony (Responsible Recorder) 4. Assistants: K. Marburger
5. Site Name and/or Number: Bell Bend 9
6. Site is (circle one): ☐ hibernation site ☒ summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested clearing with wetland and pond
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? ☒ YES - ☐ NO
11. Geographic Coordinates (D-M-S): Latitude: 41° - 5' - 35.3"N, Longitude: 76° - 9' - 34.3"W
Datum (circle one): ☒ NAD27 (Preferred), ☐ NAD83, ☐ WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bombay Ln Berwick PA 18603
13. Time (military) & Temperature: Start Time 20:45 h Stop Time 01:45 h Total Minutes: 300
Start Temp. 21.8 °C End Temp. 19.3 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): ☒ Clear, ☐ Partly Cloudy; ☐ Mostly Cloudy; ☐ Cloudy; ☐ Drizzle; ☐ Intermittent Rain;
(suspend netting during periods of rain) ☐ Steady Rain; ☐ Thunderstorms; ☐ Snow; Other: _____
15. General Wind Conditions (circle one): ☒ Calm, ☐ Breezy (Leaves Rustling), ☐ Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	1	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	12m x 2.6m	stacked over wetland	93.6 m ²
2	nets	3	18m x 2.6m	stacked over pond	140.4 m ²

Total Capture Area: 234.0 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 9 Date: 5-21-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

gently rolling recovering farm land
cherry, ash, goldenrod18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in Total columns)

NA

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 6

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-29-13 2. Company Name: Normandeau
3. Bat Identifier: M. O'Mahony (Responsible Recorder) 4. Assistants: K. Marburger
5. Site Name and/or Number: Bell Bend 9
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested clearing with wetland and pond
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 5' 35.3" N, Longitude: 76° 9' 34.3" W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PDL LLC
38 Bomboy Lane Berwick PA 18603
13. Time (military) & Temperature: Start Time 20:45 h Stop Time 01:50 h Total Minutes: 305
Start Temp. 17.8 °C End Temp. 14.7 °C (must stay ≥10°C for summer netting)
14. General Weather (circle one): Clear, Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	12m x 2.6m	stacked over wetland	93.6 m ²
2	nets	3	18m x 2.6m	stacked over pond	140.4 m ²

Total Capture Area: 234 sq. m

(Site Survey Record – Continued)


Site Name/No.: Bell Bend 9Date: 5-22-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

gently rolling recovering farm land
cherry, ash, goldenrod18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in Total columns)

NA

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-21-13 2. Company Name: Norman Leau
3. Bat Identifier: M. O'Mahony 4. Assistants: M. Vukovich
(Responsible Recorder)
5. Site Name and/or Number: Bell Bend 10
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
farm road through woodlot
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 5' 21.3"N, Longitude: 76° 9' 40.1"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bombay Lane Berwick PA 18603
13. Time (military) & Temperature: Start Time 20:45 h Stop Time 01:50 h Total Minutes: 305
Start Temp. 21.8 °C End Temp. 19.3 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	12m x 2.6m	stacked over road	93.6 m ²
2	nets	3	9m x 2.6m	stacked over road	70.2 m ²

Total Capture Area: 163.8 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 10 Date: 5-21-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

low slope drainage through woodlot with farm road
poplar, cherry, white oak18. Was reproductive status checked? ☒ YES / ☐ NO (if "NO" only enter numbers in Total columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>	1	5				6		2		2	8
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 8

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-29-13 2. Company Name: Normandean
3. Bat Identifier: M. O'Mahony (Responsible Recorder) 4. Assistants: K. Maurice
5. Site Name and/or Number: Bell Bend 10
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
farm road through woodlot
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 5' 21.3"N, Longitude: 76° 9' 40.1"W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
38 Bombay Lane Berwick PA 18603
13. Time (military) & Temperature: Start Time 20:55 h Stop Time 1:55 h Total Minutes: 300
Start Temp. 17.8 °C End Temp. 14.7 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	12m x 2.6m	stacked over road	93.6 m ²
2	nets	3	9m x 2.6m	stacked over road	70.2 m ²

Total Capture Area: 163.8 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 10 Date: 5-29-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

low slope drainage through woodlot with farm road
poplar, cherry, white oak18. Was reproductive status checked? YES NO (if "NO" only enter numbers in Total columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>		7				7		1		1	8
<i>Perimyotis subflavus</i>		2				2					2
<i>Lasiurus borealis</i>		1				1					1
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 11

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-21-13 2. Company Name: Normandeau
3. Bat Identifier: Jayne Schaeffer (Responsible Recorder) 4. Assistants: Keith Maurice Charlie Dix
5. Site Name and/or Number: Bell Bend - II
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel, other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
Transmission line corridor - forested
8. County: LuZerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 05' 59.87" N, Longitude: 76° 09' 19.77" W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.)
PPL-LLC 38 Bomboy Lane Berwick, PA 18603
13. Time (military) & Temperature: Start Time 2045 h Stop Time 0145 h Total Minutes: 300
Start Temp. 24.3 °C End Temp. 21.4 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	Nets	3	18m x 2.6m	Stacked across power line	140.4
2	Nets	3	18m x 2.6m	Stacked across power line	140.4

Total Capture Area: 280.8 sq. m

(Site Survey Record – Continued)

Site Name/No.:

11

Date: 5-21-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

Hilltop transmission line with wooded area on both sides
Dominant tree(s) Red maple, also hickory, oak, black cherry

18. Was reproductive status checked? YES ☒ NO (if "NO" only enter numbers in **Total** columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>							1			1	1
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total
											1

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-30-12 2. Company Name: Normandeau
3. Bat Identifier: M. O'Mahony 4. Assistants: K. Maurice
(Responsible Recorder)
5. Site Name and/or Number: Bell Bend 11
6. Site is (circle one): hibernation site summer habitat
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
forested power line corridor
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41° - 06' - 1.0" N, Longitude: 76° - 9' - 18.3" W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) PPL LLC
13. Time (military) & Temperature: Start Time 20:50 h Stop Time 01:50 h Total Minutes: 300
Start Temp. 23.3 °C End Temp. 19.5 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear, Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
<u>1</u>	<u>Nets</u>	<u>4</u>	<u>12m x 2.6m</u>	<u>Stacked over trail</u>	<u>124.8 sq. m</u>
<u>1</u>	<u>nets</u>	<u>4</u>	<u>18m x 2.6m</u>	<u>stacked over Row</u>	<u>187.2 m²</u>
<u>2</u>	<u>nets</u>	<u>4</u>	<u>18m x 2.6m</u>	<u>stacked over Row</u>	<u>187.2 m²</u>

Total Capture Area: 374.4 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 11 Date: 5-30-1317. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)
Hilltop transmission line with wooded area on both sides
red maple, hickory, oak, black cherry18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in **Total** columns)***CAPTURE RESULTS**

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>		2				2					2
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total 2

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-21-13 2. Company Name: Normandeau
3. Bat Identifier: Jayme Schaeffer 4. Assistants: Ryan Bauman
(Responsible Recorder)
5. Site Name and/or Number: Bell Bend - 12
6. Site is (circle one): hibernation site summer habitat
7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____
7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):
Tree lined canal and wooded walking path
8. County: Lucerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES NO
11. Geographic Coordinates (D-M-S): Latitude: 41° 06' 7.43" N, Longitude: 76° 08' 7.54" W
Datum (circle one) NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.)
PPL - LLC 38 Bombay Lane Berwick, PA 18603
13. Time (military) & Temperature: Start Time 2045 h Stop Time 0145 h Total Minutes: 300
Start Temp. 24.3 °C End Temp. 21.4 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear, Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	Nets	3	9m x 2.6m	Stacked over canal	70.2
2	Nets	3	9m x 2.6m	stacked over walking trail	70.2

Total Capture Area: 140.4 sq. m

(Site Survey Record – Continued) Site Name/No.: 12 Date: 5-21-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

Floodplain river bottom with old canal and ag fields
Dominant tree is maple
understory spicebush and poison ivy18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in Total columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>								1		1	1
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>		1				1					1
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total <u>2</u>

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: 5-30-13 2. Company Name: Normandeau
3. Bat Identifier: M. O'Mahony (Responsible Recorder) 4. Assistants: K. Marburger
5. Site Name and/or Number: Bell Bend 12
6. Site is (circle one): hibernation site ☐ summer habitat ☒
- 7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel, other structure, describe - _____
- 7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream): tree lined canal and wooded wooded walking path
8. County: Luzerne 9. 7.5' Quad.: Berwick
10. Was site GPS'd (required)? YES - NO
11. Geographic Coordinates (D-M-S): Latitude: 41 ° - 6 ' - 7.4 "N, Longitude: 76 ° - 8 ' - 7.5 "W
Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____
12. Ownership and Access: (Who owns site or controls access? Give name and address.) FPL LLC
38 Bomboy Ln Berwick PA 17603
13. Time (military) & Temperature: Start Time 20:50 h Stop Time 01:50 h Total Minutes: 300
Start Temp. 22.1 °C End Temp. 17.5 °C (must stay ≥ 10 °C for summer netting)
14. General Weather (circle one): Clear, Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain; (suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____
15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).
16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m
1	nets	3	18m x 2.6m	stacked over pond	140.4 m ²
2	nets	3	9m x 2.6m	stacked over tow path	70.2 m ²

Total Capture Area: 210.6 sq. m

(Site Survey Record – Continued) Site Name/No.: Bell Bend 12 Date: 5-30-13

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species)

Flood plain near river bottom with old canal and ag fields
maple, spicebush, poison ivy18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in **Total** columns)

*CAPTURE RESULTS

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>								1		1	1
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.											Grand Total
											1

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

APPENDIX C



PENNSYLVANIA GAME COMMISSION
COMMONWEALTH OF PENNSYLVANIA
2001 ELMERTON AVENUE
HARRISBURG PA 17110

SPECIAL USE PERMIT

PERMIT TYPE STUDIES-SCIENTIFIC
PERMIT # 29451

DESCRIPTION BAT SAMPLING - CAPTURE & RELEASE ALL BATS INCLUDING INDIANA BATS (MYOTIS SODALIS)

PERMITTEE

MICHAEL O'MAHONY
400 OLD READING PIKE
BUILDING A, SUITE 101
STOWE PA 19464

DOB 2/26/1973

COUNTY LUZERNE, FRANKLIN
REGION NE, SC
EFFECTIVE DATE 5/15/2013 - 8/15/2013
FEE \$ 0

REPORT REQUIRED AS SPECIFIED
RENEWABLE NO
PITTMAN-ROBERTSON NO

SPECIES BAT

SUBPERMITEE CHRIS SANDERS-QIBS , JASON COLLINS-QIBS , KEITH CHRISTENSON-QIBS , JAYME SCHAEFFER-BI , AARON COVALT-BI , NADIA BARKAWI-BI , DOUG KOZIOL-BI , ELISE MERRILL-BI , SARAH DEWEES-BI

CONDITIONS

- 1 THE VALIDITY OF THIS PERMIT IS CONDITIONED UPON THE RECEIPT AND MAINTENANCE OF ANY OTHER APPLICABLE FEDERAL, STATE OR LOCAL PERMITS REQUIRED BY LAW.
- 2 A COPY OF THIS PERMIT SHALL BE CARRIED AND PRESENTED UPON REQUEST OF ANY DULY AUTHORIZED OFFICER OR REPRESENTATIVE OF THE COMMISSION.
- 3 ALL PERMITTED ACTIVITIES SHALL AT ALL TIMES BE CONDUCTED IN CONFORMANCE WITH ALL APPLICABLE REQUIREMENTS OF THE GAME AND WILDLIFE CODE (34 PA.C.S. § 101 ET SEQ.) AND ITS ATTENDANT REGULATIONS (58 PA. CODE § 131.1 ET SEQ.).
- 4 STUDY AREAS WILL BE: BELL BEND PROJECT IN LUZERNE COUNTY AND THE BROAD MOUNTAIN WIND PROJECT IN FRANKLIN COUNTY.
- 5 PERMITTEE WILL ABIDE BY THE ALL THE GUIDANCE AND REQUIREMENTS IN THE 2013 PA BAT SURVEY REPORTING PACKET.
- 6 THE SUMMER NETTING PERIOD IS MAY 15 THROUGH AUGUST 15 AND IF PROPERLY PERMITTED, THE HIBERNACULA TRAPPING SAMPLING PERIOD IS SEPTEMBER 15 THROUGH OCTOBER 15.



PENNSYLVANIA GAME COMMISSION
COMMONWEALTH OF PENNSYLVANIA
2001 ELMERTON AVENUE
HARRISBURG PA 17110

SPECIAL USE PERMIT

PERMIT TYPE STUDIES-SCIENTIFIC
PERMIT # 29451

- 7 BATS MAY BE CAPTURED THROUGH THE USE OF MIST NETS AND HARP TRAPS. BATS MAY BE Banded USING FOREARM BANDS (ORANGE BANDS MAY ONLY BE USED ON INDIANA BATS. OTHER COLORS MAY BE USED ON INDIANA BATS BUT NO OTHER SPECIES WILL BE Banded WITH ORANGE BANDS) AS PRESCRIBED IN PROJECT OUTLINE. ANY INDIANA BAT (MYOTIS SODALIS), SMALL-FOOTED (STATE THREATENED, MLEIBII) AND REPRODUCTIVE FEMALE/JUVENILE SILVER-HAIRED BATS (LNOCTIVIGANS) AND REPRODUCTIVE FEMALE/JUVENILE SEMINOLE BATS (LSEMINOLUS) SHALL BE RADIO TAGGED, ROOSTS LOCATED AND EMERGENCE COUNTS CONDUCTED DURING SUMMER NETTING SURVEYS. RADIO TELEMTRY MAY BE USED TO DETERMINE ROOST LOCATIONS AND FORAGING AREAS FOR ALL SPECIES. TISSUE SAMPLES MAY NOT BE TAKEN FROM INDIANA BATS (MYOTIS SODALIS). AN ACOUSTICAL BAT DETECTOR MAY BE USED AT EACH NET SITE.
- 8 EQUIPMENT WILL BE CLEANED AND DECONTAMINATED WHEN MOVING FROM ONE COUNTY TO ANOTHER. FOLLOW LATEST DECONTAMINATION PROCEDURES AVAILABLE AT [HTTP://WHITENOSESNDROME.ORG/](http://WHITENOSESNDROME.ORG/) (WNS INFO). THE WHITE FUNGUS IS ONLY ONE SIGN OF WNS. YOU SHOULD NOT EXPECT TO FIND BATS WITH FUNGUS ON THEM DURING THE SUMMER OR FALL. PERMITTEES ARE REQUIRED TO FOLLOW ALL DECONTAMINATION AND DISINFECTION GUIDELINES FOR SPRING SUMMER AND FALL BAT FIELD STUDIES.
- 9 ALL BATS CAPTURED DURING THE SURVEY SHALL BE HANDLED IN A HUMANE MANNER AND NON TARGET BATS SHALL BE RELEASED UNHARMED. ANY NON TARGET BAT THAT MAY DIE DUE TO HANDLING WILL BE REPORTED TO THE PENNSYLVANIA GAME COMMISSION, BUREAU OF WILDLIFE MANAGEMENT, 2001 ELMERTON AVENUE, HARRISBURG, PA 17110, (717)787-5529, WITHIN 72 HOURS OF ITS DEATH.
- 10 A REPORT OF THE ACTIVITIES CONDUCTED THROUGH THIS PERMIT SHALL BE PROVIDED TO THE PENNSYLVANIA GAME COMMISSION WITHIN 90 DAYS OF THE COMPLETION OF THE PROJECT. REPORTS WILL INCLUDE THE PROVIDED MANDATORY REPORTING FORMS IN HARD COPY. THE FINAL REPORT SHALL BE PROVIDED BY 12/31/13. PLEASE SEND TO SAME ADDRESS IN CONDITION 9 ATTN: CAL BUTCHKOSKI.
- 11 IF A SURVEY IS CONDUCTED FOR A PROJECT (OR ANY PORTION THEREOF) THAT HAS UNDERGONE A PENNSYLVANIA NATURAL DIVERSITY INVENTORY (PNDI) ENVIRONMENTAL REVIEW BY THE PENNSYLVANIA GAME COMMISSION'S DIVISION OF ENVIRONMENTAL PLANNING AND HABITAT PROTECTION (REGARDLESS OF THE OUTCOME OF THAT ENVIRONMENTAL REVIEW), AN ELECTRONIC COPY OF THE REPORT AND FORMS REQUIRED UNDER CONDITION 10 SHALL ALSO BE PROVIDED ON COMPACT DISC TO THE PENNSYLVANIA GAME COMMISSION, DIVISION OF ENVIRONMENTAL PLANNING AND HABITAT PROTECTION, ATTN: TRACEY LIBRANDI MUMMA, 2001 ELMERTON AVENUE, HARRISBURG, PA 17110, WITHIN 90 DAYS OF THE COMPLETION OF THE PROJECT.
- 12 A QUALIFIED INDIANA BAT SURVEYOR MUST BE PRESENT DURING THE TIMES OF SURVEYS AND IS RESPONSIBLE FOR OVERSEEING ALL ASPECTS OF THE PROJECT INCLUDING ADHERENCE TO PGC NETTING STANDARDS AND EFFORT REQUIREMENTS. THIS PERSON SHALL BE LISTED ON THE USFWS QUALIFIED INDIANA BAT SURVEYORS LIST.
- 13 ONLY QUALIFIED INDIANA BAT SURVEYORS AND APPROVED BAT IDENTIFIERS WILL IDENTIFY BATS. BAT IDENTIFIERS SHALL BE LISTED ON THE USFWS BAT IDENTIFIER LIST.
- 14 PROJECT AREA MAY BE EXTENDED TO STATE GAME LANDS WITH PRIOR PERMISSION OF REGIONAL LAND MANAGEMENT SUPERVISOR (LMS), WHO CAN BE CONTACTED THROUGH THE APPROPRIATE REGIONAL OFFICE.



PENNSYLVANIA GAME COMMISSION
COMMONWEALTH OF PENNSYLVANIA
2001 ELMERTON AVENUE
HARRISBURG PA 17110


SPECIAL USE PERMIT

PERMIT TYPE STUDIES-SCIENTIFIC
PERMIT # 29451

- 15 ONCE PERMISSION FROM THE LMS IS OBTAINED, WHEN PARKING OR LEAVING A VEHICLE UNATTENDED IN AN AREA NOT OPEN TO PUBLIC TRAVEL, PERMITTEE SHALL DISPLAY A LOGO OR CARD IN AN OBVIOUS LOCATION IN OR ON YOUR VEHICLE TO IDENTIFY ITS AFFILIATION AND LEAVE A COPY OF THIS PERMIT ON THE DASHBOARD, VISIBLE FROM OUTSIDE THE VEHICLE.
- 16 ACCESS WILL ONLY BE GRANTED FOR OFFICIAL PURPOSES AND NO UNAUTHORIZED PERSONS SHALL BE TRANSPORTED BEHIND COMMISSION GATES OR INTO OTHER AREAS CLOSED TO THE PUBLIC.
- 17 NO ACTIVITY SHALL OCCUR BEFORE NOON ON ALL SATURDAYS DURING THE SPRING TURKEY SEASON. ACCESS MAY BE DENIED AT OTHER TIMES DUE TO HUNTING SEASONS, INCLEMENT WEATHER, ROAD CONDITIONS OR OTHER CONFLICTS AS DETERMINED BY THE LMS. CONSENT FOR RIGHT OF ENTRY SHALL NOT INTERFERE WITH LAWFUL PUBLIC HUNTING AND TRAPPING ACTIVITIES.

 5-14-13
PERMITTEE SIGNATURE DATE





DIRECTOR, BUREAU OF
WILDLIFE PROTECTION

Standard and Minimum Effort Requirements for Qualified Indiana Bat Surveyor Netting within the Commonwealth of Pennsylvania for Environmental Review Projects.

Mist-net surveys will be carried out in accordance with the U.S. Fish and Wildlife Service's (USFWS) *Indiana Bat Mist Netting Guidelines* and will include effort and measures above and beyond those guidelines as specified in this document as a requirement of the PA Game Commission (PGC) Permit. Accompanying a State Permit are required reporting information and bat White-Nose decontamination protocols. Make certain to review and adhere to the requirements. All field personnel must be familiar with these guidelines.

Netting Season: May 15 – August 15

Minimum Net Equipment for Site Sets: 2 net sets (4 poles) capable of stacking a minimum of 3 (2.6m high) nets to reach canopy/sub-canopy (>7 m / 23 ft). Poles will have a pulley system for efficient bat removal. An additional assortment of poles will also be available for situations where stacked nets can not be used. Nets will be the lowest visibility weights available (50 denier 2-Ply Nylon or 75 denier 2-Ply Polyester) and 38 mm (~1.5 in) mesh. Standard net lengths will be available to cover most travel corridors ranging from 6 m (~19 ft) to 18 m (~59 ft). Nets will be hung in the standard manner to provide bag in panels. Overstretched nets that eliminate panel bagging will not be permitted. Nets should be placed in what is considered Indiana bat habitat and among "clutter" to minimize bat detection. Sites will be monitored quietly; loud noises (other than low volume occasional communication), running engines, campfires and other activities that disturb/alert bats will not be allowed within 300 m of a Site.

Standard Site Sets: A minimum of 2 net sets, ≥ 30 m (98 ft) apart, will be placed at a net Site. A standard set will consist of 3-stacked nets*. If triple high sets are not used, a thorough justification must be provided in the comments section of the PGC Bat netting/Trapping Site Survey Record (P-70008-N/T). Should we find that quality netting locations suitable for triple-high net sets are available but that lower net sets were deployed or poor quality netting locations were selected, permits may be revoked and the qualified surveyor may be considered unable to select and set Sites resulting in removal from the Pennsylvania list of qualified surveyors. Each net Site will be sampled for 2 nights beginning at sunset for at least 5 hours (300 minutes). Each net set will be checked ~every 10 minutes. Minimally, one person will monitor a Site at all times.

*Sites will be selected for prime capture locations in Indiana bat habitat which is often forested travel corridors (streams, trails etc) rather than locations capable of placing triple high net sets (open field). Professional judgment is foremost in site selection and net sets. However, given that Indiana bats are often captured in elevated net sets, they will be considered the standard when conducting surveys in PA and if not used, a justification must be provided.

Minimum Nightly Effort/Site = 420 Units of Effort (UE): One unit of effort is equal to 1m^2 of net area in place for 1 hour - (total m^2 of capture area) x (minutes in place/60).

Each net Site must provide a minimum of 420 UE. For example, 2 sets-each measuring 7 m high by 6 m wide in place for the required 5 hours would meet the minimum effort of 420 UE:

$((7\text{ m} \times 6\text{ m}) + (7\text{ m} \times 6\text{ m})) \times 5\text{ hrs.}$ In the rare situation where stacked nets can't be used, minimum effort must still be met with more nets or net sets at a Site. As of 2008, average effort/Site of companies capturing Indiana bats in PA range from 490 to 680 UE. If unable to complete the required effort on one night, such as bad weather, the site will be repeated using full UE on another night.

Weather -- Netting will be suspended when:

1. Rain, steady drizzle or heavy fog soaks nets.
2. Temperature falls below 10°C (50°F).
3. Winds result in frequently moving/billowing nets **OR** wind gusts exceed 18 mph (Windy-small trees in canopy sway).

Commonwealth of Pennsylvania, Pennsylvania Game Commission
**Standard and Minimum Effort Requirements for Qualified Indiana Bat Surveyor Netting within the
Commonwealth of Pennsylvania for Environmental Review Projects.**

Qualified Indiana Bat Surveyors (QIBS): A qualified surveyor is one who's credentials and experience have been reviewed by the USFWS, State College Field Office (USFWS-SCO) and the (PGC) and found to have expertise in all the following:

1. Correct identification of bats of the northeast, to species.
2. Collection of biological information on bats of the northeast.
3. Selecting Net Sites and placing Net Sets to maximize bat captures.
4. Attaching radio transmitters, and bat bands.
5. Radio-tracking and mapping behavior gained thru biotelemetry.
6. Identifying, describing, and conducting emergence counts of day roosts.
7. Documenting study information (bats, net sets, portal entrances, etc.) with photography

A QIBS is responsible for overseeing all aspects of surveys, and is, therefore, required to be at an active project site (including net surveys, telemetry monitoring and roost evaluations). The QIBS will select sites, sets and inspect net sets each night. QIBS are the individuals who act in the capacity of Principal Investigator (PI), having in-field oversight responsibility for net setup, bat captures, bat identification, telemetry studies, safe handling procedures and adherence to WNS disinfection protocols. They are also the individuals responsible for ensuring bat permitting requirements are met, and ensuring that reports are accurate and complete and submitted to the appropriate agencies. In addition, the QIBS will be in contact (2 way radio and/or cell phones) with site workers, or if not possible the QIBS will visit all sites every hour. The QIBS will verify and photo document captures of *M.sodalis*, *M.leibii*, and other species not regularly found in Pa., and supervise radio tagging and telemetry.

Bat Identifier (BI): The QIBS may select experienced personnel capable of identifying northeastern bats and is responsible for BI's qualifications. A list of BI's with documented experience will be provided to the PGC and USFWS-SCO for review and approval. The QIBS and BI may have oversight for the identification of bats at up to 2 net Sites at a time unless travel between sites is >30 minutes in which case only 1 Site can be monitored. Captured bats may not be held more than 1 hour unless outfitting for telemetry or other processing documented in the permit.

Only QIBS's and BI's are permitted to be bat identifiers (responsible recorder) on PGC Forms: P-70008-NT and P-70008-M. The ratio of net Sites to QIBS's and BI's will be 2:1, except as noted above.

Assistants: Assistants are under the supervision of the QIBS and are only responsible for assisting in site set-up, take-down and removal of bats. All bats must be held until verified by a QIBS or BI and the verification will occur within 1 hour of capture.

Only a QIBS may apply for a permit. The permit will list all QIBS', and BI's for a project. There will be no sub-permittee designations on the permit request. BI's and Assistants that wish to document their bat experience can briefly note these activities in the comment sections of PGC Forms: P-70008-NT and/or P-70008-M. (example: Name identified 2 Indiana bats upon removal from net, measured, banded, attached transmitters and verified by QIBS as acceptable work.). Spelling Name clearly will facilitate future retrieval of this information from the database.

Telemetry: Telemetry will be conducted on the below mentioned species, roosts will be identified, at least one roost emergence count conducted, and a map of foraging activity areas provided. Minimum foraging activity shall relate to the project area. This should include triangulation/bi-angulation data points and general monitoring from roads and trails etc. for at least three full nights. The PA Game Commission shall be notified for all species and the USFWS State College, PA Field Office shall be notified for Indiana bat captures and telemetry. Notification will occur as soon as possible but not to exceed 72 hours after capture. Additional nights of telemetry may be required depending upon project impacts to species habitat¹. Telemetry will not be conducted on light weight animals if transmitter attachment exceeds 10% of bat's weight.

Species: All Indiana bats (*M.sodalis*); All small-footed bats (*M.leibii*); reproductive female and juvenile silver-haired bats (*L.noctivigans*); and reproductive female and juvenile Seminole bats (*L.seminolus*).

Telemetry Frequency: Transmitters, receivers and antennas will be tuned to **172 MHz**. This will avoid conflicts with game species transmitters on animals and in storage. This frequency will also allow PGC Diversity Staff to assist if a need arises (both on the ground and with aircraft).

¹*When conducting telemetry at the request of **PGC Environmental Review**, refer to standards and requirements located in Appendix I. Appendix I also has general guidance for transmitter attachments etc.*

Ethical Standards from USFWS, PA Field Office-Reminder that Surveyors are expected to:

- >Have current permits to conduct surveys in Pennsylvania.
 - >Follow all provisions of State Permits including White Nose Syndrome decontamination protocols.
 - >Report Indiana bat findings to the Service and PGC within 72 hours.
 - >Contact the Service and PGC immediately (same day) if an Indiana bat is killed or injured
 - >Follow established survey guidelines, and accurately, fully, and truthfully report on the methods used and results obtained during these surveys.
 - >Maintain field notes documenting their work and provide copies of field notes upon request.
 - >Maintain the confidentiality of Indiana bat sites.
 - >Obtain landowner permission before accessing land.
 - >Conduct surveys and studies in a manner that ensures the safety of Indiana bats.
 - >Refrain from removing any Indiana bats from their habitat, holding them in captivity, collecting tissue (wing punches) or blood samples, conducting radio-telemetry studies, or harp trapping unless specifically authorized by a State Permit (Weighing, measuring, analyzing and photographing Indiana bats are standard operating procedures that take place when conducting mist net surveys).
- (Failure to adhere to these ethical standards may result in an individual's removal from the list of qualified surveyors and revocation of their State Permit)*

Contacts

USFWS State College, PA Field Office (814) 234-4090
Pam Shellenberger Pamela_Shellenberger@fws.gov

PA Game Commission, Wildlife Diversity
Cal Butchkoski (814)667-3685 cbutchkosk@pa.gov
Greg Turner (814)237-1432 grturner@pa.gov

COMMONWEALTH OF PENNSYLVANIA

Pennsylvania Game Commission, Bureau of Wildlife Protection, Special Permits Enforcement Division
2001 Elmerton Avenue, Harrisburg, PA 17110-9797

Procedure and format for permittee reports to the PA Game Commission when conducting bat capture surveys within the Commonwealth.

The report is divided into six sections that include: (1) Cover page, (2) Site Survey Record, (3) Bat Measurement and Capture Data Forms, (4) Roost forms, (5) Maps and (6) Photo Documentation.

Section 1 - Cover

A separate cover page should be provided for each project with the accompanying data of Sections 2 through 6 contained within. An example is provided.

Section 2* - Bat Netting/Trapping Site Survey Record

(FORM P-70008-N/T)

This is a **mandatory** two-page summary of site(s) surveyed and of captures. It should be completed for all sites surveyed, including those with no captures. If a capture technique other than mist netting or harp trapping is used, it should be described in remarks. Complete 1 for each site survey night (If site is trapped twice, 2 site survey records are required, etc.).

Section 3* - Bat Measurement and Capture Data Form

(FORM P-70008-M)

Band color restrictions: Yellow- only on *M.sodalis* at Canoe Creek St. Park; Orange- may only be used on *M.sodalis* elsewhere.

This form is **mandatory** for:

1. *Myotis sodalis* captures
2. *Myotis leibii* captures
3. Bats you are banding and all band recaptures (*orange and yellow band colors have restrictions*)
4. All radio-tagged bats (describe transmitter in remarks)
5. Bat species not usually found in Pennsylvania*.

* Pennsylvania species: *Myotis lucifugus*, *Myotis septentrionalis*, *Myotis leibii*, *Myotis sodalis*, *Eptesicus fuscus*, *Perimyotis subflavus*, *Lasiurus borealis*, *Lasiurus cinereus*, and *Lasionycteris noctivagans*

The surveyor also has the option to use this form for measuring and reporting all bats. All measurements should follow North American collector standards (Nagorsen, D. W. and R. L. Peterson. 1980. Measurements and Weights. Pp. 22-26 in Mammal Collectors' Manual. Royal Ontario Museum, Publications in Life Sciences). Banded bat information will be maintained in a database and future recaptures of your bands will be reported to you.

Section 4* – Roost Forms

When conducting telemetry 2 roost forms are provided: one for describing roosts (WD-DR-02/13) and another for bat emergence data (WD-EM-02/13). It is recommended and often required that *M. sodalis*, *M.leibii*, and *L. noctivagans* be radio-tagged when captured in summer habitats and their roosts located.

***Section 2, 3, and 4 forms may not be modified for reporting because they are used for data entry. If necessary, supplemental pages may be added to report unique data.**

Section 5 - Maps

An example is provided. All survey sites will be reported on a map (preferably a 7.5' USGS Topographic Map) so that locations can be accurately located and coordinates verified.

Section 6 - Photo Documentation

An example is provided. Photographs (preferably digital) will be taken of identification characteristics of all *M.sodalis*, *M.leibii*, and species not usually found in PA. The photos should be labeled with the site, date and capture number.

Mail **hard copy** of reports to address on the heading of this page within 90 days of project completion.

COMMONWEALTH OF PENNSYLVANIA
Pennsylvania Game Commission
Bureau of Wildlife Protection, Special Permits Enforcement Division
2001 Elmerton Avenue, Harrisburg, PA 17110-9797

Section 1 - Cover

PERMITTEE BAT CAPTURE REPORT

Mail **hard copy** of reports to address on the heading of this page within 90 days of project completion.

Permit Number _____

Project Name: _____

Company/
Organization/
Permittee Name: _____

Address: _____

Phone: (_____) _____ - _____ Fax: (_____) _____ - _____

E-Mail: _____

Project Supervisor Name: _____

Supervisor Contact: Phone: (_____) _____ - _____

E-Mail: _____

If this is contracted work, provide the name & address of the individual/organization work is being performed for:

Mail **hard copy** of report to address on the heading of this page within 90 days of project completion.

BAT NETTING/TRAPPING SITE SURVEY RECORD

Page 1 of 2

1. Survey Date: _____ 2. Company Name: _____

3. Bat Identifier: _____ 4. Assistants: _____
(Responsible Recorder)

5. Site Name and/or Number: _____

6. Site is (circle one): hibernation site summer habitat

7a. If hibernation site circle one: limestone mine, coal mine, limestone cave, sandstone cave, RR tunnel,
other structure, describe - _____.

7b. If summer habitat, describe area being sampled (e.g. forested stream or forest clearing with stream):

8. County: _____ 9. 7.5' Quad.: _____

10. Was site GPS'd (required) ? YES - NO

11. Geographic Coordinates (D-M-S): Latitude: _____°-_____'-_____"N, Longitude: _____°-_____'-_____"W

Datum (circle one): NAD27 (Preferred), NAD83, WGS84, Other: _____

12. Ownership and Access: (Who owns site or controls access? Give name and address.) _____

13. Time (military) & Temperature: Start Time _____ h Stop Time _____ h Total Minutes: _____

Start Temp. _____ °C End Temp. _____ °C (must stay $\geq 10^{\circ}\text{C}$ for summer netting)

14. General Weather (circle one): Clear; Partly Cloudy; Mostly Cloudy; Cloudy; Drizzle; Intermittent Rain;
(suspend netting during periods of rain) Steady Rain; Thunderstorms; Snow; Other: _____.

15. General Wind Conditions (circle one): Calm, Breezy (Leaves Rustling), Windy (Trees Swaying).

16. Capture Setup at Site:

Set #	Type	Count	Dimensions	Description	TOTAL AREA (m)
1	Nets	4	12m x 2.6m	Stacked over trail	124.8 sq. m

Total Capture Area: _____ sq. m

(Site Survey Record – Continued) Site Name/No.: _____ Date: _____

17. Describe habitat 150 m around site: (topography and vegetation including dominant tree species.)

18. Was reproductive status checked? YES / NO (if "NO" only enter numbers in Total columns)***CAPTURE RESULTS**

Species	Number of Adult Females				No. Juv. Fem.	Total No. Fem.	Number of Adult Males		No. Juv. Male	Total No. Males	Species Totals
	NR	PG	L	PL			SCR	NR			
<i>Eptesicus fuscus</i>	2		1			3	2	1	1	4	7
<i>Myotis lucifugus</i>											
<i>Myotis septentrionalis</i>											
<i>Myotis leibii</i>											
<i>Myotis sodalis</i>											
<i>Eptesicus fuscus</i>											
<i>Perimyotis subflavus</i>											
<i>Lasiurus borealis</i>											
<i>Lasiurus cinereus</i>											
<i>Lasionycteris noctivagans</i>											
Other – specify:											
Other – specify:											
Reproductive Status: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen. *Complete Measurement and Capture Data Form for all: (1) <i>Myotis sodalis</i> , (2) <i>Myotis leibii</i> , (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA.										Grand Total	

19. BAT DETECTORS & OTHER MONITORING DEVICES: Tallies of bat passes / hour. One to 5 hours required for Indiana bat hibernacula surveys. Monitor one hour after 22:00 hrs when trapping/netting hibernacula and 5 hours when only monitoring with bat detectors, night vision or infrared device (when site can not be trapped/netted). Describe procedure & equipment used in remarks.

1 st hour	2 nd hour	3 rd hour	4 th hour	5 th hour
Start Time:	Start Time:	Start Time:	Start Time:	Start Time:
End Time:	End Time:	End Time:	End Time:	End Time:
Tallies:	Tallies:	Tallies:	Tallies:	Tallies:

20. REMARKS:

Bat Measurement and Capture Data Form(Complete for all (1) *Myotis sodalis*, (2) *Myotis leibii*, (3) bats you are banding or band recaptures, (4) radio-tagged bats and (5) bat species not usually found in PA)

Site Name Or Number:				Date:				Set No. Captured In:		Name of Person Identifying the Bat:				*Capture Number:		
Height in meters captured above ground surface: _____ m				Body Measurements (grams and millimeters)					Band Information (if banded) (Band Males on bat's RIGHT fa., Females on bat's LEFT fa.)					Transmitter Attached? If so: Frequency (mHz)		
Species	Sex	Age	Repro. Condition	Wt. (g)	Ear	Tragus	Fore- arm	Hind Foot	Recapture Yes/No	Band Material	Band Color	Band Inscription	Band on Left/Right			
Time of Capture	Photo Taken Yes / No		WNS Wing Score		Wing Photo ID:										Remarks:	
Repro. Condition: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen																
Site Name Or Number:				Date:				Set No. Captured In:		Name of Person Identifying the Bat:				*Capture Number:		
Height in meters captured above ground surface: _____ m				Body Measurements (grams and millimeters)					Band Information (if banded) (Band Males on bat's RIGHT fa., Females on bat's LEFT fa.)					Transmitter Attached? If so: Frequency (mHz)		
Species	Sex	Age	Repro. Condition	Wt. (g)	Ear	Tragus	Fore- arm	Hind Foot	Recapture Yes/No	Band Material	Band Color	Band Inscription	Band on Left/Right			
Time of Capture	Photo Taken Yes / No		WNS Wing Score		Wing Photo ID:										Remarks:	
Repro. Condition: NR= nonreproductive, PG= pregnant, L= lactating, PL= post lactating, SCR= scrotal/epididymis swollen																
Site Name Or Number:				Date:				Set No. Captured In:		Name of Person Identifying the Bat:				*Capture Number:		
Height in meters captured above ground surface: _____ m				Body Measurements (grams and millimeters)					Band Information (if banded) (Band Males on bat's RIGHT fa., Females on bat's LEFT fa.)					Transmitter Attached? If so: Frequency (mHz)		
Species	Sex	Age	Repro. Condition	Wt. (g)	Ear	Tragus	Fore- arm	Hind Foot	Recapture Yes/No	Band Material	Band Color	Band Inscription	Band on Left/Right			
Time of Capture	Photo Taken Yes / No		WNS Wing Score		Wing Photo ID:										Remarks:	

*Capture Number = number in sequence by site.

PA GAME COMMISSION
Wildlife Diversity Section
Day Roost Data Sheet

1-

Landowner: **Name:** _____ **Address:** _____
Phone: _____

2-BAT INFO

Dates on Roost: _____ **Day Roost Number:** _____
(Date = Date bat was on roost; Roost No. = Bat # & numbered roost, in sequence, for that bat ~ 241PGC-01)

Surveyors: _____ **Type:** Tree - Building - Rock - Other _____
(Describe rock and other roost structures)

Bat Species: _____ **Band No.:** _____ **Transmitter Frequency:** _____

Ht.(m) bat is roosting off ground: _____ **Was Bat Emergence Form Completed?** YES - NO
Comments: *(Where is bat roosting? Under bark? If building-describe)*

3-LOCATION

County: _____ **Quadrangle:** _____
Latitude: _____ (DMS) **Elevation (ft.):** _____
Longitude: _____ (DMS) **%Slope:** _____ **Slope Aspect (0-360):** _____
Datum: Nad27 (preferred) NAD83 / WGS84 (circle one)

4-Roost INFORMATION *(If other than tree, indicate rock, rock cliff, house, barn etc. for species)*

Species: _____ **DBH (cm):** _____ **Is Tree Alive?** YES - NO (CIRCLE)

Height: (%UP _____ + %DOWN _____) X **Dist.(m) to tree** _____ = _____ m *(For Trees)*

1st Branch Ht. (%UP _____ + %DOWN _____) X **Dist.(m) to tree** _____ = _____ m *(For Trees)*

Estimate % Canopy Cover Around Roost: _____

Is suitable roost area exposed to direct sunlight? YES - NO *(circle one)*
If so - estimate # of hours of exposure to direct sun: _____
Azimuth of Exposure (which way does exposed part of roost face): _____ *(1-360)*

For Trees:

Exfoliating Bark? YES - NO **Estimate % of tree with Exfoliating Bark:** _____ %

Cavities? YES - NO **If yes - Describe:** _____

5-SURROUNDING HABITAT

Distance (m) to Water: _____ **Water Type:** _____

Understory Species: _____

Overstory Species: _____

6-Comments *(Comment on Overstory Species, Habitat Composition and non-tree roosts. Use back if needed)*

PA GAME COMMISSION, Wildlife Diversity Section
Bat Emergence Form

* It is important to keep lights and noise disturbance to a minimum during the emergence period. *

ROOST NO.: _____ DATE: _____

ROOST TYPE: Building - Tree - Rock - Other _____

Surveyors: _____

Transmitted Bat Band No.: _____ Transmitter Frequency: _____

Weather Temperature: _____ *F

Sky Condition Code: _____ Wind Scale Code: _____

Sky Conditions		Beaufort Wind Scale	
Code		Code	MPH Indicators
0	Clear or a few clouds	0	<1 Smoke rises vertically
1	Partly cloudy/variable sky	1	1-3 mph Smoke Drift shows wind direction
2	Cloudy (broken) or overcast	2	4 - 7 mph Wind felt on face/leaves rustle
4	Fog or smoke	3	8 - 12 mph Leaves&sm.twigs in constant motion
5	Drizzle	4	13 - 18 mph Raises dust & loose paper
7	Snow	5	19 - 24 mph Small trees in leave sway
8	Showers		

Night Vision Equipment Used? YES - NO

Bat Detector Used? YES - NO

Telemetry Equipment Present? YES - NO

Time Surveyors arrived at Roost : _____ (use 24 hour clock for times)

Time First Bat Seen Flying: _____

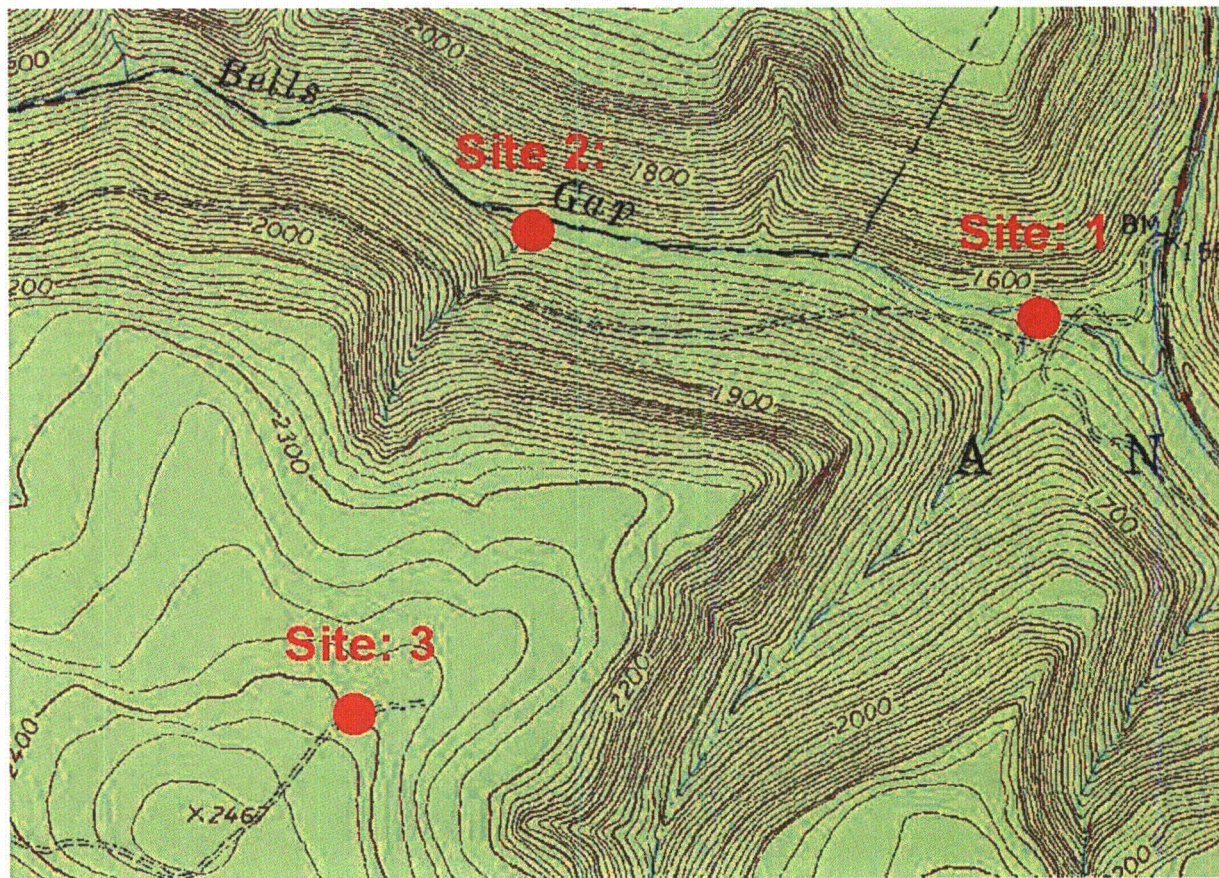
Time Transmitted Bat Emerged: _____ And Azimuth Last Detected: _____

Time Last Bat Seen Emerging: _____ Total Emergence Count: _____

Comments: (include other emergence observations, weather, bat behavior, etc.)

Section 5 - Maps (example)

Blair Co., Blandburg Quadrangle, Bells Gap Area.
Location of Sites 1, 2, and 3 for Project PA-24



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Section 6 - Photos (example)

Male *Myotis sodalis* captured at **Site 1**

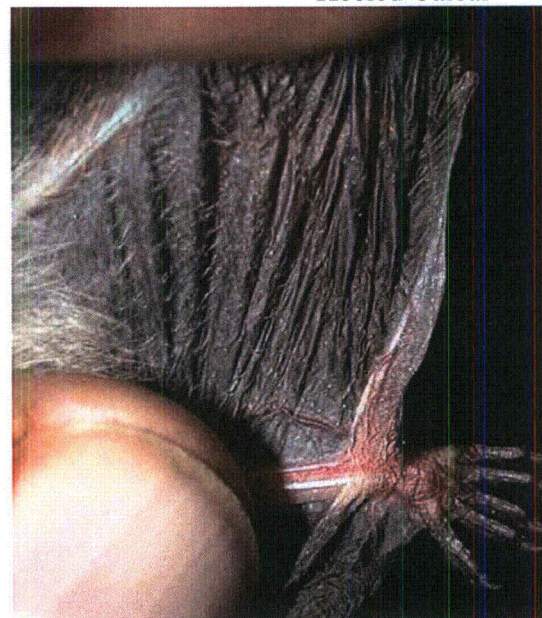
Capture date: **7/18/01**

Capture Number: **06**

Portrait



Keel'd Calcar



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Pennsylvania Game Commission
Bureau of Wildlife Protection, Special Permits Enforcement Division
2001 Elmerton Avenue, Harrisburg, PA 17110-9797

**PENNSYLVANIA GAME COMMISSION
Environmental Review Bat Telemetry Protocol**

Appendix I

**Pennsylvania Game Commission
Environmental Review Telemetry Protocol**

Refer to these standards when specific telemetry is requested by The Bureau of Habitat Protection. This document also provides general guidance for attaching transmitters to bats.

Contact:

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717-787-4250 3614
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PENNSYLVANIA GAME COMMISSION

Environmental Review Bat Telemetry Protocol

- ❖ Objective: To identify and characterize roosts (trees, buildings, rocky areas), foraging areas, and travel corridors.
- ❖ Data collected from telemetry surveys will be used by PGC Environmental Review staff to determine how to best avoid, minimize, and if necessary, mitigate for potential impacts to bat species.
- ❖ PGC Environmental Review staff may request the use of this telemetry protocol for Eastern small-footed bats (*Myotis leibii*), silver-haired bats (*Lasionycteris noctivagans*), Seminole bats (*Lasiurus seminolus*), or other bat species as specified in PA Game Commission (PGC) PNDI response letters.

Bat Telemetry Protocol:

- *Banding and Transmitter Attachment*
 - Banding
 - Do not attach arm bands or take wing punches without prior PGC approval: banding materials and ID numbers must be approved prior to use. No orange or yellow darvic bands are to be used without specific approval. Split metal bands with tabs and unique number system are preferred for generic banding of species, numbering must be approved ahead of time
 - No banding *M. leibii*
 - Transmitters
 - Try not to exceed 5% and **DO NOT** exceed more than 10% of the bats body weight
 - With the lighter transmitters you should be able to be close to 5%; any transmitter that fits weight rule may be used
- *Equipment*
 - Receivers: Receiver can be a scanning or non-scanning type
 - Antennas
 - Antennas must be tuned to the frequencies of your transmitters and receiver (172 MHz)
 - Antennas should be at least a 2-element (H-antenna) or 3+ element (yagi)
 - Transmitters
 - Transmitters should be tuned to 172 MHz to match the PGC; Approval and justification required in advance from the PGC
 - Transmitter application
 - Transmitters are attached with latex, medical adhesive
 - Recommend PERMA-TYPE surgical cement (Plainville, CT 06062).
 - Using scissors, remove a small patch of fur from the mid-dorsal region (between shoulder blades), then glue the transmitter to the bat's skin with a latex, medical adhesive (Perma-type, Skin-Bond Cement or Osto-Bond)
 - A thin layer of glue is applied to the bat and transmitter separately, allowed to dry a couple minutes until tacky, then joined together to form a secure bond according to manufacturer recommendations
- *Level of effort*
 - Maximum number = 6 bats per survey season
 - All eastern small-footed bats (*Myotis leibii*)
 - Reproductive female and juvenile silver-haired bats (*Lasionycteris noctivagans*)

PENNSYLVANIA GAME COMMISSION

Environmental Review Bat Telemetry Protocol

- Reproductive female and juvenile Seminole bats (*Lasiurus seminolus*)
- Any other bat species as requested by PGC Environmental Review staff
- Minimum of 3 nights of telemetry per bat
- Minimum of 10 hours a night with a minimum of 3 successful triangulations per hour totaling 30 successful triangulations per night
 - Lead biologist should have experience conducting telemetry on flying bats, be familiar with triangulation programs, be able to overcome typical field application difficulties (i.e. bounce/terrain), and be confident they are meeting these requirements
 - 10 hour minimum per night includes the time spent by the bat roosting, unless time spent roosting can be attributed to weather (rain, wind over 18 mph, and/or night with starting temperatures below 60°F).
 - No more than 2 hours of any night should be missed due to telemetry crew error and/or weather reasons (rain, wind over 18 mph, and/or night with starting temperatures below 60°F).
- For each day any transmitted bat is documented roosting at a particular day roost, a minimum of 1 emergence count is required.
 - All day roost found must have a minimum of 1 emergence count conducted
 - Surveyors should arrive at least ½ hour before sunset and remain at the roost tree, counting all bats emerging until the time at which all bats have emerged or the lighting diminishes to a point at which the surveyor can no longer see to count the bats
 - If emergence counts during telemetry are conducted on nights when the starting temperature is below 60°F or wind codes are 4 and above an additional emergence count is needed when more favorable weather conditions exist
- *Data sheets and Data*
 - Process data by individual animal and provide shapefiles of data points, minimum convex polygons of evening activity and fixed kernel utilization distribution of 95%, 75%, and 50% of the activity data.
 - PGC data sheets MUST be completed:
 - Bat-Netting/Trapping Site Survey Record
 - Bat Measurement and Capture Data Form
 - Bat Transmitter Detection Record
 - Day Roost Forms
 - Complete this form for all roost types – trees, rocks, building, etc.
 - Regardless of roost type, fill out the following under 4-Roost Information:
 - Canopy cover estimation
 - Whether roost is exposed to direct sunlight
 - Hours of exposure to direct sunlight
 - Azimuth of exposure
 - Bat Emergence Form
 - Bats' activity schedule referenced to general locations on a map
 - Foraging and Roosting as a minimum for activity remarks
 - Fall telemetry of males should include amount of time within mine, foraging and roosting