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Final Report:

Fall 2017/Winter 2018 NCDOT Northern Long-eared Bat Research Project, Dare and Hyde Counties, North Carolina

Phase V

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Executive Summary

North Carolina Department of Transportation (NCDOT) contracted Copperhead Environmental Consulting, Inc. (Copperhead) to assist with portions of a research study of the federally threatened northern long-eared bat (*Myotis septentrionalis*; NLEB) in eastern North Carolina's Coastal Plain. Since the species presence was first documented in the Coastal Plain in 2007, relatively little is known of the natural history of the species in this region. This study is part of a multi-year research project designed to elucidate the distribution, habitat preferences, and behavior of the NLEB in the region. A detailed summary of the results of this field study are provided herein.

Copperhead conducted bat surveys at 2 pre-determined study areas using mist-netting techniques during "Fall" (15 November – 20 December 2017) and "Winter" (26 December 2017 – 28 February 2018) study periods. All surveys were conducted within suitable NLEB roosting and foraging habitat with the goal of capturing and radio-tagging individuals of the species. In general, mist-netting followed guidelines established by the US Fish and Wildlife Service (USFWS 2017). However, certain flexibility was made for nights when the temperatures fell below 50°F (10°C) during the fall and winter months.

Netting efforts were conducted at 18 sites over 85 crew nights. A total of 153 bats of 7 species were captured, including 17 NLEB. Twelve NLEB were fitted with radio transmitters (10 temperature sensitive transmitters and 2 non-temperature sensitive transmitters) and subsequently tracked in an effort locate day roosts and characterize habitat preferences. Copperhead crews used ground-based and aerial telemetry to locate radio-tagged bats. Seven of the focal bats were successfully tracked for ≥ 21 days. Of the remainder, 1 transmitter was shed after 10 days, 1 transmitter died after 13 days, and 2 bats went missing for several days before aerial searches were able to relocate them. One bat was never detected or successfully tracked from the ground but was located with the plane on 2 occasions.

Tracking efforts successfully located 54 roost trees of 13 tree species in 1 study area (Alligator River National Wildlife Refuge, Dare County), and no NLEB were caught in the second study area (Gull Rock Game Land, Hyde County). The mean number of roosts used by focal bats was 5 (range 1 – 9 roosts). The mean number of days focal bats remained in a roost was 3.8 (range 1 – 16 days). A minimum of 1 emergence count was conducted on each roost tree. The maximum number of bats observed emerging from a roost was 1. The mean distance from point of capture to day roosts (including triangulations and aerial estimates) was 1,341 m (range 114 – 13,853 m).

All bats were captured when ambient temperature was ≥ 51.1°F. Radio-tagged bats were recorded as being awake at ambient temperatures as low as 37.6°F.

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Project Background

The US Fish and Wildlife Service (USFWS) formally listed the northern long-eared bat (*Myotis septentrionalis*; NLEB) as a threatened species under the Endangered Species Act on 4 May 2015. Subsequently, the North Carolina Department of Transportation (NCDOT) entered into a Programmatic Agreement with the USFWS that includes a research program designed to establish conclusive information concerning the existence of the NLEB in the Coastal Plain of North Carolina. NCDOT has funded NLEB surveys during the summer and winter months to better understand the species' habitat requirements.

The NLEB was first documented in the Coastal Plain of North Carolina in 2007 (Morris et al. 2009). While most NLEB across their range hibernate underground, the Coastal Plain has no known caves or mines. Subsequent research (NCDOT 2016, Three Oaks 2016, Copperhead 2017) has shown that a population of the species overwinters on the Coastal Plain where the relatively mild winter temperatures appear to allow a level of insect activity high enough to provide winter foraging opportunities (Grider 2016).

In October 2017, Copperhead Environmental Consulting, Inc. (Copperhead) was contracted by NCDOT to conduct a mist-net survey at 2 predetermined study sites in the Coastal Plain of North Carolina. The Fall 2017/Winter 2018 NLEB Research Project (detailed herein) represents the 5th phase of an ongoing multi-year effort to elucidate the range, habitat preferences, and behavior of the species in the Coastal Plain of North Carolina. The objectives of this study outlined by NCDOT in the provided Scope of Work include the following:

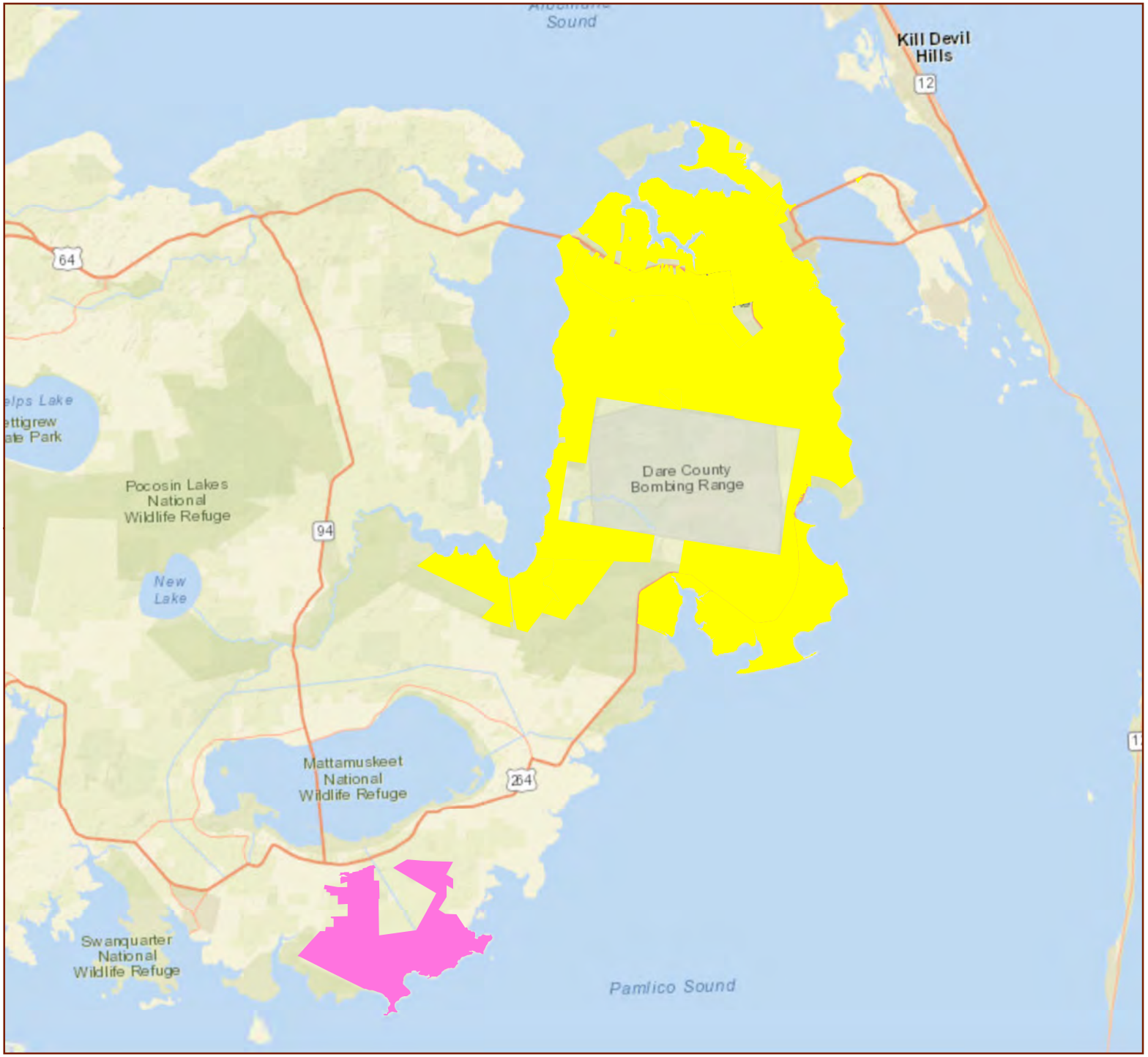
- Determine the distribution of NLEB in eastern North Carolina, further document fall/winter activity, and develop a greater understanding of NLEB winter habitat use and behavior;
- Conduct mist-netting and radio telemetry on NLEB to locate and characterize day roosts used during the late fall/winter months;
- Determine how NLEBs respond if/when ambient air temperatures drop below 50°F using temperature sensitive transmitters;
- Swab susceptible bats in winter to determine presence/absence of *Pseudogymnoascus destructans* (*Pd*), the fungus that causes white-nose syndrome (WNS).

Study Area Description

Copperhead was tasked with sampling 2 locations in the Coastal Plain of North Carolina:

1. Alligator River National Wildlife Refuge, Dare County
2. Gull Rock Game Land, Hyde County

Both study areas had previously been surveyed during the summer with acoustic and/or mist-net surveys, and NLEB had been captured at a single site in both study areas.



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NCDOT MYSE Eastern Research Project

Fall/Winter 2017-2018

Dare and Hyde Counties, North Carolina

Alligator River National Wildlife Refuge

Gull Rock Gameland

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or
1 cm = 5 km

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Coordinate System:
NAD 1983 StatePlane North Carolina FIPS 3200 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, Copperhead Consulting, NCDOT
Date: 4/13/2018

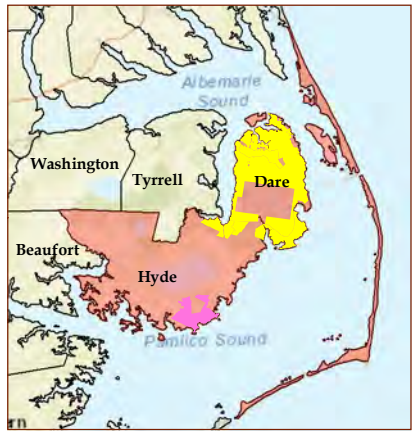

Figure 1. Project overview and study areas surveyed during the Fall 2017/Winter 2018 NCDOT Northern Long-eared Bat Research Project, Dare and Hyde counties, North Carolina.

Methods

Mist-Net Surveys

Mist-net surveys generally followed methodologies outlined by the *2017 Range-Wide Indiana Bat Summer Survey Guidelines* (USFWS 2017). In some cases, NCDOT requested modifications to the guidelines to allow netting during colder nightly temperatures during the fall and winter months. Mist-net surveys were conducted over 85 crew nights at 18 sites across the 2 study areas. A crew night is defined as 1 crew at 1 site for a complete survey night. The 18 sites included 2 sites where NLEB had been captured in earlier studies conducted in the summers. The 16 remaining sites were determined via discussions with ARNWR biologists and field reconnaissance by Copperhead biologists in areas of suitable NLEB habitat.

Mist-nets were set to maximize coverage of flight paths used by NLEB along suitable travel corridors, foraging areas, or drinking areas. The placement of mist-nets was based on the extent of canopy cover, presence of an open flyway, and forest conditions near the site. The actual location and orientation of each net was determined in the field. Mist-net sites were surveyed for 1 or more nights based on capture success and/or the quality of surrounding habitat. All work was conducted by qualified bat biologists with current applicable USFWS and North Carolina Wildlife Resources Commission (NCWRC) permits.

A minimum of 4 net sets were deployed each night. Each set consisted of a minimum of 1 double-high net configuration (i.e., 2 nets stacked; 5.2 m tall). Low visibility, high-quality nylon nets, 4 to 12 m (depending upon the width of the corridor), were used for each net set. Nets were deployed at sunset each night, left open for the duration of the survey period, and checked every 10 minutes. Disturbance near the nets was kept to a minimum between checks.

Weather data, including temperature, wind speed, and cloud cover, were recorded at each site on an hourly basis to ensure compliance with the mist-netting guidelines. In the fall survey period, no work was conducted on nights when the forecasted temperature at sunset was lower than 50°F. During the winter survey period, no work was conducted on nights when the forecasted temperature at sunset was lower than 45°F. Nightly mist-net efforts at each site were considered "complete" when nets remained open for at least 5 hours past official sunset. If temperatures fell below 45°F, netting was ceased and only considered a complete night if temperatures in the first 3 hours of survey stayed above 45°F. Survey efforts at each site were repeated if weather conditions failed to meet the minimum temperature requirement, the winds moved the nets more than 50 percent of the time, or rain or fog persisted for 30 minutes or continued intermittently throughout the survey period.

Bats were live-caught in mist-nets and released unharmed near the point of capture. Data was recorded on NCDOT Mist-Netting Data Forms. Biological and morphometric data collected included species, sex, age class (juvenile or adult), reproductive condition

(pregnant, lactating, post-lactating, scrotal, or non-reproductive), forearm length (mm), and mass (g). Wing-Damage Index (WDI) was scored and recorded for each bat based on Reichard and Kunz (2009) to determine possible White-nose Syndrome (WNS) infection. In addition, the capture height and the specific net set of capture were recorded for each bat. Processing of bats was completed within 30 minutes from the time the bat was removed from the net. Aluminum-lipped arm bands (Porzana Ltd, Icklesham, East Sussex, UK) provided by NCDOT and Copperhead were applied to the right (for males) or left (for females) forearm of captured bats.

Prior to release, NLEB were photographed following USFWS (2017) techniques. Mist-netting was considered complete after the target number of NLEBs were radio-tagged (n = 6) during each survey period.

Radio Telemetry

All radio-transmitters used during the study were programmed to 172 kHz. NLEB ≥ 6.5 g were fitted with temperature-sensitive 21-day radio transmitters (Holohil Systems Ltd. LB-2X, 0.33 g). NLEB that were 6.0 - 6.5 g were fitted with 15-day transmitters (Holohil Systems Ltd. LB-2X, 0.27 g; Lotek Wireless Inc. PicoPip, 0.29 g). Transmitter attachment followed methodologies outlined in the *2017 Range-wide Indiana Bat Summer Survey Guidelines* (USFWS 2017). Radio transmitters were tested and then attached between the scapulae of each bat using a nontoxic surgical adhesive (The Perma-Type Company, Inc., Plainville, CT, USA) that degrades over time allowing the transmitter to eventually become detached from the bat. The unique frequency of each transmitter was used to identify individual bats during radio-tracking.

Ground Telemetry

Model TRX-1000S (Wildlife Materials Inc., Carbondale, Illinois, USA) and model R-1000 (Communications Specialist Inc., Orange, California, USA) tracking receivers and 172-3FB 3- and 5-element Yagi directional antennas were used to search for radio-tagged bats. Diurnal roosts were located for radio-tagged bats for at least 21 days, or the transmitter was shed or malfunctioned, whichever occurred first. Five bats were tracked beyond 21 days with approval from NCDOT and USFWS. If radio signals were not immediately detected in the field, the bat was searched for on the ground for 4 – 8 hours.

Roost trees were photographed, and coordinates were obtained using a handheld GPS unit set to decimal degrees using the NAD83 datum. In addition, a sketch of the roost tree was made on Copperhead's Roost Tree Datasheet and a uniquely numbered aluminum tree tag and high visibility flagging were placed on each tree to aid in locating trees in the future. Basal area [an expression of tree density (Avery 1967)] of the forest surrounding the roost tree was determined with a 10-factor prism. A basal area prism was used to determine a variable radius plot around the roost tree. All trees within the plot were identified to species and the following data was recorded for each tree: diameter at breast height (dbh; in cm), tree height (in m; estimated), roost height (in m; estimated if known), condition (i.e., snag, live, or live-damaged), percent usable bark cover for roosting

(Gardner et al. 1991), percent total bark cover, tree ranking (i.e., whether a tree's crown was in the canopy, sub-canopy, or understory), and any other noteworthy observations (e.g., bat vocalization, guano). Emergence counts were documented on USFWS Emergence Count Datasheets (USFWS 2017) and Copperhead Roost Tree Datasheets.

Bat Body and Air Temperature Data Collection

Model R4500SD Receiver - Dataloggers (Advanced Telemetry Systems Inc., [ATS], Isanti, MN) were deployed 1 day after bat capture in the vicinity of a roosting area in order to collect interpulse periods of temperature sensitive transmitters. These data were used in a 3rd order polynomial equation created from calibration points provided by the manufacturer to determine bat body temperature. A strong, constant signal is required for logging of these inter-pulse periods. Therefore, even though a datalogger could hear the transmitter signal, the signal while a bat was actively flying and foraging was not always consistent enough to record the inter-pulse periods. Data collection of bats at rest was more consistent and provides insight into a number and duration of behavior states (i.e., awake or torpor). Tracking crews checked the R4500SD data loggers and downloaded data daily.

To collect ambient air temperature and humidity in coordination with the collection of bat temperature, DS1923 iButton® Temperature/Humidity data loggers (Maxim Integrated, San Jose, CA) were placed on the landscape near roosting bats. iButton® data loggers were collected and downloaded at the end of each survey period.

Bat activity was determined from the recorded bat temperatures and air temperatures using the torpor on-set equation by Willis (2007):

$$T_{\text{body-onset}} \text{ -1 SE} = (0.041)\text{body mass} + (0.040)T_{\text{air}} + 31.083$$

A bat temperature was considered "awake" if the recorded bat temperature was > torpor on-set temperature and considered "torpid" if the recorded bat temperature was < torpor on-set temperature.

Aerial Telemetry

If ground crews lost contact with a transmitter for more than 2 days, aerial searches were conducted to relocate the lost bat. Aerial searches were conducted using a Cessna Sky Hawk 172 fitted with ATS aircraft strut mount assemblies with 2 172-3FB 4-element ATS Yagi directional antennas (model #13886). The aerial crew consisted of a pilot and a navigator. The pilot maintained an elevation of approximately 455 m above ground level and the navigator monitored the transmitter signal through the receiver, estimating bat location on mapping software (DeLorme Topo North America 9.0, Yarmouth, ME). The aerial crew performed a search pattern along parallel transects spaced approximately 6 km apart centered on the last known location of the lost bat. This pattern, distance, and altitude is well within known signal capabilities and allowed for maximum coverage of the landscape.

Habitat Characterization

The natural community type was described at all NLEB capture sites and day roosts. Community types followed the *Guide to the Natural Communities of North Carolina, Fourth Approximation* (Schafale 2012). In addition, habitat in the survey area was characterized using the following attributes:

1) pine/hardwood/mixed
2) upland/bottomland
3) managed (thinned, burned, or pine plantation)/unmanaged
4) cutover/immature forest/mature forest
5) natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)
6) clutter (classifications 1-4):
    - sparse/no, < 10% cover
    - low, 10-39% cover
    - medium, 40-75% cover
    - high, >75% cover

Clutter at mist-net sites was recorded as an average number representing the surrounding forest where all nets were set, not just the flyway.

White-Nose Syndrome Protocol

To minimize the transmission of WNS between captured bats, all netting and field activities followed the most recent USFWS *National White-Nose Syndrome Decontamination Protocol*. All hard, non-porous netting equipment was sanitized with Isopropyl alcohol wipes (70%) prior to arrival at the project site and after each survey night; all other equipment was submersed in hot water (140°F) for a minimum of 20 minutes. Disposable latex gloves were worn over sanitized handling gloves and changed following the handling of each bat. All non-disposable equipment (e.g., PESOLA® scales, rulers, calipers) which came into contact with bats was sanitized immediately following the handling of each bat.

Biological Sampling

Swab samples were collected from all captured NLEB and attempts were made to collect both swab and guano samples from captured little brown bats (*Myotis lucifugus)*, southeastern bats (*Myotis austroriparius)*, big brown bats (*Eptesicus fuscus)*, and tricolored bats (*Perimyotis subflavus)*. Collection methodologies followed guidance outlined in Appendix E of *North Carolina's White-nose Syndrome Surveillance and Response Plan, April 2016*. Collected swab samples were refrigerated and sent to the Southeast Cooperative Wildlife Disease Study (SCWDS) lab in the fall and to Kennesaw State University in the winter for *Pd* analysis under the NCWRC contract. Guano samples were also collected for *Pd* analysis from the species listed above in the fall survey session when available. Guano samples are currently being housed at the Copperhead Main Office pending

further shipping instructions from NCDOT or the US Geological Survey National Wildlife Health Center.

Results

Mist-Net Surveys

A total of 153 bats of 7 species were captured (Table 1). A detailed mist-net capture summary table is provided in Appendix A. Figures detailing the locations of mist-net sites and NLEB captures are provided in Appendix B and completed mist-net datasheets are provided in Appendix C. Photographs of mist-net sites are in Appendix D and photos of captured NLEB are provided in Appendix E.

Table 1. Summary of total bat captures by species, age, sex, and reproductive status captured during the Fall 2017/Winter 2018 NCDOT Northern Long-eared Bat Research Project, Dare and Hyde counties, North Carolina.

Species	Adult Male		Adult Female				Escaped	Total
	NR	S	P	L	PL	NR		
Corynorhinus rafinesquii	1	4	-	-	-	3	1	9
Eptesicus fuscus	21	8	-	-	-	13	-	42
Lasiurus borealis	18	2	-	-	-	-	3	23
Lasiurus seminolus	8	-	-	-	-	1	1	10
Myotis septentrionalis	8	3	-	-	-	6	-	17
Nycticeius humeralis	25	4	-	-	-	22	-	51
Perimyotis subflavus	1	-	-	-	-	-	-	1
Total	**82**	**21**	**0**	**0**	**0**	**45**	**5**	**153**

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

Bat Capture by Study Area

A total of 18 sites were sampled across the 2 study areas (Table 2). The Alligator River NWR was surveyed in both the fall and winter study periods, while the Gull Rock Game Land was only surveyed in the winter study period. Because the required number of NLEB were captured and radio-tagged early in the fall study period at Alligator River NWR, NCDOT and USFWS agreed that capture efforts at the Gull Rock Game Land study area should be postponed until the winter survey period.

Table 2. Bat capture by study area during the Fall 2017/Winter 2018 NCDOT Northern Long-eared Bat Research Project, Dare and Hyde counties, North Carolina.

Study Area	Total Bat Captures	Species Richness	No. of Net Sites	No. of Crew Nights	# NLEB Captured
Alligator River NWR	110	7	13	60	17
Gull Rock GL	43	5	5	25	0
Total	**153**	**7**	**18**	**85**	**17**

Bat Capture by Study Period

During the fall study period, a total of 22 bats of 6 species were captured, including 8 red bats (*Lasiurus borealis*), 7 NLEB, 3 evening bats (*Nycticeius humeralis*), 2 Seminole bats (*L. seminolus*), 1 big brown bat, and 1 tri-colored bat. The average ambient temperature when bats were captured in the fall survey period was 59 ± 33°F (range 52 – 65°F). A tri-colored bat was caught at 52°F on December 15, 2017, which was the lowest temperature for a capture during the fall study period. The lowest temperature a NLEB was captured at was 53°F, also recorded on December 15, 2017.

During the winter study period, a total of 131 bats of 6 species were captured, including 48 evening bats, 41 big brown bats, 15 red bats, 10 NLEB, 9 Rafinesque's big-eared bats *(Corynorhinus rafinesquii)*, and 8 Seminole bats. The average ambient temperature when bats were captured in the winter study period was 61.5 ± 32.5°F (range 51 - 71°F). The lowest capture temperature during mist-netting efforts during this period was 51°F, recorded upon the capture of 2 Seminole bats on January 22, 2018 and NLEB captured on February 19 and 22, 2018.

On average, NLEB caught in the fall (n = 7) weighed more (8.3 ± 0.2 g; range 7.5 - 9.3 g) than those caught in the winter (n = 10; 6.2 ± 0.1 g; range 5.8 – 7.0 g).

Radio-telemetry, Roosts, and Emergence Counts

Twelve NLEB were fitted with radio-transmitters and tracked to locate their day roosts. Seven of the focal bats were tracked for 21 days or more, 1 transmitter was shed after 10 days, 1 transmitter died after 13 days, and 2 bats went missing for several days before aerial searches were able to locate them. The 12th bat was never heard from on the ground but was located during aerial searches on 2 occasions.

A total of 54 roost trees of 13 tree species were located by ground crews. The location of 3 additional roost locations were estimated via triangulation or from the airplane. This total includes 35 roost trees of 9 species located in the fall and 19 roost trees of 7 species located in the winter survey period. Roost trees varied greatly in size. Overall, the most commonly used species were *Nyssa biflora* (n = 19), *N. aquatic* (n = 11), *Persea palustris* (n = 5), and *Acer rubrum* (n = 5). Most roosts were live or live-damaged (n = 48) but focal bats also roosted in snags (n = 6). The mean dbh of all roost trees was 19.9 ± 1.5 cm (range

4.9 – 63.5 cm) and the mean tree height was 11.9 ± 0.70 m (range 3.5 – 24.0 m). Microhabitat used by NLEB included cavities (n = 35), cracks/crevices (n = 13), and exfoliating bark (n = 5).

The mean number of roosts used by all focal bats during both study periods was 5 (range 1 – 9 roosts). In general, focal bats roosted near their capture site and utilized multiple roosts close to one another. The mean distance from point of capture to day roosts (including triangulation and aerial estimates) was 1,341 ± 337.9 m (range 114 – 13,853 m). Bats switched roosts on average every 3.8 days (range 1 – 16 days) and many left roosts only to return to them another day.

In the fall study period, the most commonly used tree species were *Nyssa biflora* (n = 13), *N. aquatic* (n = 10), and *Liquidambar styraciflua* (n = 5). In the winter study period, *Nyssa biflora* (n = 6) was again the most commonly used tree species followed by *Persea palustris* (n = 4) and *Acer rubrum* (n = 3). On average, roost trees used in the fall and winter study periods were similar in DBH and tree height (Table 3).

Bats in the fall tended to use more roosts than in winter (Table 3). Average distance traveled from the point of capture to a day roost (Table 3) was greater in the winter (range 622 – 13,853 m) than in the fall (range 114 – 3,131 m).

Table 3. Select roost tree information by study period during the Fall 2017/Winter 2018 NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina. Distance from capture site includes estimated locations from triangulation and aerial telemetry.

Study Period	Mean ± Standard Error			
	DBH (cm)	Tree Height (m)	# roosts used	distance from capture site (m)
Fall	18.5 ±1.6	11.9 ± 0.9	5.8 ± 0.8	660.0 ± 148.0
Winter	22.5 ± 2.9	11.9 ± 1.1	3.6 ± 0.8	2,592.0 ± 869.6

A total of 76 emergence counts were conducted (36 in the fall and 40 in the winter), including at least 1 survey at every roost location except for 1 tree. No more than 1 bat was observed emerging from a given roost. On multiple occasions, crews confirmed emergence via receiver and antenna because it was too dark and/or cluttered to see the bat emerge.

Completed roost tree and emergence datasheets are provided in Appendix F and photographs of day roosts are provided in Appendix G.

Bat Body and Air Temperature

In the fall study period, 6 NLEB were fitted with temperature-sensitive transmitters. ATS receiver dataloggers that were placed near each bat's roosting area while a transmitter was active, recorded 99,339 bat temperatures from November 16 – December 20, 2017. Using the Willis (2007) equation for torpor on-set to determine if a bat was awake or in torpor, 976 recordings identified bats as awake. In the winter, 4 NLEB were fitted with temperature sensitive transmitters and ATS receiver dataloggers recorded 48,802 bat temperatures from February 8 – March 14, 2018. Of these, 1,102 recordings identified bats as awake.

Average air temperature when bats were in torpor during the fall study period was 49.6 ± 32.0°F (range -28.4 – 78.9°F). Average air temperature when bats were awake during the fall study period was 58.1 ± 32.1°F (range 37.4 – 74.5°F). Average air temperature when bats were in torpor during the winter study period was 49.7 ± 32.0°F (range -25.7 – 81.7°F). Average air temperature when bats were awake during the winter study period was 71.9 ± 32.1°F (range 38.4 – 81.6°F).

The coldest temperatures when a bat was recorded as awake were 37.4°F (fall study period) and 38.4°F (winter study period). The corresponding bat body temperatures for these recordings were 90.9°F and 92.6°F respectively (Table 4).

Table 4. Coldest air temperature recorded and corresponding bat body temperature while a bat was awake during the Fall 2017/Winter 2018 NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.

Bat Frequency	Air Temperature °F	Bat Body Temperature °F	Date
172.664	51.0	96.7	11/25/2017
172.722	47.5	97.5	11/28/2017
172.063	48.4	91.8	11/29/2017
172.124	46.6	90.1	12/6/2017
172.603	37.4	90.9	12/9/2017
172.783	42.0	89.3	12/19/2017
172.905	43.9	90.0	2/12/2018
172.302	54.6	93.2	2/22/2018
172.182	55.6	90.6	2/23/2018
172.243	38.4	92.6	3/5/2018

The coldest air temperature recorded during the fall study period while a bat was torpid was 28.4°F and 25.7°F in the winter study period. During these coldest recorded temperatures, tagged bats' body temperatures dropped to a low of 45.2°F in the fall and 50.8°F in the winter (Table 5).

Table 5. Coldest air temperature recorded and corresponding bat body temperature while a bat was torpid during the Fall 2017/Winter 2018 NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.

Bat Frequency	Air Temperature °F	Bat Body Temperature °F	Date
172.664	33.0	46.3	11/21/2017
172.722	28.4	45.2	12/13/2017
172.063	31.2	50.1	11/27/2017
172.124	30.3	52.0	12/10/2017
172.603	30.3	55.8	12/10/2017
172.783	28.4	49.4	12/13/2017
172.905	27.6	51.4	2/9/2018
172.302	25.7	51.5	3/6/2018
172.182	35.7	58.0	3/9/2018
172.243	25.7	50.8	3/6/2018

The number of nights a bat broke torpor while being monitored ranged from 1 – 8. Torpor bouts ranged from 3-13 days. The longest torpor bout recorded in the fall was 12 (range 3-12) and 13 (range 2-13) in the winter (Table 6).

Table 6. Number of nights in torpor, number of arousals, the longest recorded torpor bout, and the number of days tracked for each bat in the Fall 2017/Winter 2018 NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina. Results based on recorded activity from the ATS receiver datalogger. If the datalogger was not recording during normal activity hours (sunset-sunrise), it was not included.

Bat Frequency	# nights in torpor	# nights awake	Longest torpor bout (days)	# days tracked
172.664	5	5	3	10
172.722	19	3	9	28
172.063	19	2	6	30
172.124	15	2	8	23
172.603	13	8	5	21
172.783	18	6	12	26
172.905	3	3	2	13
172.302	15	4	13	24
172.182	3	5	3	25
172.243	15	1	7	21

NLEB Capture Site Results and Habitat Characterizations

This section describes the mist-net sites within the Alligator River NWR where NLEB were documented (no NLEB were documented in the Gull Rock Game Land survey area).

Community type narratives are not provided for mist-net sites where no NLEB were captured. In the following sections, the letter/number combination after each bat represents band numbers of which NCDOT means that bands were provided by North Carolina DOT and CC = Copperhead Consulting.

ARNWR01 (35.827897, -75.903003) is in the northcentral part of the refuge. The mist-net site was positioned south of Sandy Ridge Road and south of a series of 4 narrow freshwater ponds. The surrounding forest most closely resembled a Blackwater Bottomland Hardwoods (High Subtype) Forest with dominant species including *Ilex* spp., *Liquidambar styraciflua, Morella cerifera, Pinus taeda*, and *Quercus* spp. It was a mature forest with 40-75% canopy cover. Five NLEBs were caught on 4 different nights: on November 15, 2017, 1 female (NCDOT1360) caught in net D was fitted with transmitter 172.603 and 1 male (CC1700) caught in net A was fitted with transmitter 172.664; on November 18, 2017, 1 female (CC1453) caught in net C was fitted with transmitter 172.124; on November 21, 2017, 1 male (CC1691) caught in net E was fitted with transmitter 172.783; and on February 7, 2018, 1 male (CC0100) caught in net B was fitted with transmitter 172.905. This site location was provided by USFWS and was the only site within the Alligator River NWR where previous studies had caught NLEB.

ARNWR02 (35.83055, -75.90145) is in the northcentral part of the refuge. This mist-net site was set up on Sandy Ridge Road, adjacent and north of a series of 4 narrow freshwater ponds. The surrounding forest most closely resembled a Blackwater Bottomland Hardwoods (High Subtype) Forest transitioning into a mix of a Bay/Cypress-Gum Swamp (Blackwater Subtype) with dominant species including *Liquidambar styraciflua, Magnolia virginiana, Nyssa* spp., and *Pinus* spp. One male NLEB (CC1451) was caught in net C on November 15, 2017 and fitted with transmitter 172.063.

ARNWR05 (35.80357, -75.88571) is in the northcentral part of the refuge. The mist-net site was set up on a dirt road adjacent to Miltail Road. This short dirt road led to an opening and there was water on either side of the dirt road. The surrounding forest most closely resembled a Blackwater Bottomland Hardwoods (High Subtype) Forest with dominant species including *Acer rubrum, Liquidambar styraciflua*, and *Pinus taeda*. The forest was mature with 40-75% canopy cover. Two NLEBs were caught on 2 different nights: on November 18, 2017, 1 male (CC2103) caught in net A was fixed with transmitter 172.722; and on February 19, 2018, 1 male (CC2110) caught in net B was fixed with transmitter 172.741 (a Holohill non-temperature sensitive transmitter).

ARNWR06 (35.831415, -75.904015) is in the northcentral part of the refuge. The mist-net site was positioned on an overgrown portion of Sandy Ridge Road where a water channel ran parallel to the north side of the road and forested wetlands were present to the north of the channel and south of the road. The surrounding forest most closely resembled a Blackwater Bottomland Hardwoods (High Subtype) Forest transitioning into a mix of a Cypress-Gum Swamp (Blackwater Subtype) with dominant species including *Ilex* spp., *Liquidambar styraciflua, Lyonia lucidula, Morella cerifera, Nyssa* spp., *Pinus* spp., *Quercus*

spp., and *Taxodium distichum*. The forest was mature with 40-75% canopy cover. Two NLEBs were caught on 2 different nights: on November 21, 2017, 1 male (CC2107) caught in net B was not fixed with a transmitter because another site had already caught the final NLEB needed for the fall study period; and on February 15, 2018, 1 male (CC0101) caught in net D was not fixed with a transmitter because the bat was < 6.0 g.

ARNWR09 (35.79123, -75.87230) is in the center of the refuge north of the Dare County Bombing Range. The net site was positioned on the dirt road portion of West Widgeon Road where it intersects with Cedar Rd. Wet channels run parallel to either side of both roads. The forest surrounding this site mort closely resembled a Peatland Atlantic White Cedar Forest with dominant species including *Chamaecyparis thyoides, Persea palustris*, and *Pinus taeda*. The forest was mature with 40-75% canopy cover. Two NLEBs were caught on 2 different nights: on February 19, 2018, 1 male (CC0711) caught in net C was fixed with transmitter 172.302; and on February 22, 2018, 1 male (CC1725) caught in net D was not fixed with a transmitter because the bat weighed <6.0 g.

ARNWR10 (35.79755, -75.85710) is in the center of the refuge. The net-site was positioned on an unmaintained dirt road adjacent to West Widgeon Road. A wet channel ran parallel to the dirt road along its southeastern edge. The forest surrounding the net site most closely resembled a mix of a Blackwater Bottomland Hardwoods (High Subtype) Forest and a Peatland Atlantic White Cedar Forest with dominant species including *Acer rubrum, Chamaecyparis thyoides, Gordonia lasianthus, Ilex* spp., *Liquidambar styraciflua, Lyonia ligustrina, Morella cerifera, Persea palustris*, and *Pinus* spp. The forest was mature with greater than 75% canopy cover. One male NLEB (CC1723) caught in net A on February 19, 2018 was not fixed with a transmitter because it weighed <6.0 g.

ARNWR11 (35.83192, -75.90908) is in the north-central part of the refuge. The mist-net site was positioned on an overgrown portion of Sandy Ridge Road. A water channel runs parallel to the north side of the road and forested wetlands were present to the north on both sides of the road. The forest surrounding this site most closely resembled a Blackwater Bottomland Hardwoods (High Subtype) Forest transitioning into a Cypress-Gum Swamp (Blackwater Subtype) with dominant species including *Acer rubrum, Ilex* spp., *Liquidambar styraciflua, Lyonia lucidula, Morella cerifera, Nyssa* spp., *Persea palustris, Pinus* spp., *Quercus* spp., and *Taxodium distichum*. The forest was mature with 40-75% canopy cover. One female NLEB (CC2112) caught in net A on February 20, 2018 was fixed with transmitter 172.182.

ARNWR12 (35.80268, -75.93410) is in the east-central part of the refuge. The mist-net site was positioned behind gates that separated the maintained and unmaintained portions of Dry Ridge Road and Possum Road. Water-filled channels run parallel to the roads. The forest surrounding this site most closely resembled a Blackwater Bottomland Hardwoods (High Subtype) Forest transitioning into a Cypress-Gum Swamp (Blackwater Subtype) with dominant species including *Persea palustris, Pinus* spp., and *Taxodium distichum*. The forest was mature with greater than 75% canopy cover. Three NLEB were captured at this

site on 2 different nights: on February 21, 2018, 2 females were caught in net C (1 escaped before a band and transmitter could be placed and the other was tagged with band CC0723 and fixed with transmitter 172.124); and on February 22, 2018, 1 female (CC1056) caught in net D was fixed with transmitter 172.243.

Biological Sampling

On December 12, 2017, a total of 8 swab samples were sent to the SCWDS lab for *Pd* analysis. Results arrived via email on January 5, 2018 indicating that *Pd* was not detected by Polymerase Chain Reaction (PCR) in any of the submitted bat swabs. A formal laboratory report detailing the results of the 2017 analysis is included in Appendix H.

On April 16, 2018, a total of 28 swab samples were sent to Kennesaw State University for *Pd* analysis. Results have not been received at this time.

Copperhead was directed on December 20, 2017 to retain the guano samples for testing at a later date. NCDOT and USFWS instructed Copperhead on January 23, 2018 to not collect guano samples for the remainder of the project.

Discussion

The Fall 2017/Winter 2018 NCDOT NLEB Research Study successfully achieved its 4 goals. The capture of 17 NLEB during the project contributes to the growing body of evidence indicating that this species maintains a year-round presence in the Coastal Plain of North Carolina. The data gathered during this study also contribute to our knowledge of NLEB habitat preferences and roosting patterns in the study area and have begun to shed light on NLEB activity when weather is less than what is currently considered ideal for bat activity (i.e., <50°F; USFWS 2017).

While the habitat preferences of NLEB during the summer maternity season have been documented (Foster and Kurta 1999, Lacki and Schwierjohann 2001), winter habitat requirements for NLEB that do not use hibernacula are poorly known. It is likely that bats choose winter habitat according to its availability. Live and live damaged trees have been shown to buffer temperatures better than snags, retaining heat and desirable cavity temperatures longer at night (Coombs et al. 2010). In this study, as in previous results documented by Copperhead (2017), live and live-damaged *Nyssa aquatica/biflora* was the most common roost species used by NLEB. This tree species is also a dominate member in the non-riverine and gum-swamp natural communities sampled during this study. In general, the presence of cavities and crevices made these species more suitable for use by bats than those with exfoliating bark.

Bats were recorded as awake in fall and winter at lower than expected temperatures (37-38°F) based on the low-temperature cutoff for surveying guidelines (50°F; USFWS 2017). The longest torpor bouts recorded were 12-13 days. Speakman and Racey (1989) calculated that the longest a torpid bat can survive without water is 9-12 days and Boyles et al. (2006) suggest that many recorded winter roost switches may be linked to arousal from torpor to rehydrate. This could explain the recorded bat activity when temperatures

were less than ideal for insect availability. A better understanding of bat activity and ambient air temperature is hindered in part by the limitations of data loggers and in part by the mobility of bats. Frequently while a data logger was in place near a roost, bats emerged and flew out of range, selected a different roost, or shifted in a roost so the data logger could not pick up the transmitter signal enough to gather temperature data consistently. Though a lot of insightful data was recorded, the results only show a portion of a bat's overall heterothermic regime in the fall and winter.

No evidence of *Pd* infection has been found (thus far) from the biological swab samples. This may indicate that staying active during the fall and winter may make the Coastal Plain population less susceptible to the effects of *Pd*. More likely, it suggests that little or no overlap occurs with NLEB populations that hibernate in caves and mines farther to the west. The lack of suitable hibernacula in the region coupled with the current maximum known migration distance of 89 km (Griffin 1945) gives further evidence that the 2 populations may not mix. The lack of detectable *Pd* in the samples is a promising find for a disease as widespread and devastating to bat populations as WNS.

Continued *Pd* testing of fall and winter bat samples in the Coastal Plain of North Carolina is warranted. USGS (2017) documented that *Pd* is more readily detected in guano samples of active bats, suggesting guano sampling is a more reliable detection method for bats captured on the landscape in fall and winter.

Additional mist-netting will continue to shape a better understanding of the distribution, density, and habitat preferences of NLEB in the Coastal Plain. The use of temperature-sensitive transmitters adds to the overall knowledge of bat activity in the fall and winter but is also useful to document bat activity on nights with below-normal temperatures (i.e., when emergence counts are not being done because of the survey guidance temperature cut-off, or when bats remain in a roost for multiple days). Finally, the use of aerial foraging telemetry in future studies will help clarify how NLEB are using the survey area and how far they are traveling from their roost areas during the fall and winter.

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Appendix A
Additional Data Tables

Table 7. Mist-net capture summary for the NCDOT Fall 2017/Winter 2018 Northern-long Eared Bat Research Project, Dare and Hyde counties, North Carolina (follows NCDOT 2016)

Study Area	Site No.	Lat, Long	Clutter	Community types	Night	Date	CORRAF	EPTFUS	LASBOR	LASSEM	MYOSEP	NYCHUM	PERSUB	Total	Notes
Alligator River National Wildlife Refuge	1	35.827897, -75.903003	3	Blackwater Bottomland Hardwoods (High Subtype) Forest	1	15-Nov-17	-	-	-	-	2	-	1	3	MYOSEP band NCDOT 1630 tagged with 172.603, MYOSEP band CC 1700 tagged with 172.664
					2	16-Nov-17	-	-	-	-	-	-	-	0	No bats captured
					3	18-Nov-17	-	1	1	1	1	1	-	5	MYOSEP band CC 1453 tagged with 172.124
					4	19-Nov-17	-	-	-	-	-	-	-	0	No bats captured
					4	21-Nov-17	-	-	1	-	1	-	-	2	MYOSEP band CC 1691 tagged with 172.783
					5	24-Nov-17	-	-	-	-	-	-	-	0	Survey terminated due to cold temperatures at 1930
					6	27-Nov-17	-	-	-	-	-	-	-	0	No bats captured
					7	6-Feb-18	-	-	-	-	-	-	-	0	No bats captured
					8	7-Feb-18	-	-	1	1	1	1	-	4	MYOSEP band CC 0100 tagged with 172.905
					9	10-Feb-18	-	2	1	-	-	2	-	5	
					10	11-Feb-18	1	9	4	-	-	3	-	17	
					11	14-Feb-18	-	-	-	-	-	-	-	0	No bats captured
					12	15-Feb-18	1	2	1	-	-	3	-	7	
					13	16-Feb-18	-	2	-	-	-	-	-	2	Survey terminated due to precipitation at 1915
					14	17-Feb-18	-	-	-	-	-	-	-	0	Survey terminated due to cold temperatures at 2100
					15	19-Feb-18	-	1	-	-	-	-	-	1	
					16	20-Feb-18	2	7	1	-	-	6	-	16	
	2	35.83055, -75.90145	3	Blackwater Bottomland Hardwoods (High Subtype) Forest transitioning into a mix of a Bay/Cypress-Gum Swamp (Blackwater Subtype)	1	15-Nov-17	-	-	1	-	1	-	-	2	MYOSEP band CC 1451 tagged with 172.063
					2	16-Nov-17	-	-	-	-	-	-	-	0	No bats captured
					3	24-Jan-18	-	-	-	-	-	-	-	0	No bats captured
					4	27-Jan-18	-	-	-	-	-	-	-	0	No bats captured
	3	35.86110, -75.91624	3	NSF	1	15-Nov-17	-	-	2	-	-	-	-	2	
	4	35.83760, -75.91916	4		1	18-Nov-17	-	-	-	-	-	-	-	0	No bats captured
					2	19-Nov-17	-	-	-	-	-	-	-	0	No bats captured
					3	14-Feb-18	-	-	-	-	-	-	-	0	No bats captured
					4	15-Feb-18	-	-	-	-	-	-	-	0	Survey terminated due to excessive wind at 1915

Table 7 (continued). Mist-net capture summary for the NCDOT Fall 2017/Winter 2018 Northern-long Eared Bat Research Project, Dare and Hyde counties, North Carolina (follows NCDOT 2016).

Study Area	Site No.	Lat, Long	Clutter	Community types	Night	Date	CORRAF	EPTFUS	LASBOR	LASSEM	MYOSEP	NYCHUM	PERSUB	Total	Notes
Alligator River National Wildlife Refuge	5	35.80357, -75.88571	3	Blackwater Bottomland Hardwoods (High Subtype) Forest	1	18-Nov-17	-	-	3	1	1	2	-	7	MYOSEP band CC 2103 tagged with 172.722
					2	21-Nov-17	-	-	-	-	-	-	-	0	Survey terminated due to other site catching last MYOSEP needed at 1830
					3	14-Feb-18	-	-	-	-	-	-	-	0	No bats captured
					4	15-Feb-18	-	5	-	-	-	3	-	8	No bats captured
					5	16-Feb-18	-	2	-	-	-	-	-	2	Survey terminated due to precipitation at 1945
					6	17-Feb-18	-	-	-	-	-	-	-	0	No bats captured
					7	19-Feb-18	-	-	-	-	1	-	-	1	MYOSEP band CC 2110 tagged with 172.741
	6	35.831415, -75.904015	3	Blackwater Bottomland Hardwoods (High Subtype) Forest transitioning into a mix of a Cypress-Gum Swamp (Blackwater Subtype)	1	21-Nov-17	-	-	-	-	1	-	-	1	MYOSEP band CC 2107 not tagged because the survey was terminated due to another site catching the last MYOSEP needed at 1930
					2	24-Jan-18	-	-	-	-	-	-	-	0	Survey terminated due to cold temperatures at 1945
					3	27-Jan-18	-	-	-	-	-	-	-	0	No bats captured
					4	14-Feb-18	-	-	-	-	-	-	-	0	No bats captured
					5	15-Feb-18	-	1	-	-	1	-	-	2	MYOSEP band CC 0101 not tagged because the bat was underweight
					6	16-Feb-18	1	1	1	-	-	-	-	3	Survey terminated due to precipitation at 1910
					7	17-Feb-18	-	-	-	-	-	-	-	0	Survey terminated due to cold temperatures at 2100
					8	19-Feb-18	1	-	-	-	-	-	-	1	
	7	35.82521, -75.89541	4		1	24-Jan-18	-	-	-	-	-	-	-	0	Survey terminated due to cold temperatures at 1930
					2	27-Jan-18	-	-	-	-	-	-	-	0	No bats captured
	8	35.77732, -75.82785	4		1	14-Jan-18	-	-	-	-	-	-	-	0	No bats captured
					2	15-Jan-18	-	-	1	-	-	1	-	2	
					3	20-Feb-18	-	-	-	-	-	-	-	0	No bats captured
					4	21-Feb-18	-	-	-	-	-	-	-	0	No bats captured
	9	35.79123, -75.87230	3	Peatland Atlantic White Cedar Forest	1	16-Feb-18	-	-	-	-	-	-	-	0	Survey terminated due to precipitation at 1945
					2	17-Feb-18	-	-	-	-	-	-	-	0	Survey terminated due to cold temperatures at 2100
					3	19-Feb-18	-	-	1	-	1	-	-	2	MYOSEP band CC 0711 tagged with 172.302
					4	20-Feb-18	1	2	-	-	-	-	-	3	
					5	22-Feb-18	-	-	-	-	1	1	-	2	MYOSEP band CC 1725 not tagged because the bat was underweight

Table 7 (continued). Mist-net capture summary for the NCDOT Fall 2017/Winter 2018 Northern-long Eared Bat Research Project, Dare and Hyde counties, North Carolina (follows NCDOT 2016).

Study Area	Site No.	Lat, Long	Clutter	Community types	Night	Date	CORRAF	EPTFUS	LASBOR	LASSEM	MYOSEP	NYCHUM	PERSUB	Total	Notes
Alligator River National Wildlife Refuge	10	35.79755, -75.85710	4	Mix of Blackwater Bottomland Hardwoods (High Subtype) Forest and a Peatland Atlantic White Cedar Forest	1	16-Feb-18	-	-	-	-	-	-	-	0	Survey terminated due to precipitation at 2015
					2	17-Feb-18	-	-	-	-	-	-	-	0	Survey terminated due to cold temperatures at 2100
					3	19-Feb-18	-	-	-	-	1	-	-	1	MYOSEP band CC 1723 not tagged because the bat was underweight
					4	21-Feb-18	-	-	-	-	-	-	-	0	No bats captured
					5	22-Feb-18	-	-	-	-	-	-	-	0	No bats captured
	11	35.83192, -75.90908	3	Blackwater Bottomland Hardwoods (High Subtype) Forest transitioning into a Cypress-Gum Swamp (Blackwater Subtype)	1	20-Feb-18	-	3	-	-	1	-	-	4	MYOSEP band CC2112 tagged with 172.182
					2	21-Feb-18	-	1	-	-	-	-	-	1	
	12	35.80268, -75.93410	4	Blackwater Bottomland Hardwoods (High Subtype) Forest transitioning into a Cypress-Gum Swamp (Blackwater Subtype)	1	21-Feb-18	1	1	-	-	2	-	-	4	one MYOSEP escaped, MYOSEP band CC 0723 tagged with 172.124
					2	22-Feb-18	-	-	-	-	1	-	-	1	MYOSEP band CC 1056 tagged with 172.243
	13	35.83207, -75.90985	3		1	22-Feb-18	-	-	-	-	-	-	-	0	No bats captured
Gull Rock Game Land	1	35.365915, -76.159581	4		1	22-Jan-18	-	-	-	-	-	-	-	0	No bats captured
					2	23-Jan-18	-	-	-	-	-	2	-	2	
					3	19-Feb-18	-	1	1	1	-	1	-	4	
					4	20-Feb-18	-	1	-	-	-	7	-	8	
					5	21-Feb-18	-	-	1	-	-	9	-	10	
					6	22-Feb-18	1	-	-	-	-	6	-	7	
	2	35.376494, -76.157733	3		1	22-Jan-18	-	-	-	-	-	-	-	0	No bats captured
					2	23-Jan-18	-	-	-	-	-	-	-	0	No bats captured
					3	19-Feb-18	-	-	-	-	-	-	-	0	No bats captured
					4	20-Feb-18	-	-	-	-	-	1	-	1	
					5	22-Feb-18	-	-	-	-	-	1	-	1	
	3	35.40009, -76.11625	3		1	22-Jan-18	-	-	-	1	-	-	-	1	
					2	23-Jan-18	-	-	1	-	-	-	-	1	
					3	14-Feb-18	-	-	-	-	-	-	-	0	No bats captured
					4	15-Feb-18	-	-	1	2	-	-	-	3	
					5	16-Feb-18	-	-	-	1	-	-	-	1	
					6	17-Feb-18	-	-	-	-	-	-	-	0	No bats captured

Table 7 (continued). Mist-net capture summary for the NCDOT Fall 2017/Winter 2018 Northern-long Eared Bat Research Project, Dare and Hyde counties, North Carolina (follows NCDOT 2016).

Study Area	Site No.	Lat, Long	Clutter	Community types	Night	Date	CORRAF	EPTFUS	LASBOR	LASSEM	MYOSEP	NYCHUM	PERSUB	Total	Notes
Gull Rock Game Land	4	35.39989, -76.10429	4		1	22-Jan-18	-	-	-	1	-	-	-	1	
					2	23-Jan-18	-	-	1	-	-	-	-	1	
					3	14-Feb-18	-	-	-	-	-	-	-	0	No bats captured
					4	15-Feb-18	-	-	-	-	-	1	-	1	
					5	16-Feb-18	-	-	-	-	-	-	-	0	No bats captured
					6	17-Feb-18	-	-	-	-	-	-	-	0	No bats captured
	5	35.363014, -76.156731	4		1	23-Feb-18	-	-	-	-	-	-	-	0	No bats captured
						GRAND TOTAL	**9**	**42**	**24**	**9**	**17**	**51**	**1**	**153**	

CORRAF = *Corynorhinus rafinesquii*, Rafinesque's Big-eared Bat; **EPTFUS** = *Eptesicus fuscus*, Big Brown Bat; **LASBOR** = *Lasiurus borealis*, Red Bat; **LASSEM** = *Lasiurus seminolus*, Seminole Bat; **MYOSEP** = *Myotis septentrionalis*, Northern Long-eared Bat; **NYCHUM** = *Nycticeius humeralis*, Evening Bat; **PERSUB** = *Perimyotis subflavus*, Tri-colored Bat

indicates NLEB capture

indicates survey cancellation

Clutter visually evaluated for surrounding forest: 1 = <10% cover, 2 = 10-39% cover, 3 = 40-75% cover, 4 = >75% cover; **Orange highlighted cells** = Site closed due to weather conditions; **Yellow highlighted cells** = MYOSEP captures; **NR** = Non-Reproductive; **Grand Total** = Total captures between all sites
Community Type: NWHF = Nonriverine Wet Hardwood Forest, NSF = Nonriverine Swamp Forest, TCGS = Tidal Cypress Gum Swamp, PPW = Pond Pine Woodland, PP = Pine Plantation, MMHF = Mesic Mixed Hardwood Forest, CPBHF = Coastal Plain Bottomland Hardwood Forest, Cypress-Gum Swamp

Table 8. Summary of radiotracking efforts and emergence counts conducted during the NCDOT Fall 2017/Winter 2018 Northern Long-eared Bat Research Project, Dare County, North Carolina (follows NCDOT 2016).

NLEB Sex/Freq.	Band No.	Dates Tracked	Habitat Classification	Tree species	Roost No.	Lat, Long	Roost Dates	Emergence Surveys		Temp During Emergence (F)	Notes
								Date	Observed Emerging		
M/.063	CC14 51	16 Nov 2017 - 15 Dec 2017	CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) - stunted and lacking Taxodium distichum	Nyssa aquatica	1 (RT900)	35.830613,-75.906914	November 16, 2017	November 16, 2017	Yes	55	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with small presence of POND PINE WOODLAND (NORTHERN SUBTYPE)	Acer rubrum	2 (RT14)	35.83088,-75.90517	November 17, 2017	November 17, 2017	No	45	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with small presence of POND PINE WOODLAND (NORTHERN SUBTYPE)	Acer rubrum	3 (RT422)	35.83085, -75.90514	November 18, 2017	November 18, 2017	Yes	62	
			PEATLAND ATLANTIC WHITE CEDAR FOREST	Nyssa aquatica	4 (RT17)	35.83055, -75.90617	November 19, 2017	November 20, 2017	No	46	
			BLACKWATER BOTTOMLAND HARDWOODS (HIGH SUBTYPE)	Liquidambar styraciflua	5 (RT21)	35.82955, -75.90286	November 20-21, 2017	November 21, 2017	Yes	59	Too dark to see bat, only heard it leave.
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with small presence of POND PINE WOODLAND (NORTHERN SUBTYPE)	Nyssa biflora	6 (RT431)	35.8319, -75.90649	November 22, 2017	November 22, 2017	Yes	54	
			PEATLAND ATLANTIC WHITE CEDAR FOREST	Nyssa biflora	7 (RT437)	35.83042, -75.90627	November 23-29, 2017	November 29, 2017	Yes	57	
			PEATLAND ATLANTIC WHITE CEDAR FOREST	Chamacyparis thyoides	8 (RT983)	35.83047, -75.90634	November 30-December 12, 2017	November 30, 2017	No	55	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) lacking Taxodium distichum	Nyssa biflora	9 (RT678)	35.83104, -75.90641	December 14-15, 2017	December 14, 2017	No	unk	

Table 8 (continued). Summary of radiotracking efforts and emergence counts conducted during the NCDOT Fall 2017/Winter 2018 Northern Long-eared Bat Research Project, Dare County, North Carolina (follows NCDOT 2016).

NLEB Sex/Freq	Band No.	Dates Tracked	Habitat Classification	Tree species	Roost No.	Lat, Long	Roost Dates	Emergence Surveys		Temp During Emergence (F)	Notes
								Date	Observed Emerging		
F/.603	NCDOT 1630	16 Nov 2017 - 6 Dec 2017	Mix of BAY FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with a lack of Taxodium distichum (possibly logged)	Nyssa aquatica	1 (RT891)	35.82943, -75.90072	November 16, 2017	November 16, 2017	Yes	55	
			Mix of BAY FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with a lack of Taxodium distichum (possibly logged)	Nyssa aquatica	2 (RT32)	35.82902, -75.90145	November 17-18, 2017	November 17, 2017	No	45	
			Mix of BAY FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with a lack of Taxodium distichum (possibly logged)	Nyssa aquatica	3 (RT33)	35.82909, -75.90138	November 19-21, 2017	November 20, 2017	No	47	
			Mix of BAY FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with a lack of Taxodium distichum (possibly logged)	Nyssa biflora	4 (RT438)	35.82840, -75.90140	November 22-28, 2017	November 22, 2017	Yes	56	
			Mix of BAY FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with a lack of Taxodium distichum (possibly logged)	Nyssa sylvatica	5 (RT982)	35.82846, -75.90149	November 29, 2017	November 29, 2017	No	53	
			Mix of BAY FOREST/PEATLAND ATLANTIC WHITE CEDAR FOREST	Chamaecyparis thyoides	6 (RT255)	35.83206, -75.89288	November 30 - December 5, 2017	November 30, 2017	Yes	55	Known to leave only due to telemetry
			Mix of BAY FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with a lack of Taxodium distichum (possibly logged)	Liquidambar styraciflua	7 (RT259)	35.8284, -75.90154	December 6, 2017				
			(Possibly) Mix of BAY FOREST/PEATLAND ATLANTIC WHITE CEDAR FOREST		Triangulated point	35.83660, -75.8914	7-Dec-18				Transmitter weak, crews were unable to access this roost before transmitter died on Dec 11th. Habitat closest to RT255 which is Bay Forest

Table 8 (continued). Summary of radiotracking efforts and emergence counts conducted during the NCDOT Fall 2017/Winter 2018 Northern Long-eared Bat Research Project, Dare County, North Carolina (follows NCDOT 2016).

NLEB Sex/Freq.	Band No.	Dates Tracked	Habitat Classification	Tree species	Roost No.	Lat, Long	Roost Dates	Emergence Surveys		Temp During Emergence (F)	Notes
								Date	Observed Emerging		
M/.664	CC1700	16 - 25 November 2017	Mix of POND PINE WOODLAND (TYPIC SUBTYPE)/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)	Nyssa aquatica	1 (RT762)	35.83041, -75.90387	November 16, 2017	November 16, 2017	Yes	55	
			Mix of POND PINE WOODLAND (TYPIC SUBTYPE)/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)	Nyssa aquatica	2 (RT16)	35.83047, -75.90382	November 17-18 22-25, 2017	November 18, 2017	Yes	62	
			Mix of POND PINE WOODLAND (TYPIC SUBTYPE)/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)	Nyssa aquatica	3 (RT406)	35.83018, -75.90417	November 19, 2017	November 19, 2017	No	55	could see antenna in tree but bat Did not emerge.
			Mix of POND PINE WOODLAND (TYPIC SUBTYPE)/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)	Nyssa bicolor	4 (RT19)	35.83036, -75.90395	November 20-21 ,2017	November 20, 2017	No	47	Bat did not emerge
M/.722	CC2103	11 November 2017- 16 December 207	PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)	Nyssa aquatica	1 (RT439)	35.80868, -75.88013	November 19-25, 2017	November 28, 2017	No	60	
			PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)	Nyssa biflora	2 (RT432)	35.80732, -75.87968	November 26-28, 2017	November 28, 2017	Yes	60	
			PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)	Persea palustris	3 (RT254)	35.80732, -75.87929	November 29-December 3, 2017	November 29, 2017	No	60	
			PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)	Nyssa biflora	4 (RT986)	35.80766, -75.88069	December 4-16, 2017	December 4, 2017	No	57	

Table 8 (continued). Summary of radiotracking efforts and emergence counts conducted during the NCDOT Fall 2017/Winter 2018 Northern Long-eared Bat Research Project, Dare County, North Carolina (follows NCDOT 2016).

NLEB Sex/ Freq.	Band No.	Dates Tracked	Habitat Classification	Tree species	Roost No.	Lat, Long	Roost Dates	Emergence Surveys		Temp During Emergence (F)	Notes
								Date	Observed Emerging		
F/.124	CC1453	19 November 2017 - 11 December 2017	CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) lacking Taxodium distichum	Cyrilla racemiflora	1 (RT405)	35.83033, -75.90427	November 19, 2017	November 19, 2017	No	55	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) lacking Taxodium distichum	Liquidambar styraciflua	2 (RT23)	35.82884, -75.90401	November 20-December 1, 2017	November 28, 2017	No	61	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) lacking Taxodium distichum	Nyssa biflora	3 (RT984)	35.82859, -75.90394	December 2, 2017	December 2, 2017	No	54	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) lacking Taxodium distichum	Nyssa biflora	4 (RT440)	35.82973, -75.90432	December 3-5, 2017	December 3, 2017	No	54	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) lacking Taxodium distichum with small presence of BAY FOREST	Persea borbonia	5 (RT991)	35.83078, -75.90424	December 6, 2017	December 12, 2017	No	49	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) lacking Taxodium distichum	Nyssa aquatica	6 (RT260)	35.82977, -75.90422	December 7-11, 2017	December 12, 2017	No	51	
M/.783	CC1691	22 November 2017 - 19 December 2017	PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) lacking Taxodium distichum	Nyssa biflora	1 (RT436)	35.82653, -75.90708	November 22-23 25, 2017	November 22, 2017	No	54	
			PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) lacking Taxodium distichum	Nyssa biflora	2 (RT22)	35.82672, -75.90592	November 24, 2017	November 26, 2017	Yes	61	
			PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) lacking Taxodium distichum	Nyssa sylvitica	3 (RT433)	35.82608, -75.90624	November 26-28 2017	November 29, 2017	Yes	53	
			PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) lacking Taxodium distichum	Nyssa biflora	4 (RT985)	35.82605, -75.90625	December 2-6, 12, 15, 2017	December 2, 2017	No	56	
			PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) lacking Taxodium distichum	Nyssa biflora	5 (RT261)	35.82682, -75.90633	December 7-11, 13, 16, 17, 2017	December 12, 2017	No	49	
M/.905	CC0100	8 - 20 February 2018	CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with small presence of BLACKWATER BOTTOMLAND HARDWOODS (EVERGREEN SUBTYPE)	Taxodium distichum	1(RT745)	35.83596, -75.90999	February 8-11, 14, 15, 2018	February 15, 2018	Yes	67	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with small presence of BLACKWATER BOTTOMLAND HARDWOODS (EVERGREEN SUBTYPE)	Nyssa biflora	2(RT444)	35.83576, -75.90903	February 12, 16, 2018	February 16, 2018	Yes	68	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with small presence of BLACKWATER BOTTOMLAND HARDWOODS (EVERGREEN SUBTYPE)	Pinus Taeda	3(RT265)	35.83503, -75.90903	February 17-19, 2018	February 17, 2018	No	48	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with small presence of BLACKWATER BOTTOMLAND HARDWOODS (EVERGREEN SUBTYPE)	Nyssa biflora	4(RT443)	35.83583, -75.90934	February 20, 2018	February 20, 2018	Yes	71	

Table 8 (continued). Summary of radiotracking efforts and emergence counts conducted during the NCDOT Fall 2017/Winter 2018 Northern Long-eared Bat Research Project, Dare County, North Carolina (follows NCDOT 2016).

NLEB Sex/Freq.	Band No.	Dates Tracked	Habitat Classification	Tree species	Roost No.	Lat, Long	Roost Dates	Emergence Surveys		Temp During Emergence (F)	Notes
								Date	Observed Emerging		
M/.741	CC2110	20 February - 14 March 2018	PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)	Persea palustris	1(RT441)	35.80597, -75.89193	February 20, 2018	February 20, 2018	**Yes**	70	
			PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)		RT 679	35.80420, -75.89126	February 21, 2018	February 21, 2018	**no**	51	
			PEATLAND ATLANTIC WHITE CEDAR FOREST	Nyssa aquatica	2(RT681)	35.80658, -75.89281	February 22, 2018	February 22, 2018	**Yes**	63	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE) with abundant Persea paulstris (possibly part BAY FOREST)	Persea palustris	3(RT682)	35.80876, -75.88693	February 23-24, 27, March 1-7, 8-14, 2018	February 24, 2018	**Yes**	67	
			PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)	Nyssa sp.	4(RT435)	35.80470, -75.89054	February 25, 2018	February 25, 2018	**Yes**	72	
			PEATLAND ATLANTIC WHITE CEDAR FOREST/CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)	Nyssa biflora	5(RT463)	35.80611, -75.89225	February 26, March 7, 2018	March 7, 2018	**No**	51	
M/.302	CC0711	20 February - 15 March 2018	CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)/PEATLAND ATLANTIC WHITE CEDAR FOREST	Nyssa biflora	1 (RT445)	35.79812, -75.87817	February 20, 2018	February 20, 2018	Yes	61	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)/PEATLAND ATLANTIC WHITE CEDAR FOREST	Nyssa biflora	2 (RT266)	35.79848, -75.87881	February 21-23, 28, 2018	February 21, 2018	Yes	69	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)/PEATLAND ATLANTIC WHITE CEDAR FOREST	Persea palustris	3 (RT743)	35.79844, -75.87887	February 24, 2018	February 24, 2018	Yes		
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)/PEATLAND ATLANTIC WHITE CEDAR FOREST	Acer rubrum	4 (RT477)	35.79849, -75.87904	February 25-27, 2018	February 25, 2018	Yes	70	
			CYPRESS--GUM SWAMP (BLACKWATER SUBTYPE)/PEATLAND ATLANTIC WHITE CEDAR FOREST	Acer rubrum	5 (RT464)	35.79818,-75.87799	March 1-15, 2018	March 7, 2018	Yes	51	
F/.182	CC2112	21 February - 12 March 2018	PEATLAND ATLANTIC WHITE CEDAR FOREST	Nyssa biflora	1 (RT264)	35.83464, -75.9159	February 21-24, 2018	February 21, 2018	Yes	68	
			PEATLAND ATLANTIC WHITE CEDAR FOREST	Acer rubrum	2 (RT475)	35.83469, -75.91602	February 25, 2018	February 25, 2018	Yes	70	
			BLACKWATER BOTTOMLAND HARDWOODS (HIGH SUBTYPE)	Pinus taeda	3 (RT890)	35.79953, -75.77714	March 5-12, 2018	March 7, 2018	Yes	51	
F/.124	CC0723	22 February - 12 March 2018	Close to RT459 (BAY FOREST)		Triangluated point	35.8065880, -75.9566650	February 25, 2018				could not access
			Not close to any known RT, habitat from google earth on edge of inundated open water		Triangluated point	35.8189000, -75.7565990	March 5, 2018				could not access
F/.243	CC1056	23 February - 15 March 2018	Bay Forest	Magnolia virginiana	1 (RT459)	35.80433, -75.96962	26 February - 15 March 2018	28-Feb-18	No	60	

Appendix B
Additional Report Figures

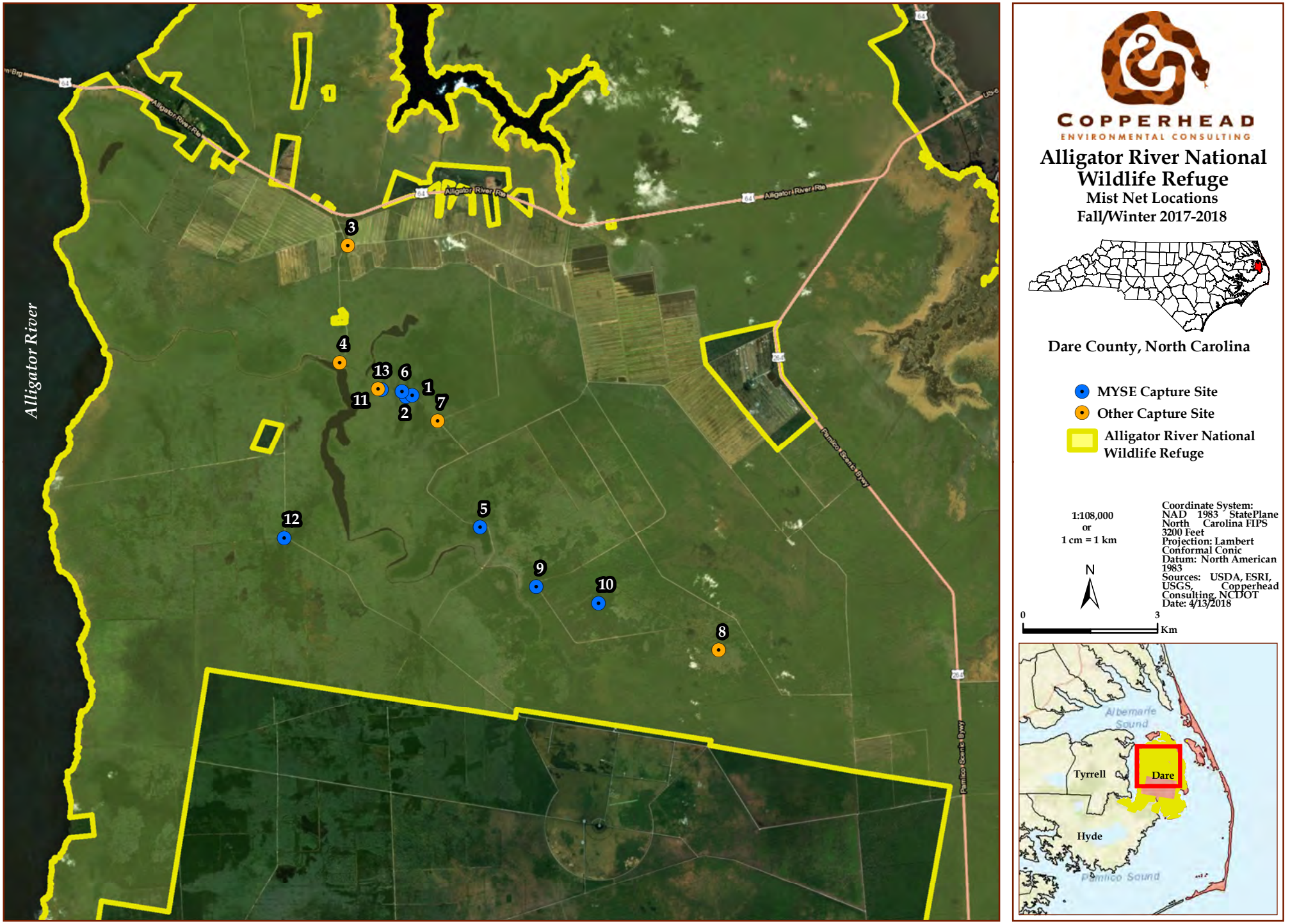


Figure 2. Survey sites sampled at the Alligator River National Wildlife Refuge Study Area during the Fall 2017/Winter 2018 NCDOT Northern Long-eared Bat Research Project, Dare county, North Carolina.

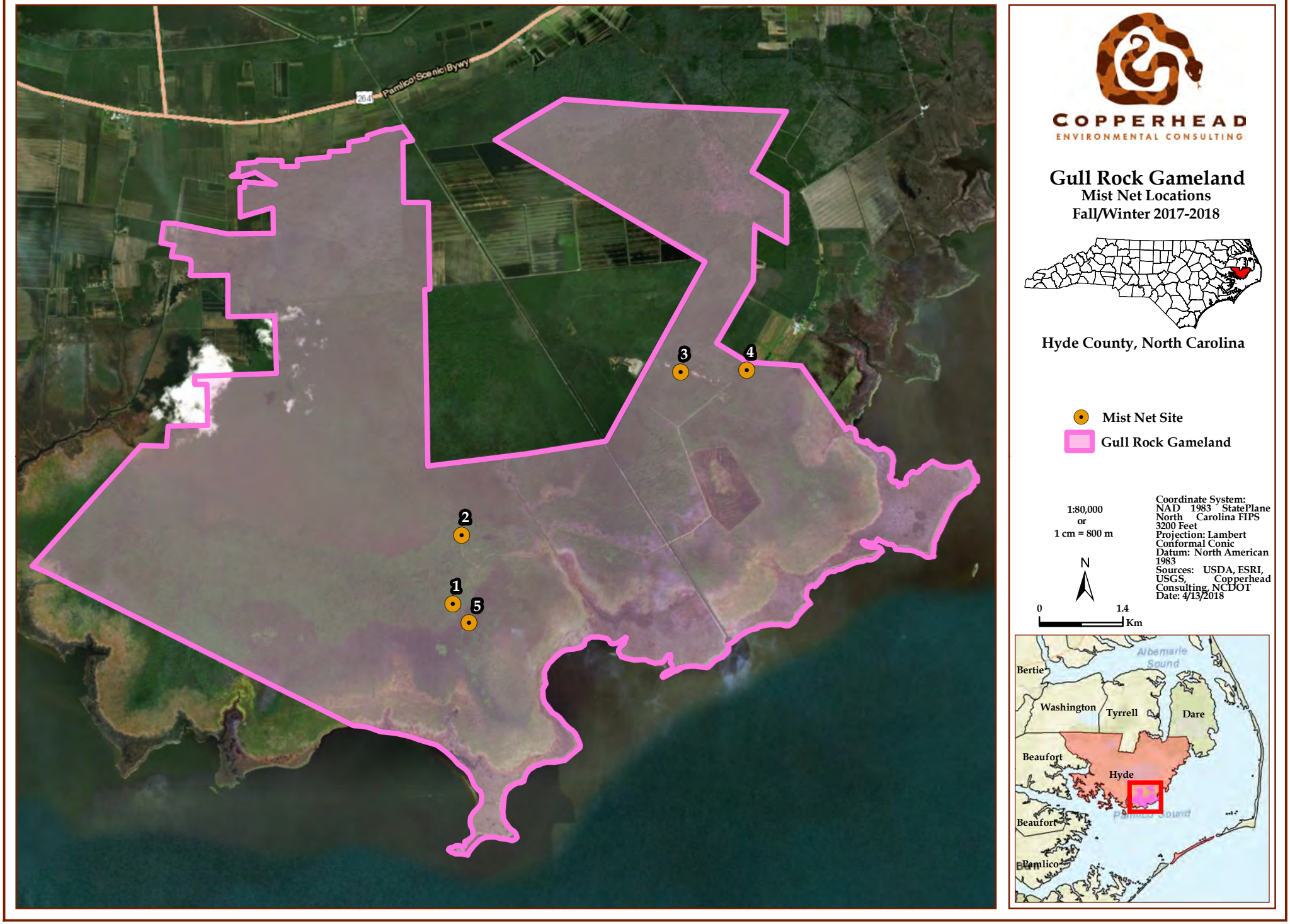


Figure 3. Survey sites sampled at the Gull Rock Game Land Study Area during the Fall 2017/Winter 2018 NCDOT Northern Long-eared Bat Research Project Hyde County, North Carolina.

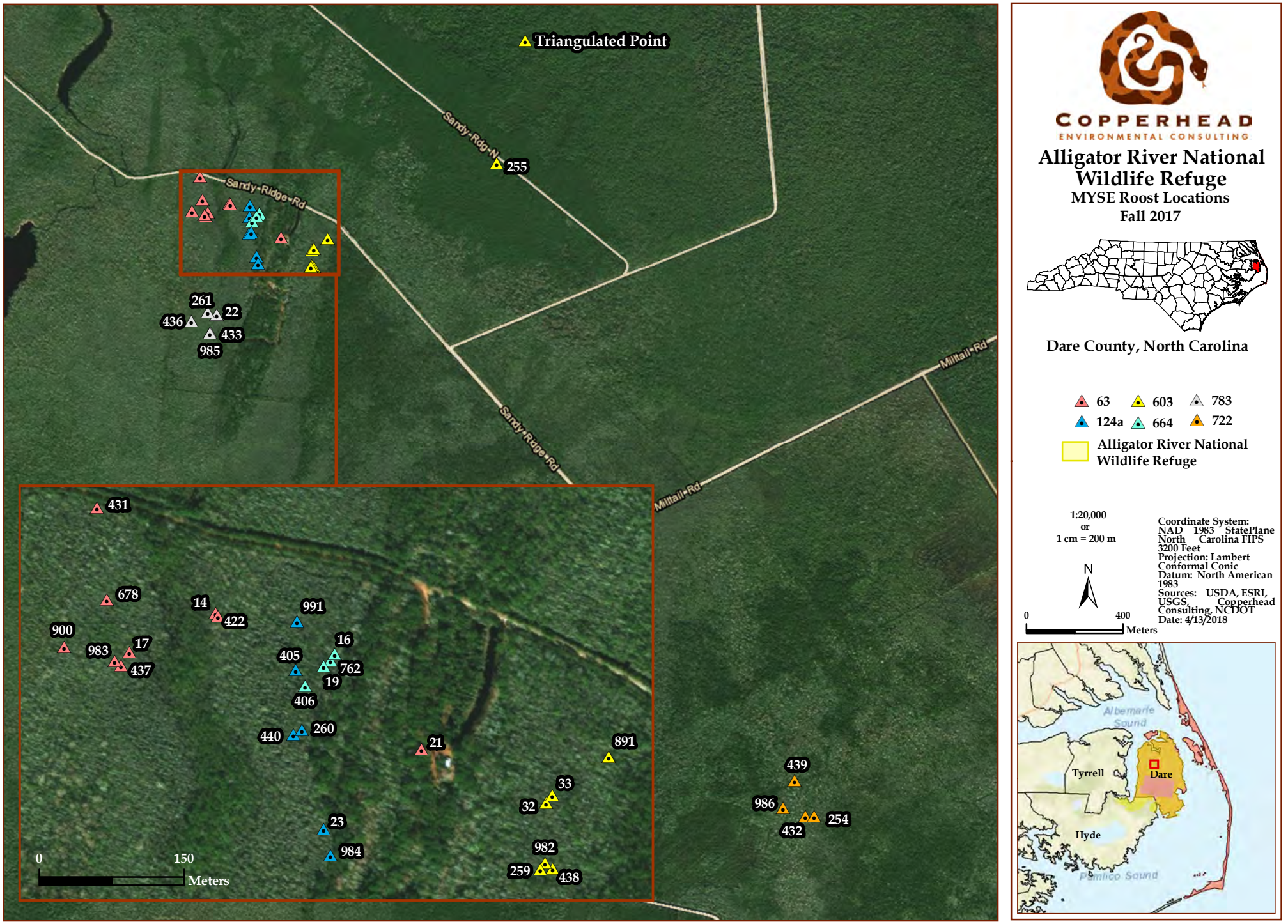
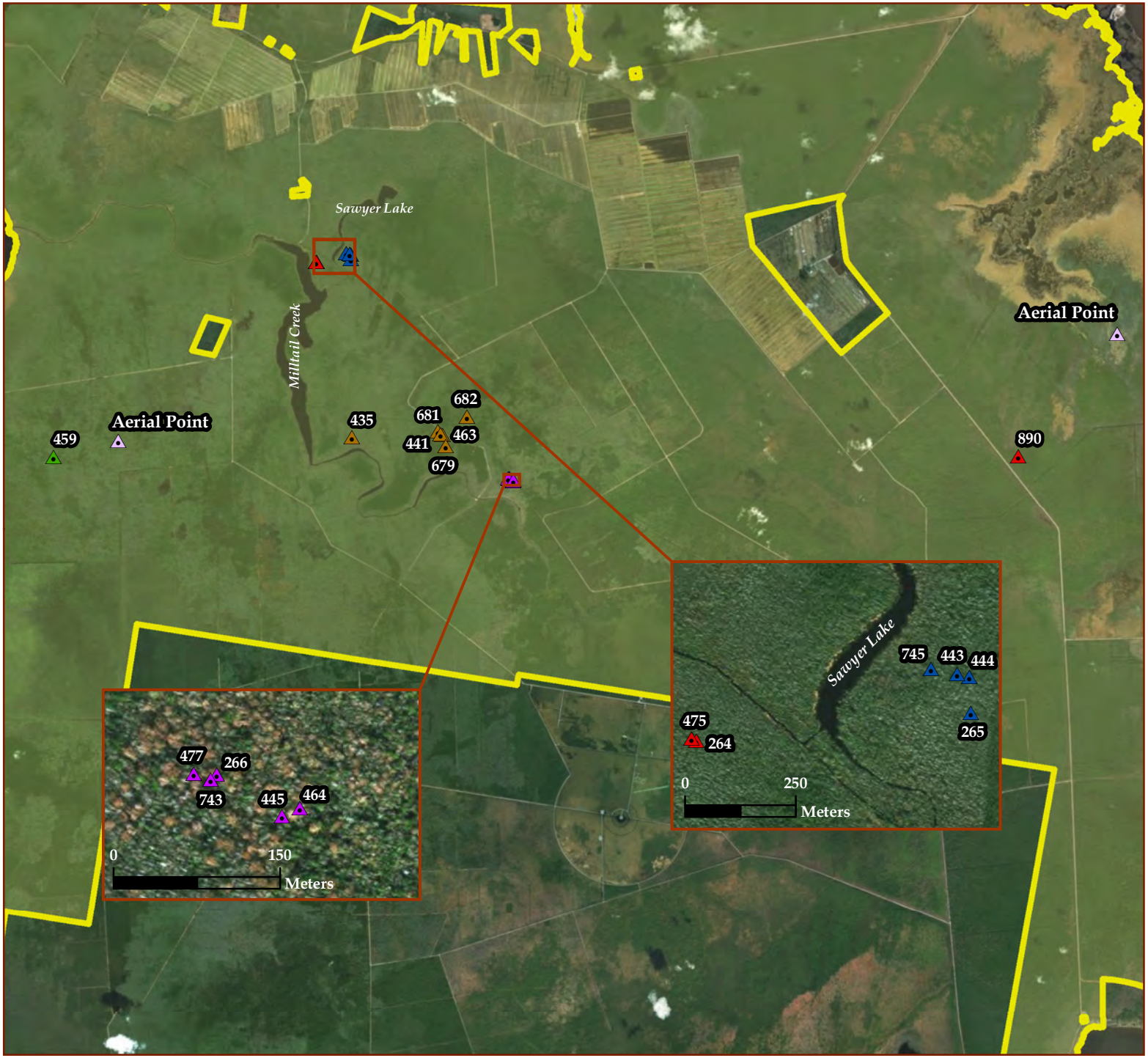


Figure 4. All roost trees located at the Alligator River National Wildlife Refuge Study Area during the Fall 2017 Survey Period of the NCDOT Northern Long-eared Bat Research Project, Dare county, North Carolina.



COPPERHEAD
ENVIRONMENTAL CONSULTING

Alligator River National Wildlife Refuge

MYSE Roost Locations
Winter 2017

Dare County, North Carolina

124b 243 741
182 302 905

Alligator River National Wildlife Refuge

1:100,000
or
1 cm = 1 km

N

0 2 Km

Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, Copperhead Consulting, NCDOT
Date: 4/30/2018

Figure

COPPERHEAD
ENVIRONMENTAL CONSULTING

Alligator River National Wildlife Refuge

Bat 063 Roost Locations
Fall 2017

Dare County, North Carolina

Roost Tree

Alligator River National Wildlife Refuge

1:2,500
or
1 cm = 25 m

N

0 50 Meters

Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, Copperhead Consulting, NCDOT
Date: 4/13/2018

Figure 6. Roost trees located for bat 172.063 at the Alligator River National Wildlife Refuge Study Area during the Fall 2017 Study Period of the NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.

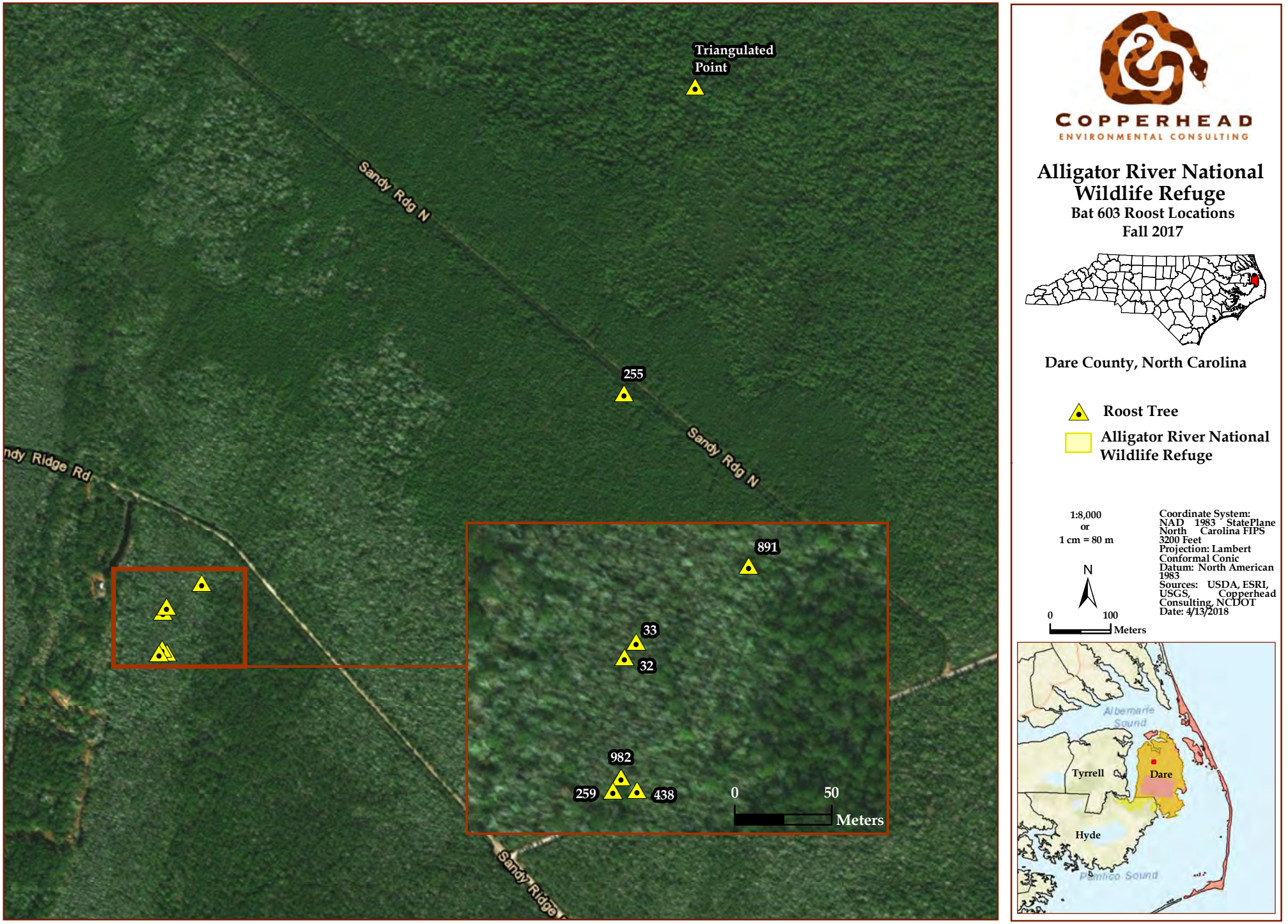


Figure 7. Roost trees located for bat 172.603 at the Alligator River National Wildlife Refuge Study Area during the Fall 2017 Study Period of the NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.

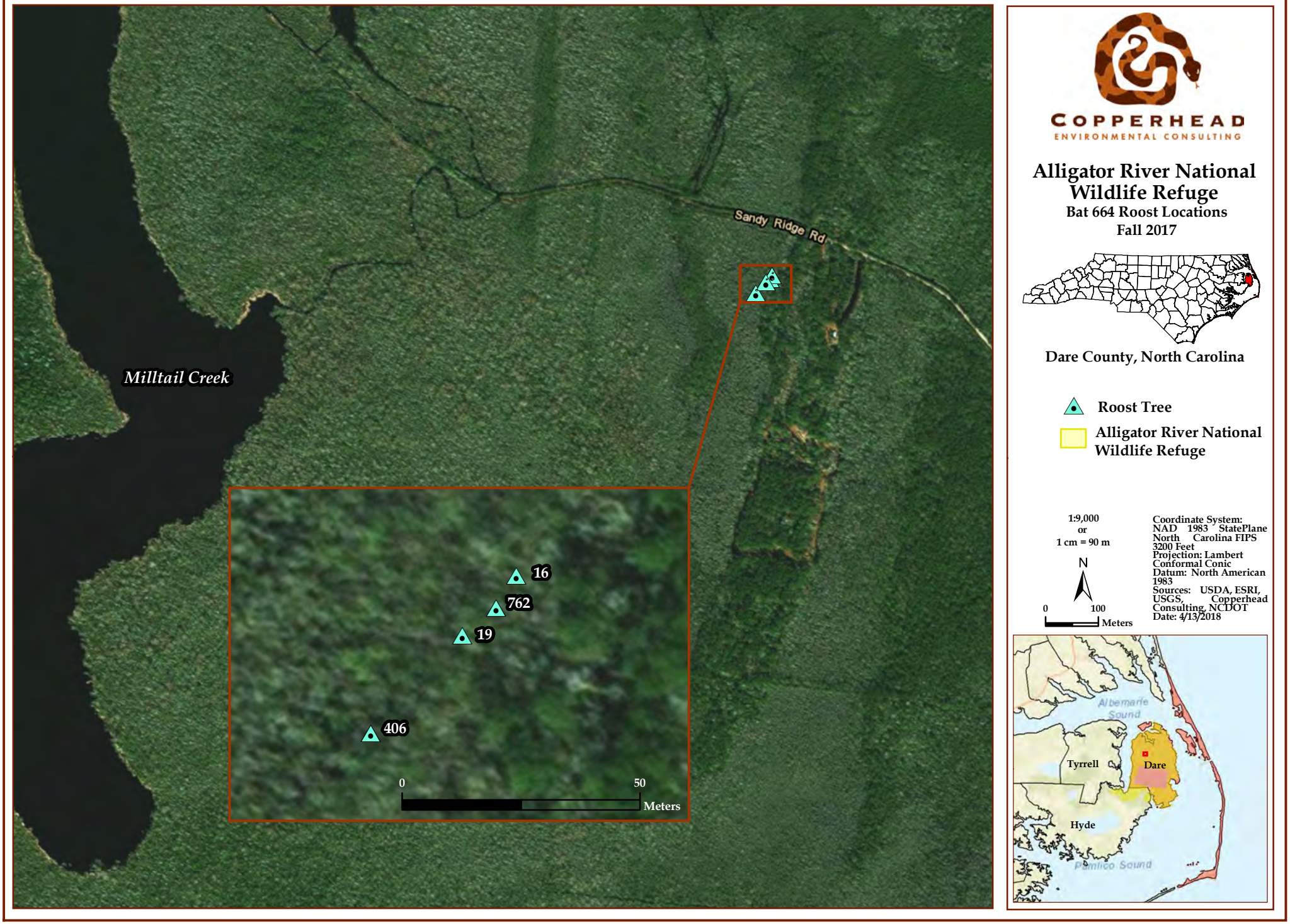


Figure 8. Roost trees located for bat 172.664 at the Alligator River National Wildlife Refuge Study Area during the Fall 2017 Study Period of the NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.

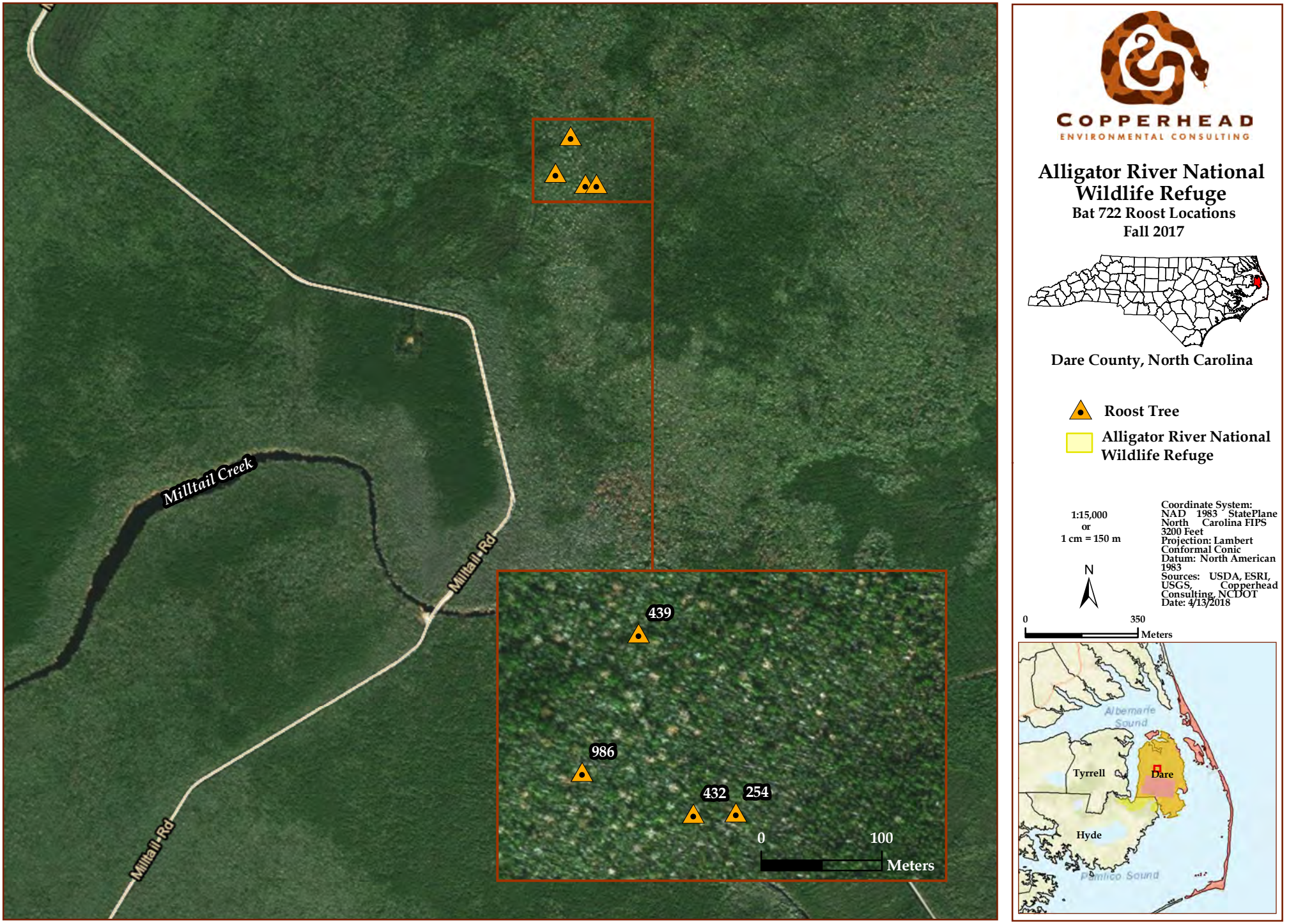
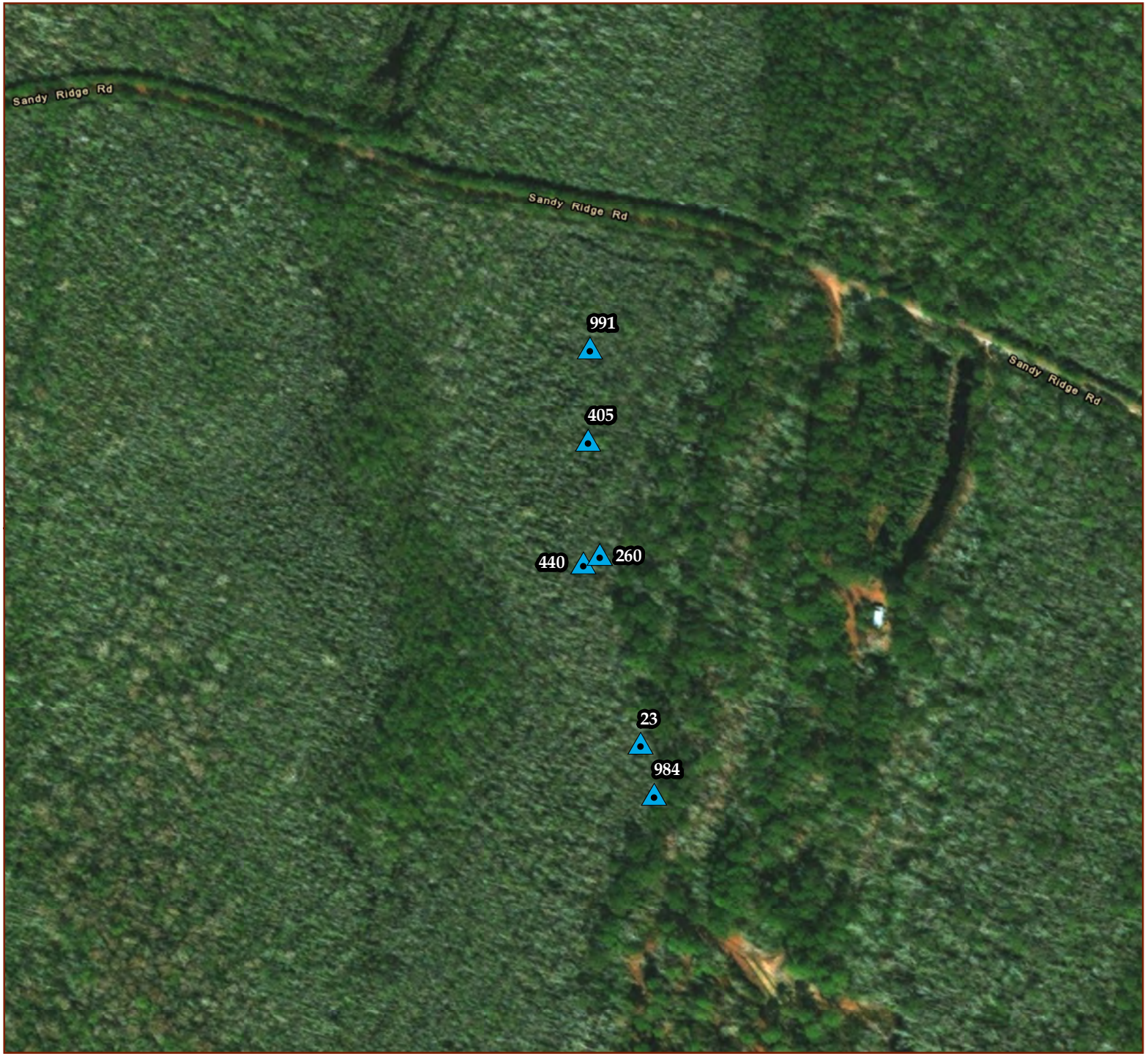


Figure 9. Roost trees located for bat 172.722 at the Alligator River National Wildlife Refuge Study Area during the Fall 2017 Study Period of the NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.



COPPERHEAD
ENVIRONMENTAL CONSULTING

Alligator River National Wildlife Refuge

Bat 124a Roost Locations
Fall 2017

Dare County, North Carolina

Roost Tree

Alligator River National Wildlife Refuge

1:3,000
or
1 cm = 30 m

N

0 50 Meters

Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, Copperhead Consulting, NCDOT
Date: 4/13/2018

Figure 10. Roost trees located for bat 172.124 at the Alligator River National Wildlife Refuge Study Area during the Fall 2017 Study Period of the NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.

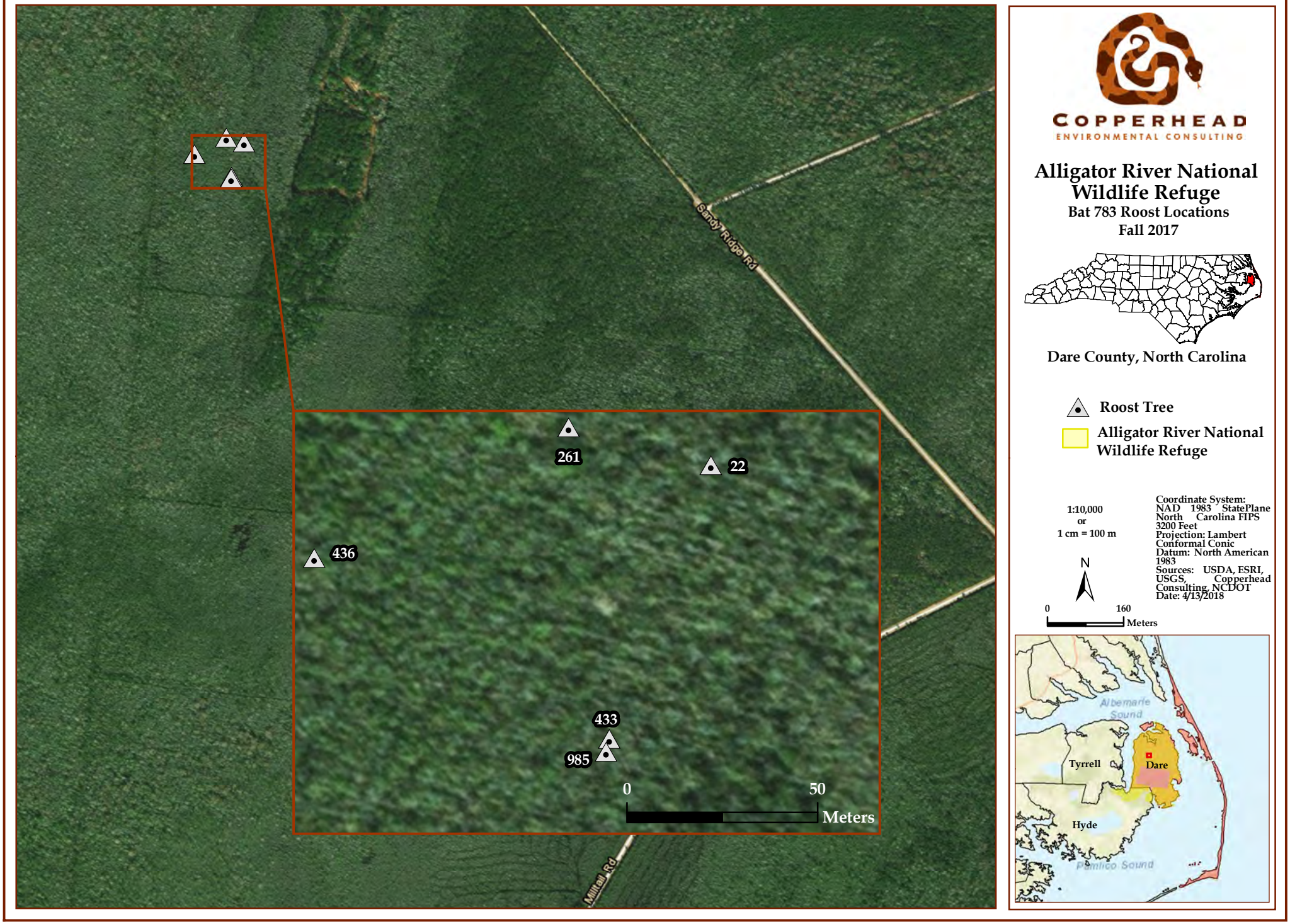


Figure 11. Roost trees located for bat 172.783 at the Alligator River National Wildlife Refuge Study Area during the Fall 2017 Study Period of the NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.

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ENVIRONMENTAL CONSULTING

Alligator River National Wildlife Refuge

Bat 905 Roost Locations
Winter 2018

Dare County, North Carolina

Roost Tree

Alligator River National Wildlife Refuge

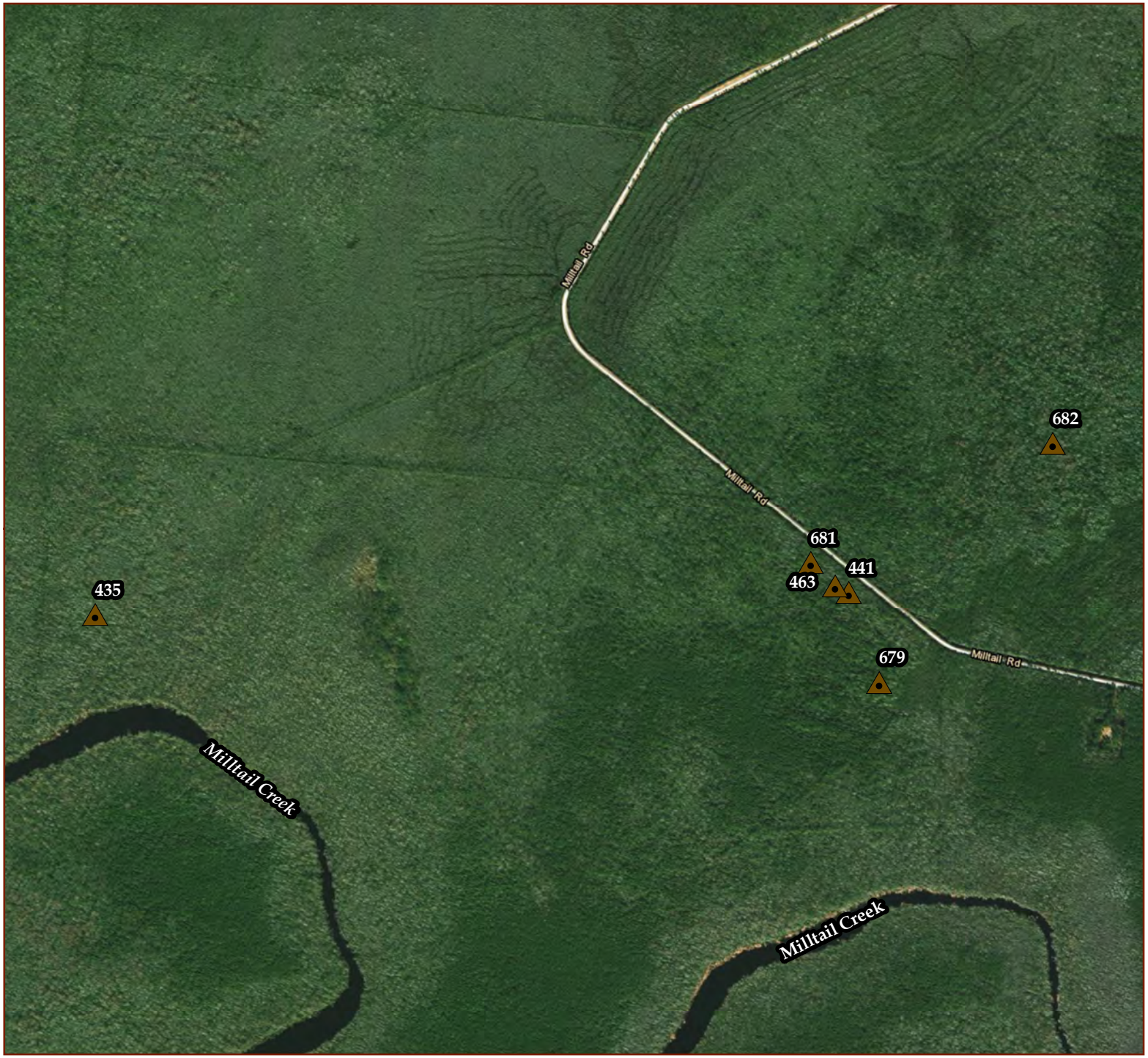
1:3,000
or
1 cm = 30 m

N

0 50
Meters

Coordinate System:
NAD 1983 StatePlane North Carolina FIPS 3200 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, Copperhead Consulting, NCDOT
Date: 4/13/2018

Figure 12. Roost trees located for bat 172.905 at the Alligator River National Wildlife Refuge Study Area during the Winter 2018 Study Period of the NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.



COPPERHEAD
ENVIRONMENTAL CONSULTING

Alligator River National Wildlife Refuge

Bat 741 Roost Locations
Winter 2018

Dare County, North Carolina

Roost Tree

Alligator River National Wildlife Refuge

1:12,000
or
1 cm = 120 m

N

0 200
Meters

Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, Copperhead Consulting, NCDOT
Date: 4/30/2018

Figure 13. Roost trees located for bat 172.741 at the Alligator River National Wildlife Refuge Study Area during the Winter 2018 Study Period of the NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.

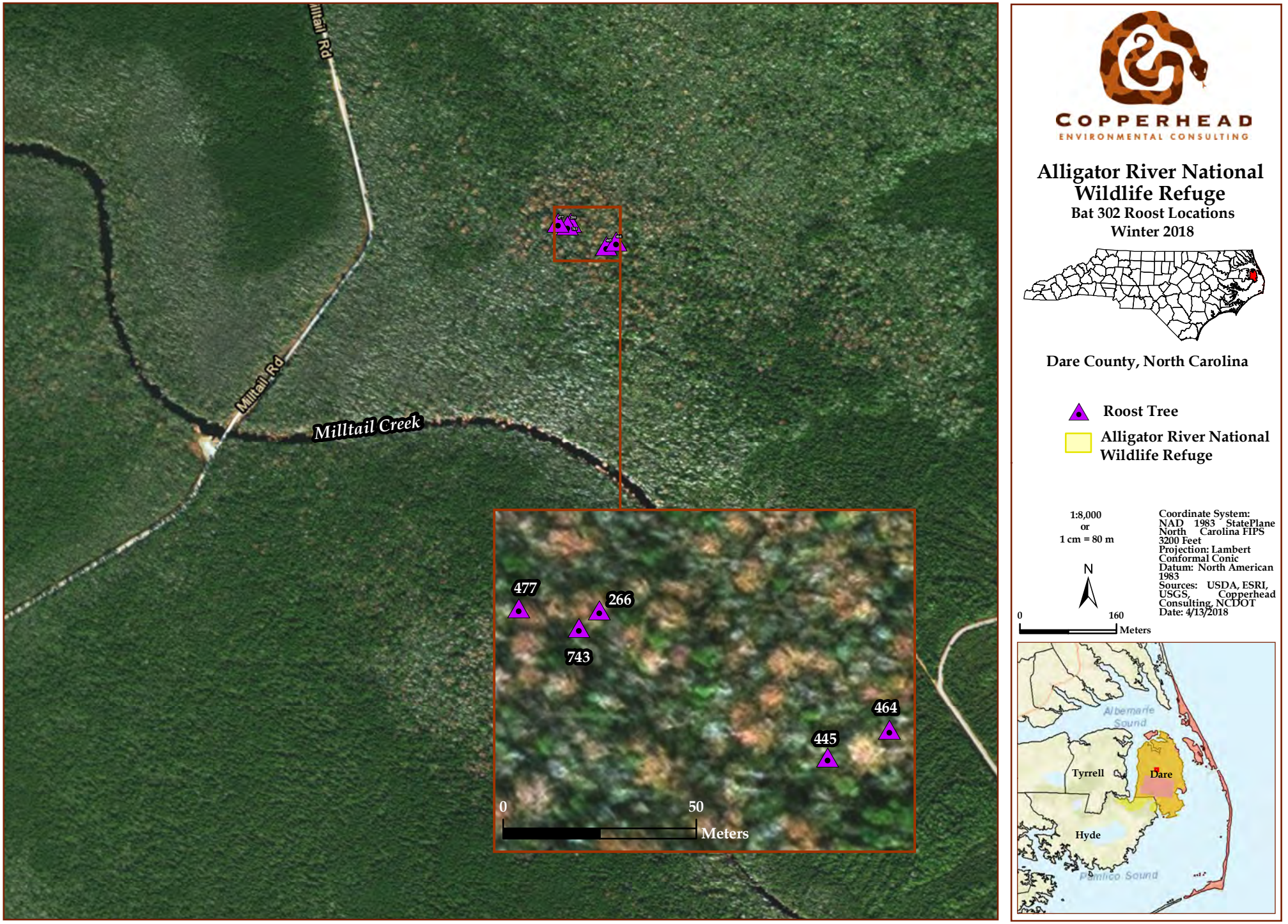


Figure 14. Roost trees located for bat 172.302 at the Alligator River National Wildlife Refuge Study Area during the Winter 2018 Study Period of the NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.

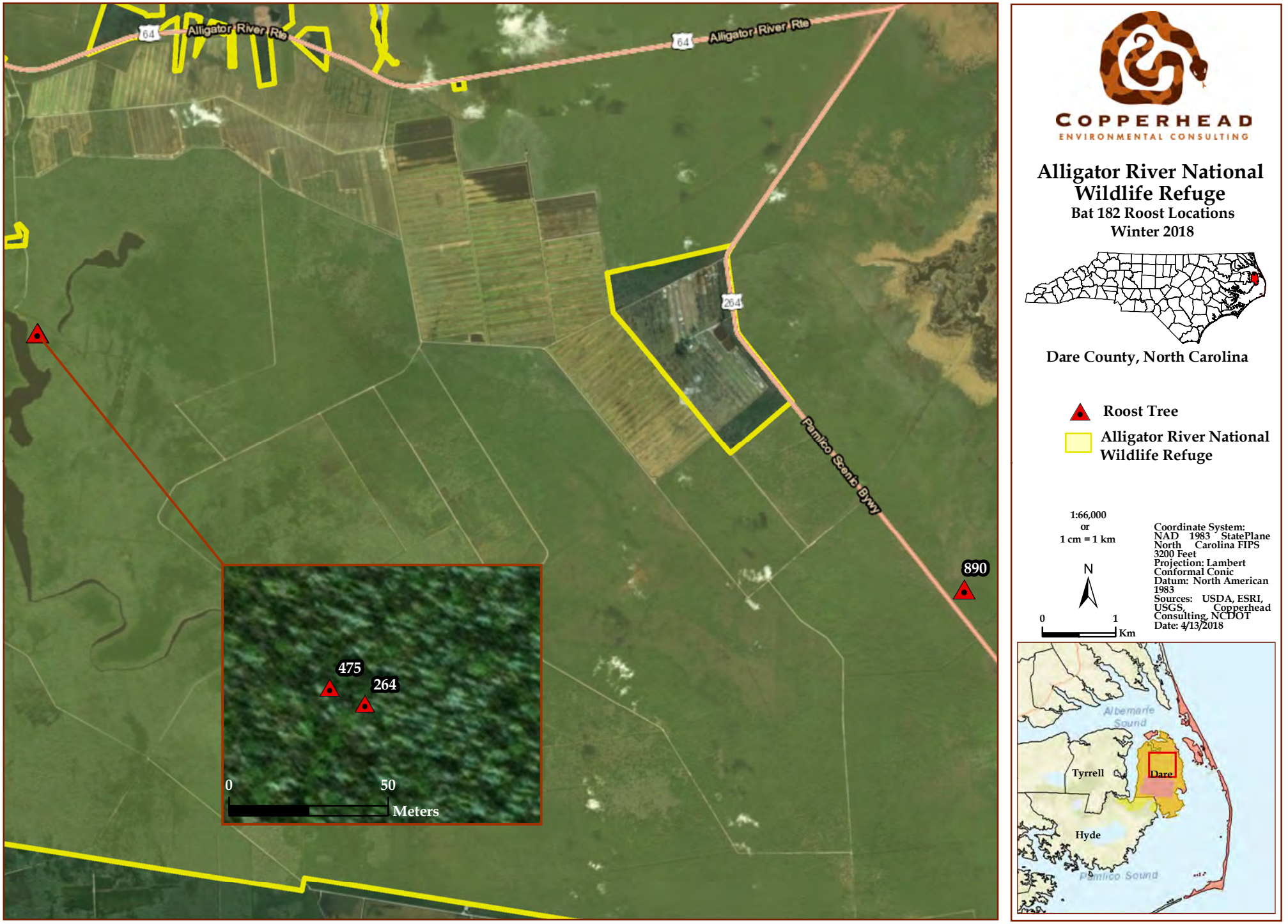
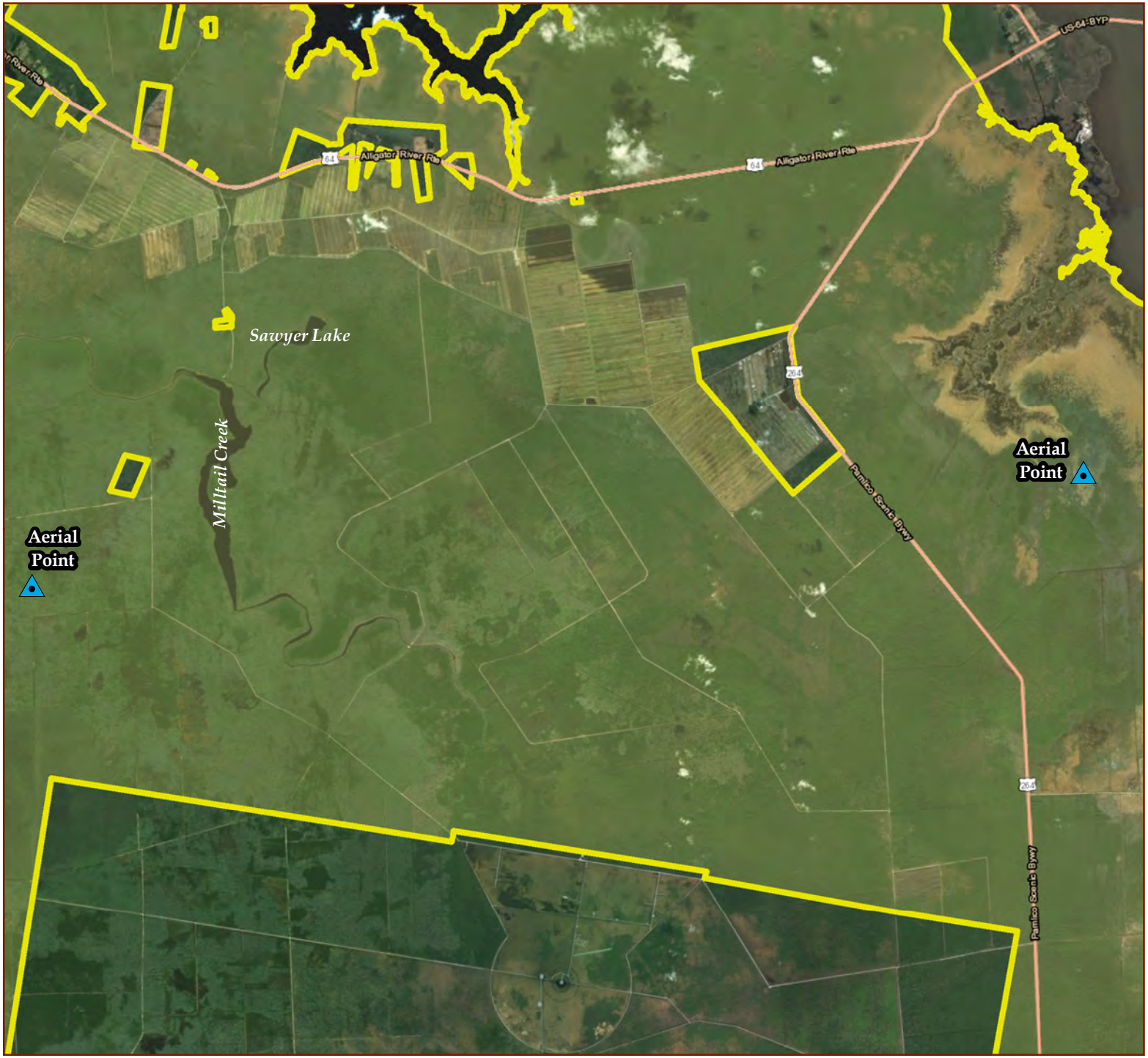


Figure 15. Roost trees located for bat 172.182 at the Alligator River National Wildlife Refuge Study Area during the Winter 2018 Study Period of the NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.



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ENVIRONMENTAL CONSULTING

Alligator River National Wildlife Refuge

Bat 124(b) Roost Locations
Winter 2018

Dare County, North Carolina

Estimated Roost Location

Alligator River National Wildlife Refuge

1:95,000
or
1 cm = 950 m

N

0 2 Km

Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, Copperhead Consulting, NCDOT
Date: 4/30/2018

Figure 16. Estimated roost locations from aerial searches for bat 172.124(b) at the Alligator River National Wildlife Refuge Study Area during the Winter 2018 Study Period of the NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.

COPPERHEAD
ENVIRONMENTAL CONSULTING

Alligator River National Wildlife Refuge

Bat 243 Roost Locations
Winter 2018

Dare County, North Carolina

Roost Tree

Alligator River National Wildlife Refuge

1:10,000
or
1 cm = 100 m

N

0 150
Meters

Coordinate System:
NAD 1983 StatePlane North Carolina FIPS 3200 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, Copperhead Consulting, NCDOT
Date: 4/13/2018

Figure 17. Roost trees located for bat 172.243 at the Alligator River National Wildlife Refuge Study Area during the Winter 2018 Study Period of the NCDOT Northern Long-eared Bat Research Project, Dare County, North Carolina.

Appendix C
Completed Mist-Netting Datasheets

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	1	**Night#:**	1	**Site Name:**	ARNWR01	**Date:**	15-Nov-2017
Latitude:	35.827897	Longitude:	-75.903003					Datum: NAD-83	Elevation: 4 ft	ID By:	Zack Baer
Observers:	Ian Burns							Start Time:	1650	End Time:	2155

Conditions:	Time	Temp	Wind	Clouds
	1655	57	0	50
	1930	54	0	0
	2155	52	0	25

Moon Effect: WAN CRES

Start: N/A

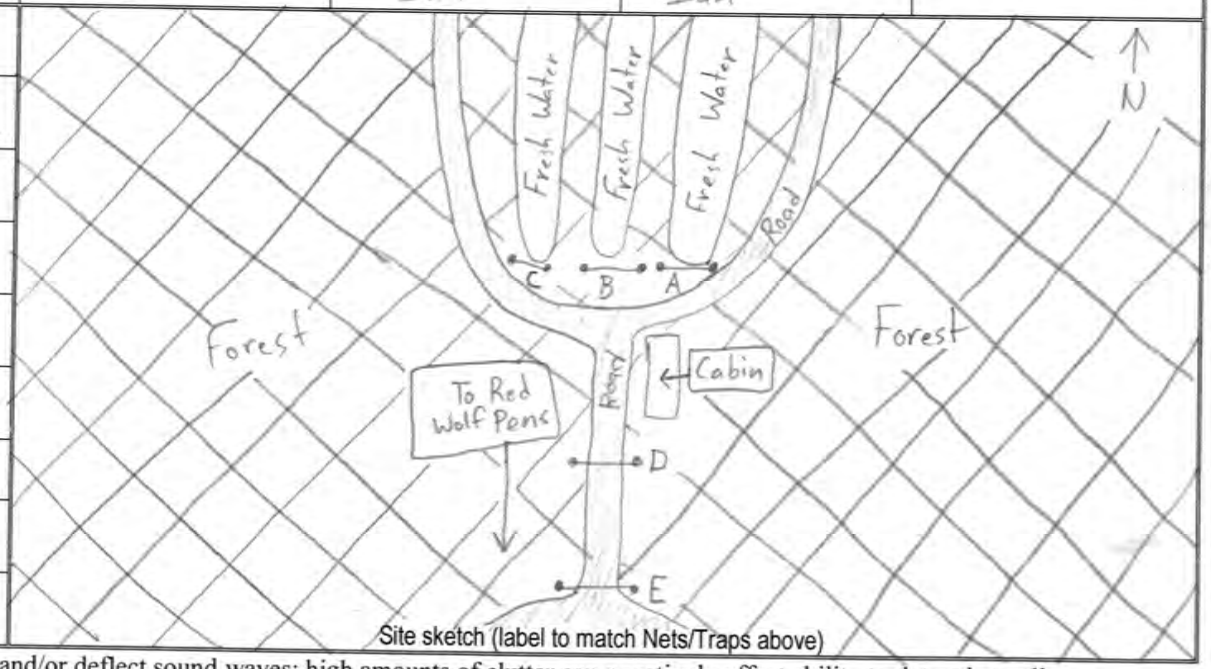
Stop: N/A

Land Use: Urban / Agriculture / (Forest) / Water / Wetland / Barren *(describe)*: 43 Mixed

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2H-6m	1x3H-9m	1x2H-6m	1x2H-6m	1x2H-6m	
Pool size WxL	N/A	N/A	N/A	N/A	N/A	
Swoop WxL	N/A	N/A	N/A	N/A	N/A	
Photo? or #	Ian	Ian	Ian	Ian	Ian	

Site Description, other than Habitat Info covered on pg 3:

Mixed forest with sand roads leading to Red Wolf Pens. Narrow fresh water ponds souranded by clutter but open to bats where nets A, B, C were placed. Standing water in forest, around site. Liquidambar styraciflua, Pinus taeda, Quercus nigra, Morella cerifera, Magnolia virginiana, Symplocos tinctoria



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: DARE Site #: 1 Night# 1 Site Name: ARNWR01 Date: 15-Nov-2017

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1810	MYOSEP	F	A	NR	37	–	9.25	D	3	NCDOT 1630 / 0	55	172.603 / Ians phone
2	1810	MYOSEP	M	A	TD	36	–	8.00	A	2	CC1700 / 0	55	172.664 / Zachs phone
3	2100	PERSUB	M	A	NR	39	–	6.75	D	2.5	CC1689 / 0	52	Ians phone
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	1	**Night#:**	2	**Site Name:**	ARNWR01	**Date:**	16-Nov-2017
Latitude:	35.827897	Longitude:	-75.903003					Datum: NAD-83	Elevation: 4ft	ID By:	Zack Baer
Observers:	Ian Burns							Start Time: 1654		End Time:	2154

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1654	58	0	50%	1930	49	0	0	2155	47	0	0

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAN CRES	Stop: N/A	43 Mixed

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
Pool size WxL	1x2H-6m	1x3H-9m	1x2H-6m	1x2H-6m	1x2H-6m	
	N/A	N/A	N/A	N/A	N/A	
Swoop WxL	N/A	N/A	N/A	N/A	N/A	
Photo? or #	Ian	Ian	Ian	Ian	Ian	

Site Description, other than Habitat Info covered on pg 3:

See Datasheet ARNWR01 from 15-Nov-2017

See Datasheet ARNWR01 from 15-Nov-2017

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: EasternNCMYSE County: DARE Site #: 1 Night# 2 Site Name: ARNWR1 Date: 16NOV2017

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1					NO BAT CAPTURES								
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647 NCDOT mSE	**County:**	Dare	**Site#:**	ARNWR1	**Night#:**	3	**Site Name:**	ARNWR-1	**Date:**	18 Nov 17
Latitude: 35.827897		Longitude: -75.903003						Datum: NAD-83	Elevation: 4 Ft.	ID By: Ray Eaton	
Observers: R. Eaton, K. Eshler								Start Time: 16:54		End Time: 22:00	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:00	61°F	3	100	19:30	61°F	2	25%	22:00	64°F	2	< 0

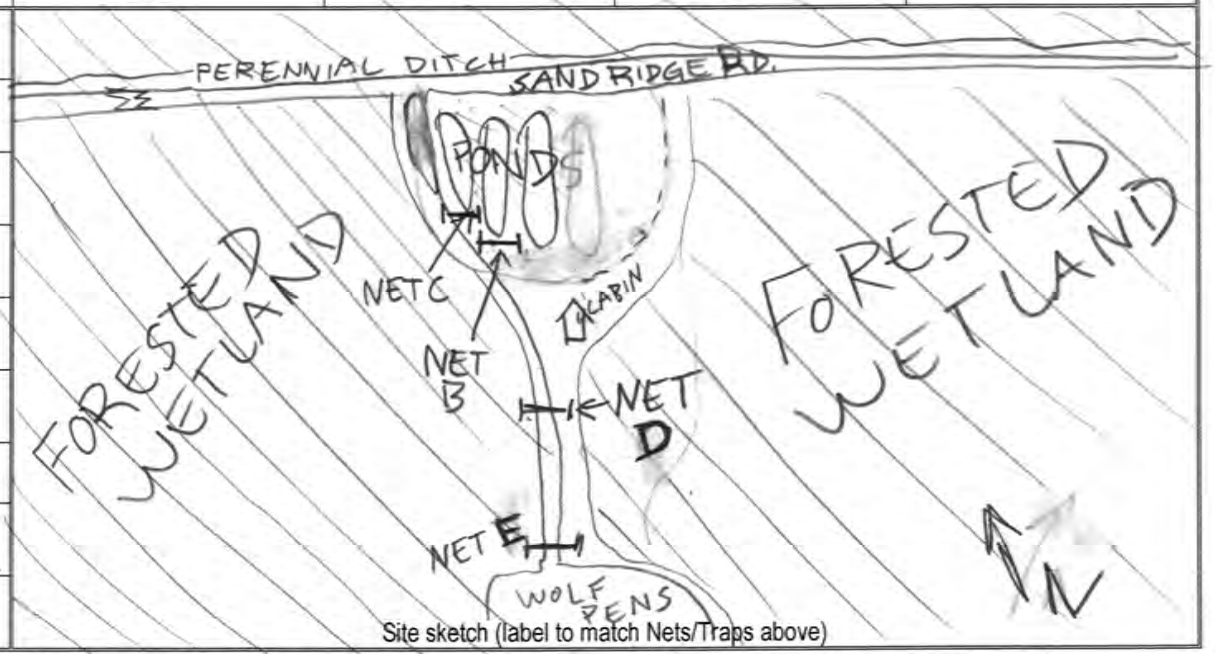
Moon Effect: WANE CRES — Start: – — Stop: –

Land Use: Urban / Agriculture / (Forest) / Water / (Wetland) / Barren *(describe)*: Netted a ridgeline trail and a series of excavated ponds surrounded by forested wetland

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
Pool size WxL	–	12m x 25m	12m x 25m	–	–	–
Swoop WxL	–	12m x 2.5m	12m x 2.5m	–	–	–
Photo? or #	–	KE	KE	KE	KE	–

Site Description, other than Habitat Info covered on pg 3:

Site located on Sand Ridge and includes a road corridor and a series of deep freshwater ponds. The ridge and pond are dominated by loblolly pine and sweetgum. The surrounding woods are a mosaic of forested wetlands.



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: NCDOT MYSE County: Dare Site #: 1 Night# 3 Site Name: ARNWR 1 Date: 18 NOV 2017

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	18:30	LASSEM	M	A	NR	39	—	12.75	E	2.5m	CC1452/0	60°	photos RE, KE
2	17:05	MYOSEP	F	A	NR	35	—	8.5	C	0.5m	CC1453/0	60°	ZZ400Z 172.124
3	1745	NYCHUM	F	A	NR	39	—	12.75	D	3m	CC1454/0	61°	—
4	2105	LASBOR	M	A	NR	38	—	11.25	E	1.0m	CC1455/0	64°	—
5	21:05	EPTFUS	M	A	SC	44	—	20.75	E	3.0m	CC1456/0	64°	—
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	1	**Night#:**	4	**Site Name:**	ARNWR	**Date:**	19 Nov 2017
Latitude:		Longitude:						Datum:	Elevation: 4'	ID By:	Ray Eaton
Observers:	Kelsie Eshler, Ray Eaton							Start Time:	16:50	End Time:	22 00

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:00	55°F	2	0	19:30	49°F	0	0	22:00	47°F	2	0

Moon Effect:	Start:	Land Use: Urban / Agriculture / (Forest) / Water / (Wetland) / Barren *(describe)*:
NEW	Stop:	High ridge/Cabin site in a giant swamp

NETS/TRAPS:	**A:** —	**B:**	**C:**	**D:**	**E:**	**F:**
Pool size WxL						
Swoop WxL						
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

SEE 19 NOV 2017 SITE ARNWR 1 DATA SHEET FOR ALL OTHER DETAILS

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Dare Site #: 1 Night# 4 Site Name: ARNWR 1 Date: 19 NOV. 2017

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		NO BATS CAPTURED											
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	1	**Night#:**	4	**Site Name:**	ARNWR01	**Date:**	21-Nov-2017
Latitude:	35.827897	Longitude:	-75.903003					Datum: NAD-83	Elevation: 4ft	ID By:	Zack Baer
Observers:	Ian Burns							Start Time:	1652	End Time:	1900

Conditions:	Time	Temp	Wind	Clouds
	1700	59	0	100%
	1930	55	0	100
	—	—	—	—

Moon Effect: WAX GIB — Start: N/A — Stop: N/A

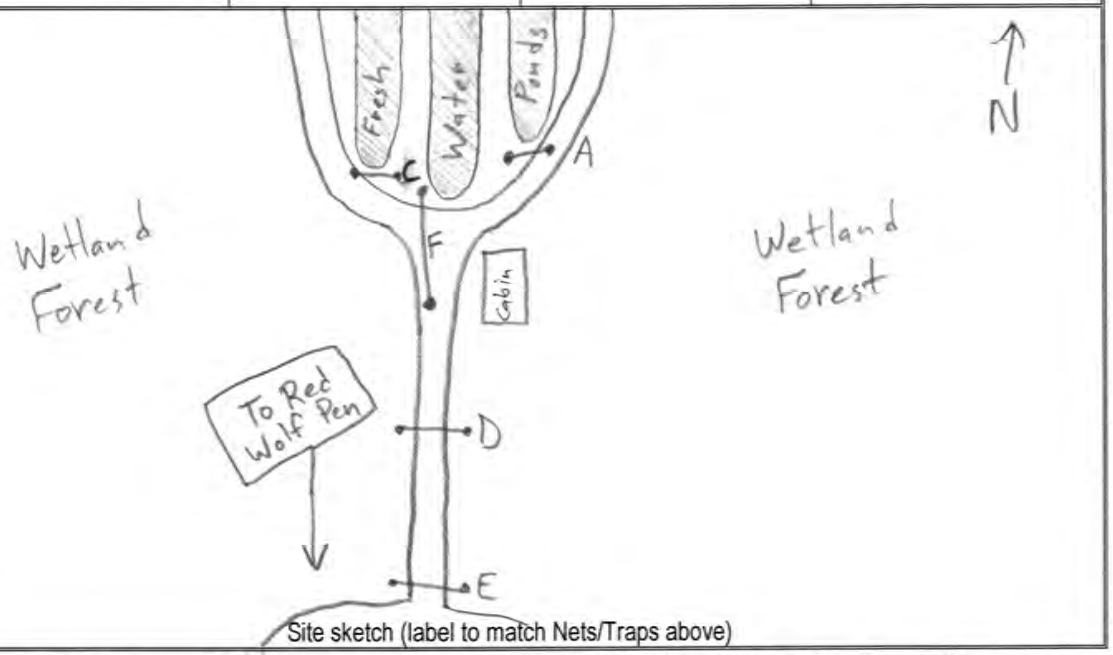
Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: 43 Mixed

NETS/TRAPS:	A: 1x2H-6m	B: N/A	C: 1x2H-6m	D: 1x2H-6m	E: 1x2H-6m	F: 1x2H-12m
Pool size WxL	N/A	N/A	N/A	N/A	N/A	N/A
Swoop WxL	N/A	N/A	N/A	N/A	N/A	N/A
Photo? or #		N/A				Zack

Site Description, other than Habitat Info covered on pg 3:

See Datasheet ARNWR01
From 15-Nov-2017

Site closed at 1900 due to all MYSE being captured



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Dare Site #: 1 Night# 4 Site Name: ARNWR01 Date: 21-Nov-2017

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1720	LASBOR	M	A	TD	39	—	10.0	E	3.0	CC1690 / 0	58	—
2	1800	MYOSEP	M	A	NR	34	—	7.5	E	2.5	CC1691 / 0	56	swabed, Punched 172.783
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	DARE	**Site#:**	1	**Night#:**	5	**Site Name:**	ARNNR09	**Date:**	24 JAN 2018
Latitude:	35.827897	Longitude:	-75.903003					Datum: NAD 83	Elevation: 4ft	ID By:	S.T. Samoray
Observers:	Shelby Cotham							Start Time: 1722		End Time:	1930

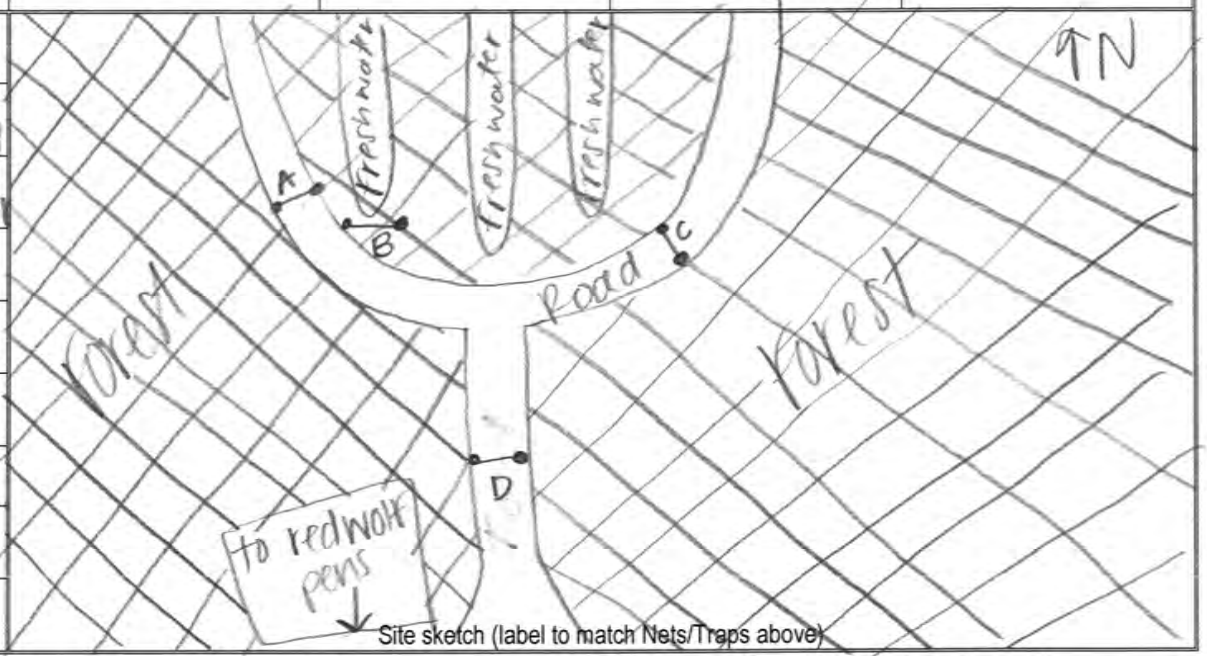
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1722	46	0	0%	—	—	—	—	—	—	—	—

Moon Effect:	Start: 1722	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
1st QTR	Stop: 1930	93 Mixed

NETS/TRAPS:	A: 1x2Hx9m	B: 1x2Hx16m	C: 1x2Hx9m	D: 1x3Hx9m	E:	F:
Pool size WxL	N/A	N/A	N/A	N/A		
Swoop WxL	N/A	N/A	N/A	N/A		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

Mixed forest with sand road as leading to Red Wolf Pens Narrow fresh water ponds surrounded by clutter put open to path where net B is placed. Standing water in forest around site. Liquidambar Styraciflua, Pinus taeda Quercus nigra, Morella cerifera, Magnolia virginiana, Symplocos tinctoria



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

NO CAPTURES

Project: Eastern NC MYSE County: DARE Site #: 1 Night# 5 Site Name: ARNWR01 Date: 24 JAN 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1				Cold Out									
2					@ 1930								
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	DARE	**Site#:**	1	**Night#:**	6	**Site Name:**	ARNWR01	**Date:**	27 Jan 2018
Latitude:	35.827897	Longitude:	-75.903003					Datum: NAD83	Elevation: 4ft	ID By:	S.T. Somaway
Observers:	Daniel Batie							Start Time: 1727		End Time:	2227

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1727	56	0	0	2027	51	0	100	2227	51	0	100

Moon Effect:	Start: 1727	**Land Use:** Urban / Agriculture / (Forest) / Water / Wetland / Barren *(describe)*:
WAX GIBB	Stop: 2030	43 mixed

NETS/TRAPS:	**A:** 1x2Hx9m	**B:** 1x24x6m	**C:** 1x2Hx9m	**D:** 1x3Hx9m	**E:**	**F:**
Pool size WxL	N/A	N/A	N/A	N/A		
Swoop WxL	N/A	N/A	N/A	N/A		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

Mixed forest with sand roads leading to Red Wolf Pens. Narrow freshwater ponds surrounded by clutter but open to bats where net B is placed. Standing water in forest around site Liquidambar styraciflua, Pinus taeda Quercus nigra, Morella cerifera, Magnolia virginiana, Symplocos tinctoria

Refer to data sheet from 24 Jan 2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Dare Site #: 1 Night# 6 Site Name: ARNWR1 Date: 27 Jan 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1													
2	—	NO BATS CAPTURED							—				
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern Nc MYSE	**County:**	Dare	**Site#:**	1	**Night#:**	7	**Site Name:**	ARNWR01	**Date:**	06-FEB-2018
Latitude:	35.827897 -75.	Longitude:	-75.903003					Datum: NAD-83	Elevation: 4ft	ID By:	Ray Eaton
Observers:	Ray Eaton, Tyler Blevins							Start Time:	17:36	End Time:	22:36

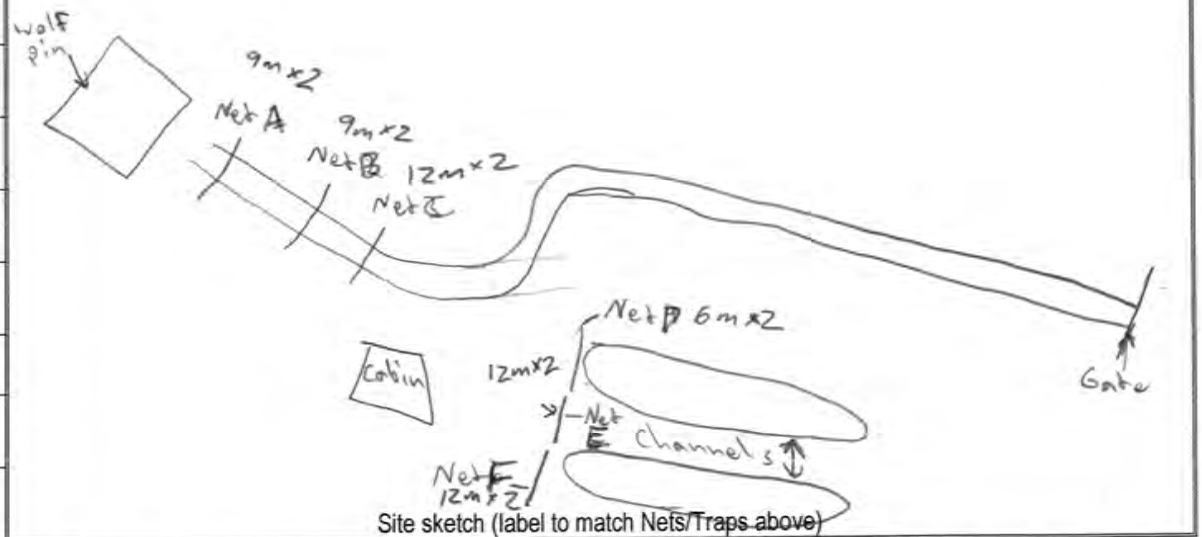
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:36	53 F	0	25%	20:00	47 F	0	0%	22:36	49 F	2	0%

Moon Effect:	Start: 07.14	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
LAST QTR	Stop: 12:04	6

NETS/TRAPS:	**A:** 1x2H-9m	**B:** 1x2H-9m	**C:** 1x2H-12m	**D:** 1x2H-6m	**E:** 1x2H-12m	**F:** 1x2H-12m
Pool size WxL	—	—	—	2m x 4m	5m x 7m	—
Swoop WxL	—	—	—	Unl.	Unl.	
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See datasheet from 24 January 2018



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Dare Site #: 01 Night# 7 Site Name: ARNWR01 Date: 6 FEB 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	ONE WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1				NO CAPTURES									
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647	**County:**	Dare	**Site#:**	7	**Night#:**	8	**Site Name:**	ARNWR01	**Date:**	07-FEB-2018
Latitude: 35.827897		Longitude: -75.903003						Datum: NAD-83	Elevation: 4ft	ID By: Ray Eaton	
Observers: Ray Eaton, Tyler Blevins								Start Time: 17:37		End Time:	

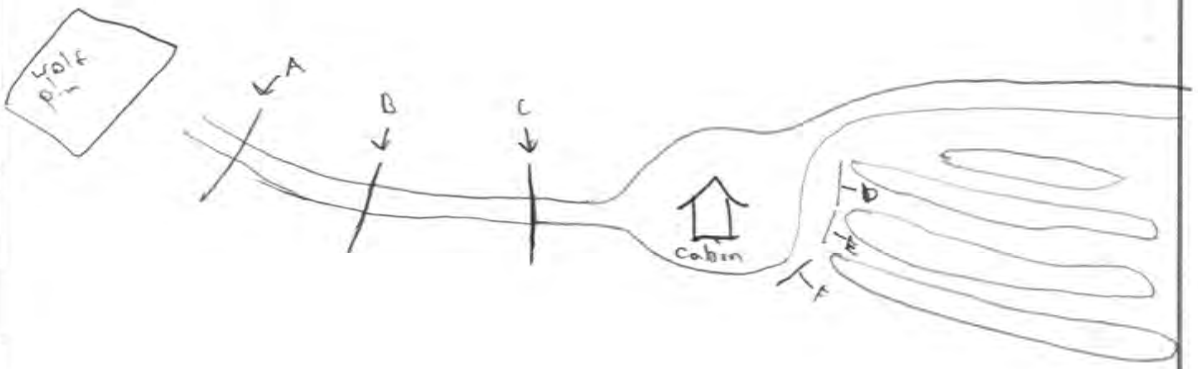
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:37	60	4	100%	20:02	57	4	50%	22:37	56	3	100%

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
LAST-QTR	NA	61
	Stop: NA	

NETS/TRAPS:	A:	B:	C:	D:	E:	F:
	1x2H-9m	1x2H-9m	1x2H-12m	1x2H-6m	1x2H-12m	1x2H-12m
Pool size WxL				2m x 4m	5m x 7m	
Swoop WxL				Unlimited	Unlimited	
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

see datasheet from 24 January 2018



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: 647 County: Dare Site #: 1 Night# 8 Site Name: ARNWR01 Date: 07-FEB-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	17:50	LAS SEM	M	A	NR	39mm	0	8.75g	C	4	CC0286/PO	60	
2	18:16	LAS BOR	M	A	NR	41mm	0	10.50g	A	3	CC0285/PO	59	
3	18:16	MYO SEP	M	A	NR	36	0	6.50g	B	2.5	CC0100/O	58	224015 .905
4	19:33	NYC HUM	M	A	NR	36	0	8.50g	B	2m	CC0099/PO	56	
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647	**County:**	Dare	**Site#:**	1	**Night#:**	9	**Site Name:**	ARNWR01	**Date:**	10-FEB-2018
Latitude: 35.827897		Longitude: -75.903003						Datum: NAD-83	Elevation: 4ft	ID By: Ray Eaton	
Observers: Ray Eaton, Tyler Blevins								Start Time: 17:39		End Time: 22:39	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:39	59	3	75%	20:03	58	3	25%	22:39	55	3	25%

Moon Effect:	Start: 3:01	**Land Use:** Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*:
WAN CRES	Stop: 13:24	61

NETS/TRAPS:	**A:** 1x2H-9m	**B:** 1x2H-9m	**C:** 1x2H-12m	**D:** 1x2H-6m	**E:** 1x2H-12m	**F:** 1x2H-12m
Pool size WxL				2mx4m	5mx7m	
Swoop WxL				Unlimited	Unlimited	
Photo? or #						

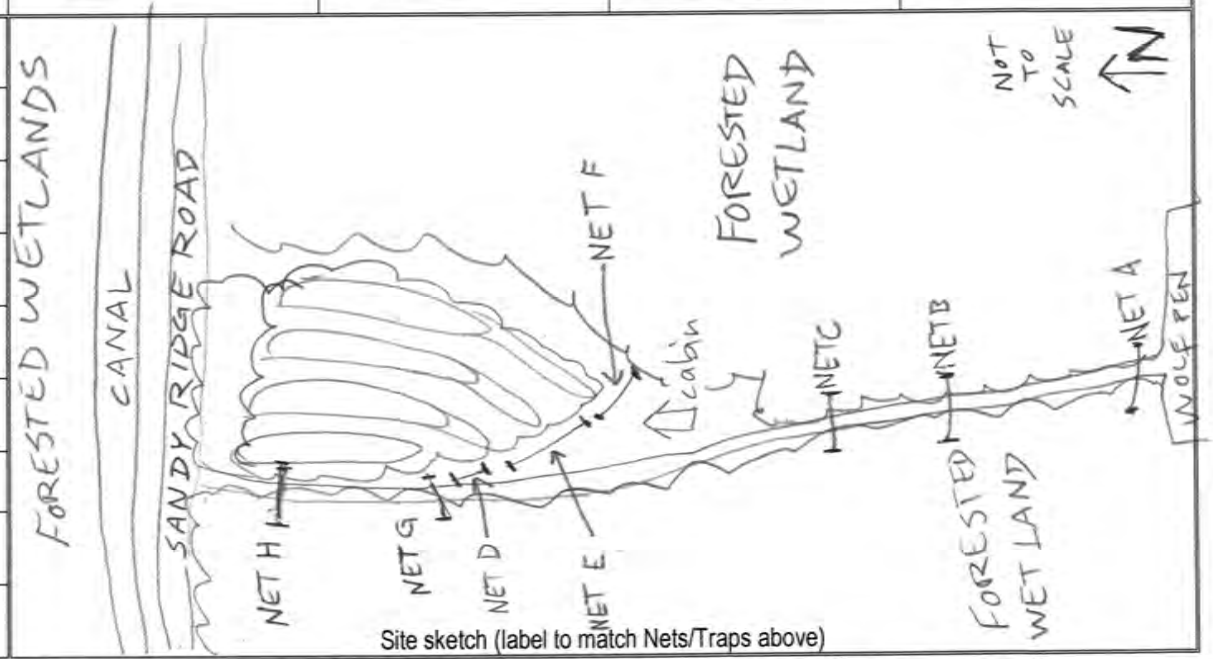
Site Description, other than Habitat Info covered on pg 3:

NET G: 1x2H-9m.

NET H (SITE ARNWR02, NET D)

1x2H-9m

Rained most of afternoon, quit ~16:00



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: 647 County: Dare Site #: 1 Night# 9 Site Name: ARNWR01 Date: 10-FEB-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	18:04	EPTFUS	M	A	NR	41	0	14.25g	E	1.5m	CC0098/PD	59	Swab
2	18:51	LASBOR	M	A	NR	39	0	9.25g	H	5m	CC0097/PD	58	
3	19:06	EPTFUS	M	A	NR	35	0		H	2m	CC0098/PD	57	Recapture
4	19:06	NYCHUM	M	A	NR	35	0	8.5g	E	2m	CC0096/PI	57	
5	19:28	NYCHUM	M	A	NR	34	0	8.5g	E	5m	CC0095/PI	57	
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647	**County:**	Dare	**Site#:**	1	**Night#:**	10	**Site Name:**	ARNWR01	**Date:**	10-FEB-20B
Latitude:	35.827897	Longitude:	-75.903003					Datum: NAD-83	Elevation: 4ft	ID By:	Ray Eaton
Observers:	Ray Eaton, Tyler Blevins							Start Time:	1740	End Time:	2240

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:40	65	4	100%	20:05	60	4	75%	22:40	58	3	0

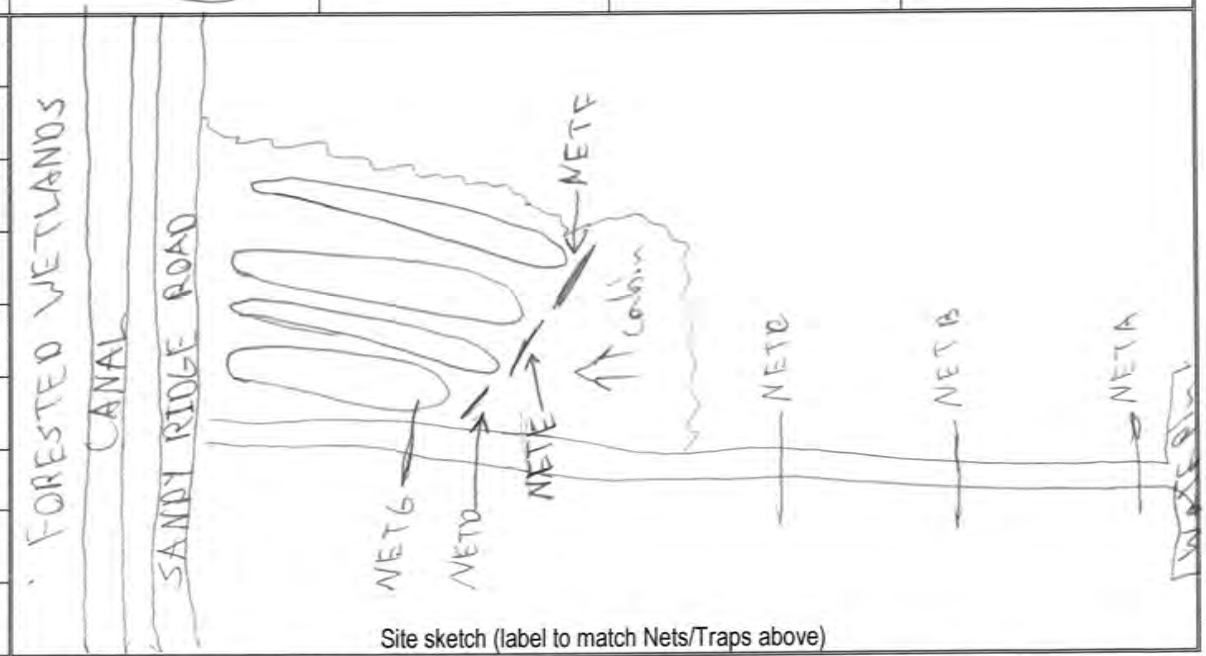
Moon Effect: WANCRES — Start: 3:52 — Stop: 14:09

Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: 61

NETS/TRAPS:	**A:** 1x24-9m	**B:** 1x24-9m	**C:** 1x24-12m	**D:** 1x24-6m	**E:** 1x24-12m	**F:** 1x24-12m
Pool size WxL				2m x 4m	5x7m	
Swoop WxL				Unlimited	Unlimited	
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

NET 6: 1x24-9m



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: 647 County: DARE Site #: 1 Night# 10 Site Name: ARNWR01 Date: 11-FEB-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	18:28	EPTFUS	F	A	NR	44	0	13g	E	2m	CC0073/PO	60	/swab
2	18:28	LASBOR	M	A	NR	36	0	10.5g	6	2m	CC0284/PO	60	FUR
3	18:28	EPTFUS	F	A	NR	47	0	18.75g	A	5m	CC0283/PO	60	
4	18:28	EPTFUS	M	A	NR	42	0	14.5g	A	4m	CC0282	60	
5	18:28	EPTFUS	M	A	NR	45	0	13g	B	2m	CC0281/PO	60	
6	18:28	EPTFUS	M	A	NR	48	0	14.75g	A		CC0278/PO	60	
7	18:40	LASBOR	M	A	NR	39	0	11g	6	5m	CC0285/PO	60	Recapture/FUR
8	18:54	NYCHUM	M	A	NR	35	0	9g	G	3m	CC0096	59	Recapture
9	18:58	EPTFUS	M	A	NR		0	15g	G	2m	CC0098/PO	59	Recapture
10	18:58	EPTFUS	M	A	NR	44	0	13.5	B	5m	CC0279/PO	59	
11	18:28	CORRAF	M	A	SC	41	0	8g	G	2m	CC0275	60	
12	19:23	EPTFUS	F	A	NR	46	0	17g	B	2m	CC0277/PO	58	
13	19:27	NYCHUM	F	A	NR	35g	0	10.75g	E	2m	CC0276 PO	58	
14	19:43	LASBOR	M	A	NR	38	0	10g	F	6m	CC1456	61	Recapture/chewingen Band
15	19:41	NYC HUM	F	A	NR	36	0	9.25	E	2m	CC0274	60	
16	19:56	EPTFUS	F	A	NR	47	0	15.75g	C	5m	CC0272	60	
17	21:37	LASBOR	M	A	NR	43g	0	9.5g	E	2m	CC0074/PO	58	FUR
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NCMYST	**County:**	Dare	**Site#:**	1	**Night#:**	11	**Site Name:**	ARNWR01	**Date:**	14 Feb 18
Latitude:	35.827897	Longitude:	-75.903003					Datum: NAD83	Elevation: 4ft	ID By:	Piper Roby
Observers:	Kelsie Eshler							Start Time: 1750		End Time:	2250

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1745	53	0	100	1930	52	0	100	2245	50	0	0

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAN CRES	N/A	43 mixed
	Stop: N/A	

NETS/TRAPS:	A:	B:	C:	D:	E:	F:
Pool size WxL		N/A	N/A	N/A	N/A	
Swoop WxL		N/A	N/A	N/A	N/A	
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See datasheet ARNWR01 from 18 NOV 17

Site sketch (label to match Nets/Traps above)

See datasheet ARNWR 01 from 18 Nov 17

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 1 Night# 11 Site Name: ARNWR01 Date: 14 Feb 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1													
2					NO		BATS						
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	1	**Night#:**	12	**Site Name:**	ARNWR 01	**Date:**	15 Feb 18
Latitude:	35.827897	Longitude:	75.903003					Datum: NAD83	Elevation: 4 ft	ID By:	Piper Roby
Observers:	Kelsie Eshler							Start Time:	17:45	End Time:	2255

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1745	66	1	25	2015	60	2	50	2245	61	2	100

Moon Effect:	Start:	Land Use: Urban / Agriculture / (Forest) / Water / Wetland / Barren *(describe)*:
New Moon	N/A	43 Mixed
	Stop: N/A	

NETS/TRAPS:	A:	B: 1 x 2H-12m	C: 1 x 2H-6m	D: 1 x 2H-9m	E: 1-2H x 9m	F:
Pool size WxL		N/A	N/A	N/A	N/A	
Swoop WxL		N/A	N/A	N/A	N/A	
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See data sheet ARNWR01 from 18 Nov 17

See data sheet ARNWR01 from 18 Nov 17

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

D = descender

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 1 Night# 12 Site Name: ARNWR01 Date: 15 Feb 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	mm FA	Bag WT	Bat WT	Net #	Height	CC Band / WS	Temp (F)	Comment / Photo #
1	1812	LASBOR	M	A	NR	39	—	10g	B	4m	0	63	hair
2	1815	EPTFUS	M	A	NR	41	—	13	E	3.5	CC2151/0	63	swab / Kelsie
3	1833	NYCHUM	M	A	D	34	—	7.75	B	3	CC2152/0	61	
4	1840	EPTFUS	M	A	D	44	—	12.5	E	3	CC2153/0	61	swab / Kelsie
5	1854	NYCHUM	F	A	NR	35	—	10	E	2	CC2154/0	60	Kelsie
6	2017	NYCHUM	M	A	D	35	—	8.5	B	4	CC2155/0	60	Kelsie
7	2244	CORRAF	M	A	D	42	—	8.5	D	3	CC2156/0	61	
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NCMYSE	**County:**	Dare	**Site#:**	1	**Night#:**	13	**Site Name:**	ARNWR01	**Date:**	16 Feb 18
Latitude:	35.827897	Longitude:	75.903003					Datum: NAD83	Elevation: 4ft	ID By:	Piper Roby
Observers:	Kelsie Eshler							Start Time: 1740		End Time:	1915

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1740	63	1	100	1915	59	2	100	—	—	—	—

Moon Effect:	Start:	Land Use: Urban / Agriculture / ~~Forest~~ / Water / Wetland / Barren *(describe)*:
WAX CRES	Stop: N/A	43 Mixed

NETS/TRAPS:	**A:**	**B:** 1 x 2H-12m	**C:** 1x2H-6m	**D:** 1x2H-9m	**E:** 1x2H-9m	**F:**
Pool size WxL		N/A	N/A	N/A	N/A	
Swoop WxL		N/A	N/A	N/A	N/A	
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See datasheet ARNWR01 from 18 NOV 17

See datasheet ARNWR01 from 18 NOV 17

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 1 Night# 13 Site Name: ARNWRO 1 Date: 16 Feb 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	Bat WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1817	EPTFUS	M	A	D	44	—	12.5	D	3	CC2153/0	63	
2	1835	EPTFUS	M	A	D	44	—	13.5	E	2.5	CC2157/0	62	Swab / Kelsic
3													
4	~	RAIN		OUT	@	1915	—						
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	1	**Night#:**	14	**Site Name:**	ARNWR01	**Date:**	17 Feb 18
Latitude: 35.827897		Longitude: 75.903003						Datum: NAD83	Elevation: 4ft	ID By: Piper Roby	
Observers: Kelsie Eshler								Start Time: 1747		End Time: 2100	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1747	48	0	100	1015	48	0	100	2100	48	0	100

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAY CRES	N/A	43 mixed
	Stop: N/A	

NETS/TRAPS:	A:	B: 1x2H-12m	C: 1x2H-6m	D: 1x2H-9m	E: 1x2H-9m	F:
Pool size WxL		N/A	N/A	N/A	N/A	
Swoop WxL		N/A	N/A	N/A	N/A	
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See datasheet ARNWR01 from 18 Nov 17

See datasheet ARNWR01 from 18 Nov 17

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 1 Night# 14 Site Name: ARNWR 01 Date: 17 Feb 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		NO BATS											
2													
3		COLD OUT @ 2100											
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYOT	**County:**	Dare	**Site#:**	1	**Night#:**	15	**Site Name:**	ARNWR 01	**Date:**	19 Feb 18
Latitude:	35.827897	Longitude:	75.903003					Datum: NAD83	Elevation: 4ft	ID By:	P. Roby
Observers:	K. Eshler							Start Time:	1747	End Time:	2245

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1747	60	0	75%	2015	58	6	75	2245	60	1	50%

Moon Effect: WAX CRES	Start: N/A	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:	
	Stop: N/A	43 Mixed	

NETS/TRAPS:	A: 1x2H-12m	B: 1x2H-6m	C: 1x2H-9m	D: 1x2H-9m	E:	F:
Pool size WxL	N/A	N/A	N/A	N/A		
Swoop WxL	N/A	N/A	N/A	N/A		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See datasheet from ARNWR01 on 18 NOV 17

Site sketch (label to match Nets/Traps above)

See datasheet ARNWR01 from 18 NOV 17

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 1 Night# 15 Site Name: ARNWR01 Date: 19 Feb 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR / Sc	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1655	EPTFUS	M	A	Sc	44	–	12.0	B	3.5	CC2158/X	58	
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

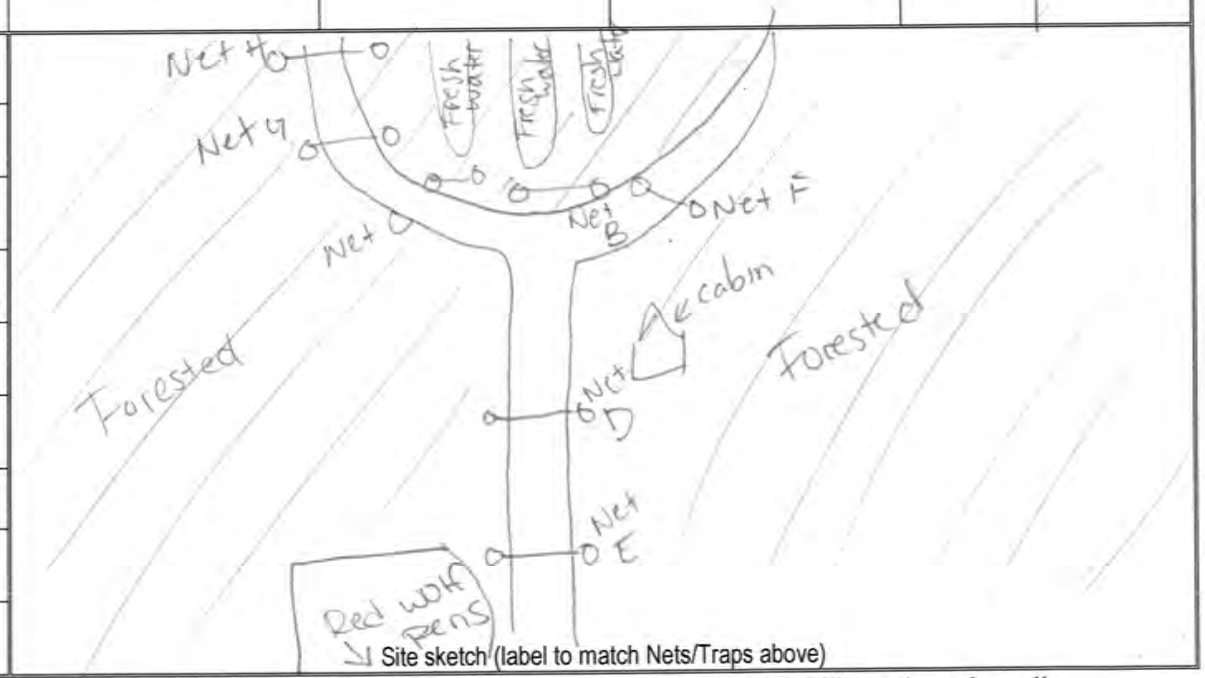
NCDOT Mist-Netting Data Form

Project:	Eastern NCMYSE	**County:**	Dare	**Site#:**	1	**Night#:**	16	**Site Name:**	ARNWR01		**Date:**	20 Feb 18			
Latitude:	35.827897	Longitude:	75.903003					Datum: NAD83	Elevation: 4ft		ID By: P Roby				
Observers:	K. Eshler, S. Cotham							Start Time: 1747			End Time: 2300				
Conditions:	Time 1747	Temp 61	Wind 1	Clouds 25	Time 2015	Temp 64	Wind 1	Clouds 8	Time 2250	Temp 61	Wind 0	Clouds 3			
Moon Effect: WAX CRES	Start: N/A	Stop: N/A	**Land Use:** Urban / Agriculture / ~~Forest~~ / Water / Wetland / Barren *(describe)*: 43 Mixed												

NETS/TRAPS:	~~A:~~ 1x2H-12m	~~B:~~ 1x2H-6m	~~C:~~ D 1x2H-9m	~~D:~~ E 1x2H-9m	~~E:~~ 1x2H-6m	~~F:~~ 1x2H-9m	1x2H-9m
Pool size WxL	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Swoop WxL	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Photo? or #							

Site Description, other than Habitat Info covered on pg 3:

See datasheet ARNWR from 18 Nov 17



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 1 Night# 16 Site Name: ARNWR01 Date: 20 Feb 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1815	NYCHUM	M	A	NR	35	-	8.5	H	3.5M	CC0095/0	61	recapture scaring on back
2	1815	NYCHUM	F	A	NR	37	-	9	H	3M	CC2159/0	61	
3	1835	EPTFUS	M	A	NR	40	-	10	D	2.5M	CC2160	61	scaringon R wing
4	1835	NYCHUM	M	A	SCR	37	-	8.25	D	2M	CC2155/0	61	recapture
5	1835	EPTFUS	M	A	NR	45	-	10.5	D	3M	CC2200/0	61	Hole in wing
6	1840	NYCHUM	F	A	NR	35	-	11	E	2.5	CC2199/0	61	
7	1840	EPTFUS	F	A	NR	47	-	15.5	H	3	CC2161/0	61	
8	1840	EPTFUS	F	A	NR	48	-	18	H	3	CC2198/0	61	
9	1840	LASBOR	M	A	NR	39	-	11	H	3	CC0284/0	61	Removed band
10	1840	EPTFUS	F	A	NR	45	-	15	H	3	CC2162/0	61	
11	1900	EPTFUS	M	A	SCR	44	-	14	G	1	CC0098/0	64	recapture
12	1935	EPTFUS	F	A	NR	44	-	-	E	1	CC2163/0	64	
13	1940	NYCHUM	F	A	NR	36	-	9.5	H	2	CC2164/0	64	
14	2127	NYCHUM	F	A	NR	36	-	10	H	4.5	CC2165	63	
15	2250	CORRAF	F	A	NR	43	-	9	D	2	CC2166	61	
16	2314	CORRAF	M	A	SC	41	-	9	E	4	CC2167	61	
17													
18													
19													
20													

ARNWR1

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	647 MYSE	**County:**	DARE	**Site#:**	2	**Night#:**	1	**Site Name:**	ARNWR02	**Date:**	15 NOV 17
Latitude:	35.830343	Longitude:	-75.90027	Datum:	WGS 84	Elevation:	5'	ID By:	Ray Eaton		
Observers:	R. Eaton, K. Eshler			Start Time:	17:00			End Time:	22:00		

Conditions:	Time	Temp	Wind	Clouds
	17:00	63°F	0	none
	19:30	53°F	0	none
	22:00	51°F	0	none

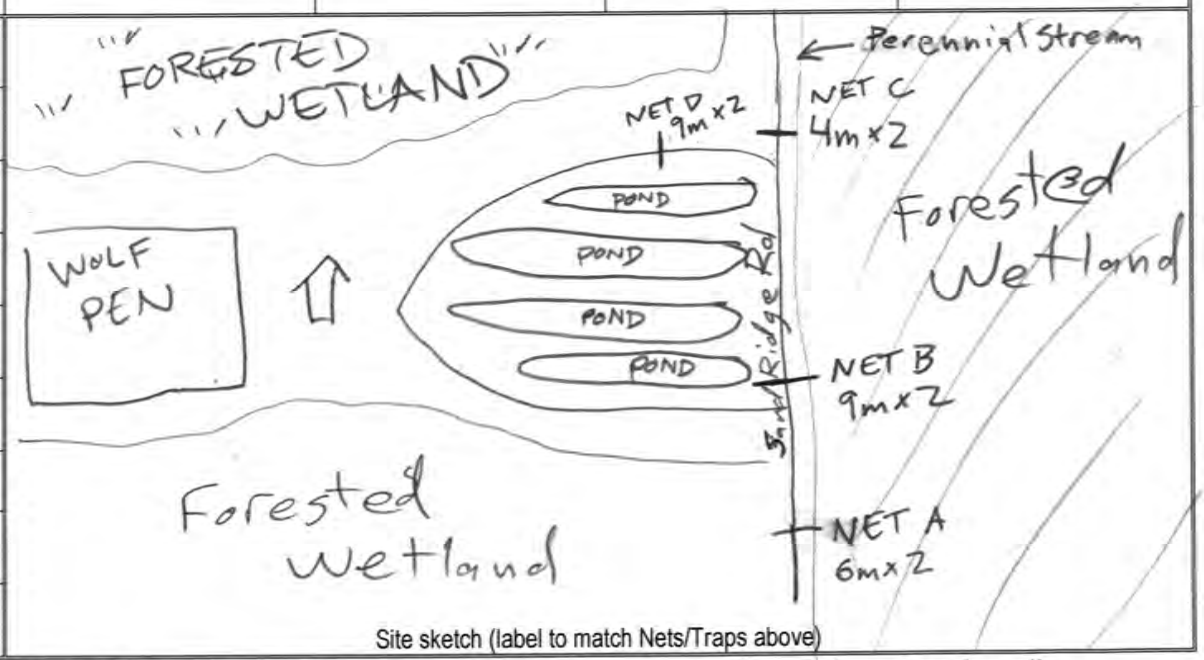
Moon Effect: WANE CRES — Start: — Stop: —

Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: 61 Forested

NETS/TRAPS:	A:	B:	C:	D:	E:	F:
	6m x 2H-6m	9m x 2H-9m	4m x 2H-4m	9m x 2H-9m		
Pool size WxL	NA	NA	NA	NA		
Swoop WxL	NA	NA	NA	NA		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

Forest canopy consists of Nyssa aquatica, Pinus taeda Pinus serotina, Pinus echinata Magnolia virginiana, Liquidambar styraciflua



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: DARECO, NC Site #: 2 Night# 1 Site Name: ARNWR02 Date: 15 NOV 17

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	17:40	LASBOR.	M	A.	TD	37	—	8.75	B	4m	—	55	
2	19:42	MYOSEP	M	A	TD	36	—	8	C	3m	"1451 10	53	tagged @ 172.063
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647 MYSE	**County:**	DARE	**Site#:**	ARNWR2	**Night#:**	2	**Site Name:**	ARNWR02	**Date:**	16NOV17
Latitude:	35.830343	Longitude:	-75.90027					Datum: WGS84	Elevation: 5'	ID By:	Theresa Whetzel
Observers:	T. Whetzel, S. Cotnam							Start Time: 1700		End Time:	2200

Conditions:	Time	Temp	Wind	Clouds
	1700	56	0	NONE
	1930	50	0	0
	2200	46	0	0

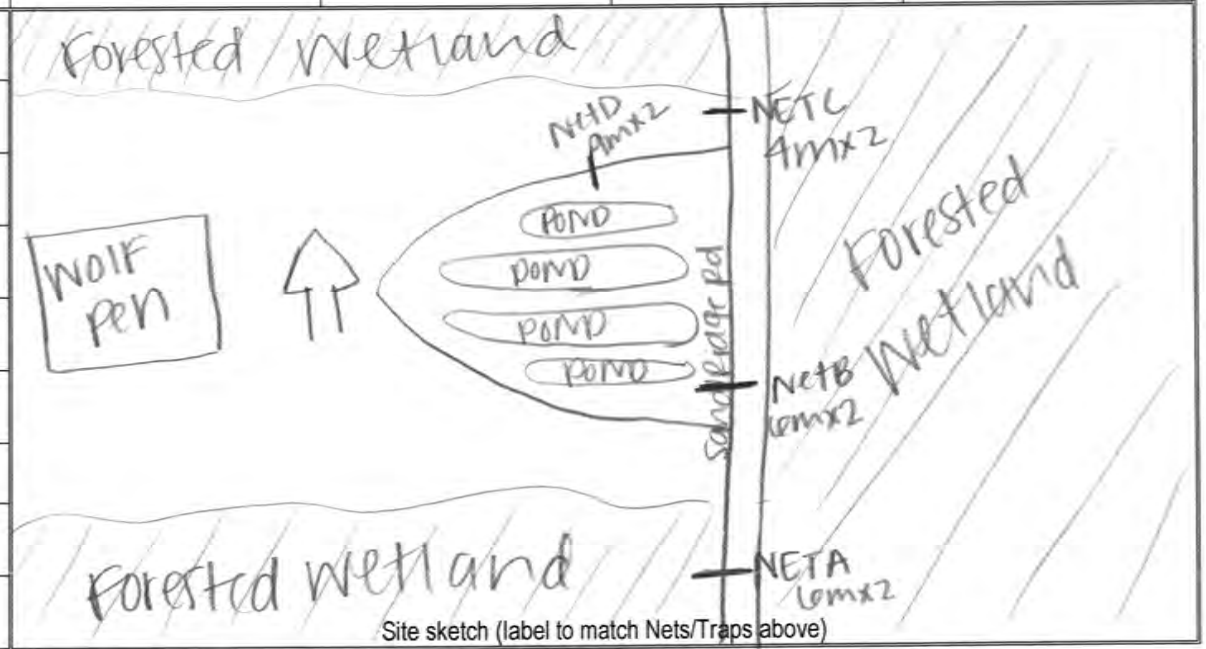
Moon Effect: Waning Crescent — Start: — Stop: —

Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: G1 Forested

NETS/TRAPS:	**A:** 1 x 2H-6m	**B:** 1 x 2H-6m	**C:** 1 x 2H-4m	**D:** 1 x 2H-9m	**E:**	**F:**
Pool size WxL	NA	NA	NA	NA		
Swoop WxL	NA	NA	NA	NA		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

Forest canopy consists of Nyssa aquatica, Pinus taeda, Pinus serotina, Pinus echinata, Magnolia virginiana, Liquidambar styraciflua



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 2 Night# 2 Site Name: ARNWR02 Date: 16Nov17

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		—	NO		BATS			CAPTURED			—		
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	NC DOT MYSE	**County:**	Dare	**Site#:**	2	**Night#:**	3	**Site Name:**	ARNWR 02	**Date:**	24 JAN 18
Latitude:	35.830343	Longitude:	75.90027					Datum: WGS 84	Elevation: 4ft	ID By:	R. EATON
Observers:	I. BURNS							Start Time:	17:20	End Time:	20:00

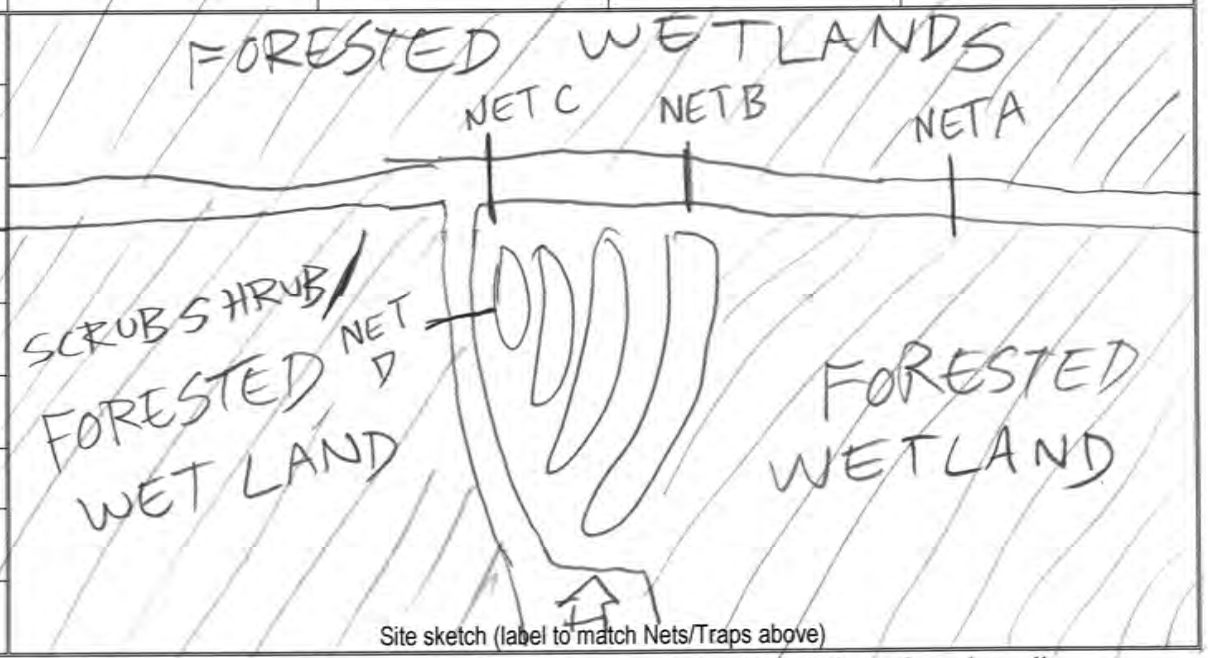
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:20	52	1	1	20:00	39	0	1	—	—	—	—

Moon Effect: 1st quarter	Start: 17:20	**Land Use:** Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*:	
	Stop: 20:00	Forested wetlands GI	

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2H-6m	1x2H-9m	1x2H-9m	1x2H-9m	—	—
Pool size WxL	—	—	—	—	—	—
Swoop WxL	—	—	—	—	—	—
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See ARNWR02 night 1 data form



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: NC DOT MYSE County: DARE Site #: 2 Night# 3 Site Name: ARNWR02 Date: 24JAN 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		NO CAPTURES											
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	2	**Night#:**	4	**Site Name:**	~~ARNWR02~~	**Date:**	27JAN18
Latitude: 35.83055		Longitude: -75.90145						Datum: WGS 84	Elevation: 4	ID By: R.Eaton	
Observers: I. Burns								Start Time: 17:24		End Time: 22	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1724	55	0	25	2030	49	0	25	2230	49	1	75

Moon Effect: waxing gibbous 82% — Start: 17:24 — Stop: 2224

Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: Forested wetland 61

NETS/TRAPS:	**A:** 1x2H-6m	**B:** 1x2H-9m	**C:** 1x2H-9m	**D:** 1x2H-9m	**E:** —	**F:** —
Pool size WxL	—	—	—	—		
Swoop WxL	—	—	—	—		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See datasheet from 19 Nov 17

See datasheet from 24 Jan 2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Dare Site #: 2 Night# 4 Site Name: ARNWR02 Date: 27JAN2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	NO CAPTURES												
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	ARNWR 03	**Night#:**	1	**Site Name:**	ARNWR03	**Date:**	11/15/17
Latitude:	35.86110	Longitude:	-75.91624					Datum: NAD83	Elevation: -6	ID By:	T. Wetzel
Observers:	T. Wetzel, S. Cotham							Start Time:	1656	End Time:	2156

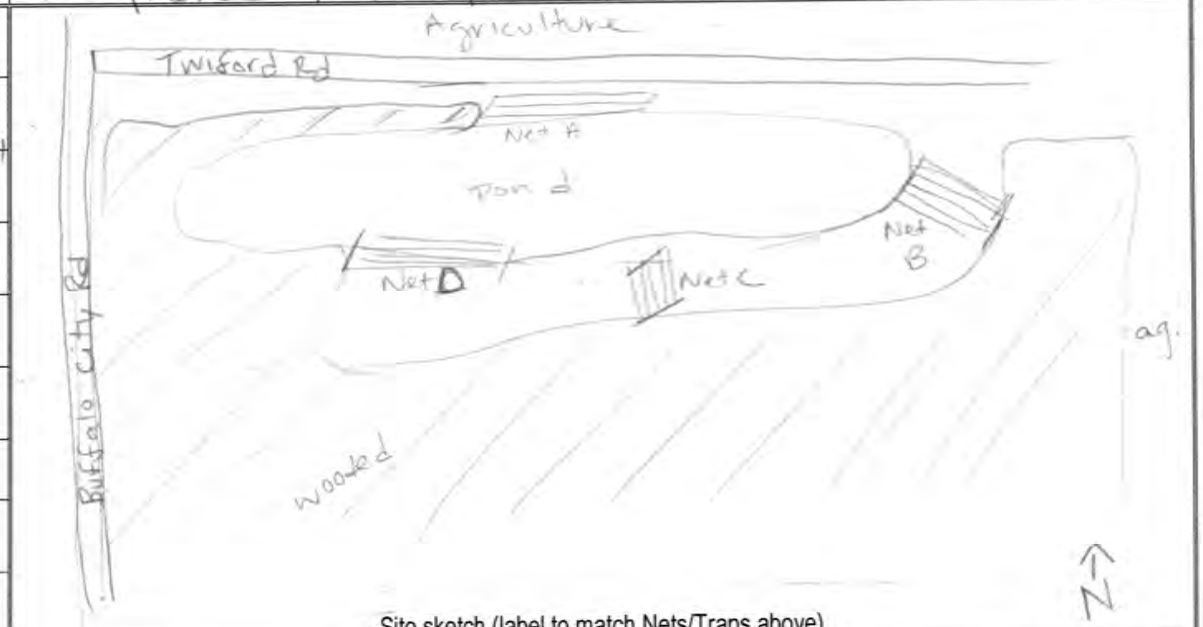
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1700	57	2	25	1930	53	1	25	2200	51	0	25

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Wan-Cres	Stop:	Cropland / Pasture 21

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1 x 2H - 12m	1 x 3H - 9m	1 x 2H - 9m	1 x 2H - 12m		
Pool size WxL	—	—	—	—		
Swoop WxL	—	—	—	—		
Photo? or #	TW phone	TW phone	TW phone	TW phone		

Site Description, other than Habitat Info covered on pg 3:

Acer saccharinum, Liquidambar sytraciflua, Pinus taeda



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Dare Site #: ARNWR 03 Night# 1 Site Name: ARNWR03 Date: 11/15/17

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1737	LASBOR	M	A	NR	41	9.75	19.75	B	2.0	CC2101/O-P	56	
2	1850	LASBOR	M	A	NR	44	9.75	20	B	5.5	CC2102/O-P	55	
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

ARNWR3

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	4	**Night#:**	1	**Site Name:**	ARNWR4	**Date:**	18-Nov-2017
Latitude:	35.83760	Longitude:	-75.91916					Datum: NAD-83	Elevation: -5ft	ID By:	Zack Baer
Observers:	Ian Burns							Start Time:	1650	End Time:	2154

Conditions:	Time	Temp	Wind	Clouds
	1653	61	2	100%
	1930	62	2	75%
	2200	65	2	50%

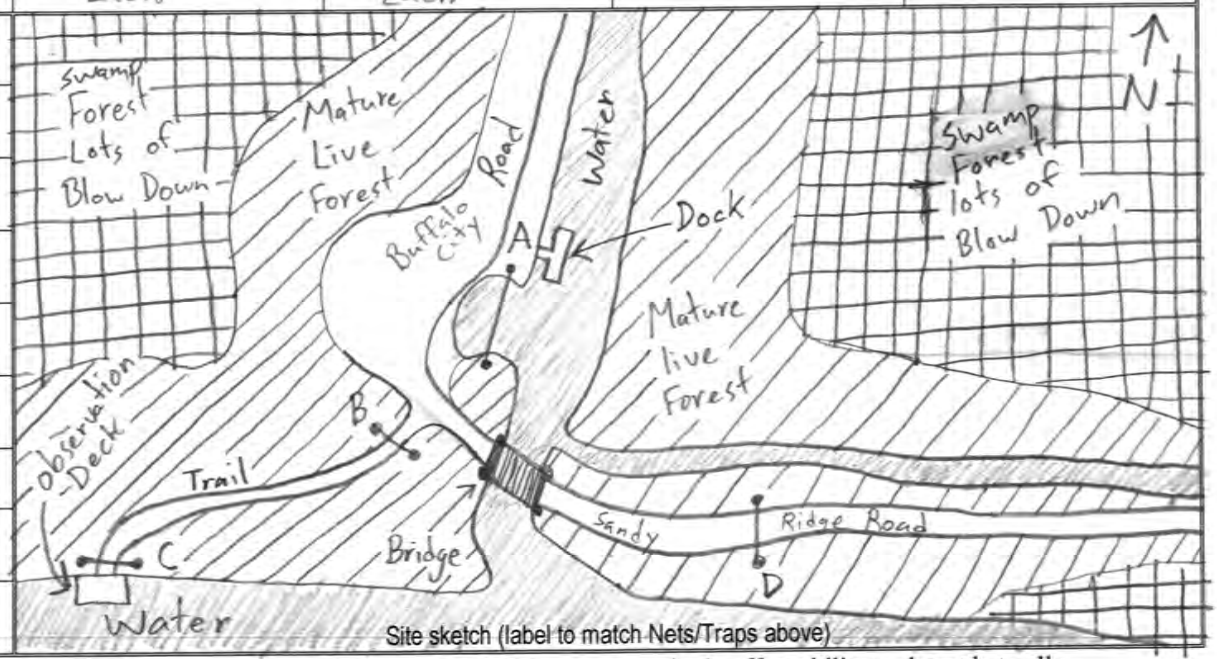
Moon Effect: New — Start: N/A — Stop: N/A

Land Use: Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*: 61 Forested

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2H-12m	1x2H-6m	1x2H-6m	1x2H-4m		
Pool size WxL	12m x 16m	N/A	N/A	N/A		
Swoop WxL	24m x UnLim	N/A	N/A	N/A		
Photo? or #	Zack	Zack	Zack	Zack		

Site Description, other than Habitat Info covered on pg 3:

Gravel road and trails leading through mixed wetland near edge of Milltail creek. Open water for bats to drink in stream channels. Souronding forest is wetland. Liquidambar styraciflua, Pinus taeda, Taxodium distichum, Morella cerifera, Acer rubrum, Magnolia virginiana, Symplocus tinctoria



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 4 Night# 1 Site Name: ARNWR4 Date: 15-Nov-2017

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1				No Bat Captures									
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	4	**Night#:**	2	**Site Name:**	ARNWR4	**Date:**	19-Nov-2017
Latitude:	35.83760	Longitude:	-75.91916					Datum: NAD-83	Elevation: -5ft	ID By:	Zack Baer
Observers:	Ian Burns							Start Time: 1650		End Time:	2153

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1653	53	1	25%	1930	47	1	0%	2153	48	2	0%

Moon Effect: New	Start: N/A Stop: N/A	**Land Use:** Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*: 61 Forested

NETS/TRAPS:	**A:** 1x2H-12m	**B:** 1x2H-6m	**C:** 1x2H-6m	**D:** 1x2H-4m	**E:**	**F:**
Pool size WxL	12m x 16m	N/A	N/A	N/A		
Swoop WxL	24m x Untim	N/A	N/A	N/A		
Photo? or #	Zack	Zack	Zack	Zack		

Site Description, other than Habitat Info covered on pg 3:

See Datasheet ARNWR4 from 18-Nov-2017

See Datasheet ARNWR4 from 18-Nov-2017

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 4 Night# 2 Site Name: ARNWR 4 Date: 19-Nov-2017

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1				No Bat Captures									
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NCMYSE	**County:**	DARE	**Site#:**	4	**Night#:**	3	**Site Name:**	ARNWR4	**Date:**	14-FEB-2018
Latitude:	35.83760	Longitude:	-75.91916	Datum:	NAD-83	Elevation:	-5ft	ID By:	Robstinson		
Observers:	Shelbi Cotham			Start Time:	1745			End Time:	2245		

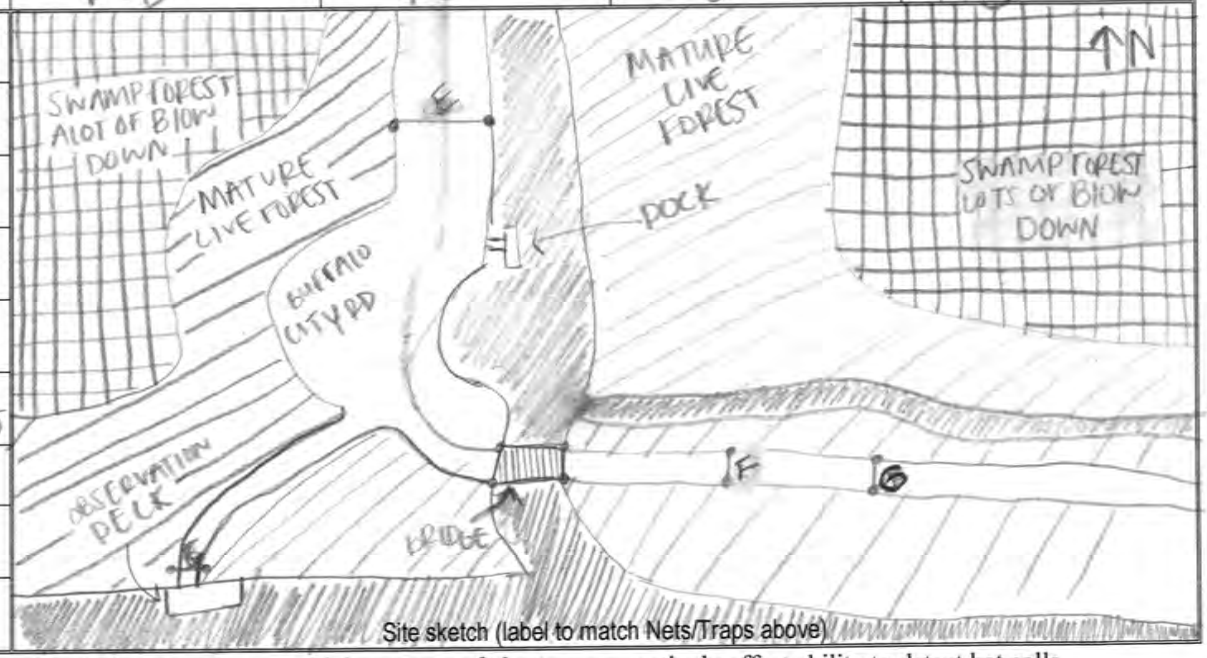
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1745	53	2	100%	2015	53	2	100	2245	50	1	0%

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WANING CRESENT	Stop: NA	61 - Forested

NETS/TRAPS:	**A:**	**B:**	**C:** 1X2HX4M	**D:** 1X2HX6M	**E:** 1X2HX9M	**F:** 1X2HX4M
Pool size WxL			N/A	N/A	N/A	N/A
Swoop WxL			NA	N/A	N/A	N/A
Photo? or #			ROB	ROB	Rob	Rob

Site Description, other than Habitat Info covered on pg 3:

Gravel road and trails leading through mixed wetland near edge of Milltail creek. Open water for boats to drink in stream channels. Surrounding forest is wetland. Liquidambar styraciflua, Pinus taeda, Taxodium distichum, Morella cerifera, Acer rubrum, Magnolia virginiana, Symplocus tinctoria



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: EASTERN NC MYSE County: Dare Site #: 4 Night# 3 Site Name: ARNWR 4 Date: 2-14-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	NO	BATS	Captured										
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	DARE	**Site#:**	4	**Night#:**	4	**Site Name:**	ARNWR4	**Date:**	15 FEB 2018
Latitude: 35.83760		Longitude: -75.91916						Datum: NAD83	Elevation: -5ft	ID By: ROB STINSON	
Observers: Shelby Cotham								Start Time: 1744		End Time: 2244	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1744	62	3	0%	1915	60	3	25%				

Moon Effect:	Start:	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
New Moon	Stop: N/A	61 forested

NETS/TRAPS:	**A:**	**B:**	**C:** 1x2Hx9M	**D:** 1x2Hx16M	**E:** 1x2Hx9M	**F:** 1x2Hx9M
Pool size WxL			N/A	N/A	N/A	N/A
Swoop WxL						
Photo? or #			ROB	ROB	ROB	ROB

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 14 FEB 2018

See data sheet from 14 FEB 2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Fathom NC MVSE County: DARE Site #: 4 Night# 4 Site Name: ARNWR4 Date: 15 FEB 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1													
2					Wind		out						
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

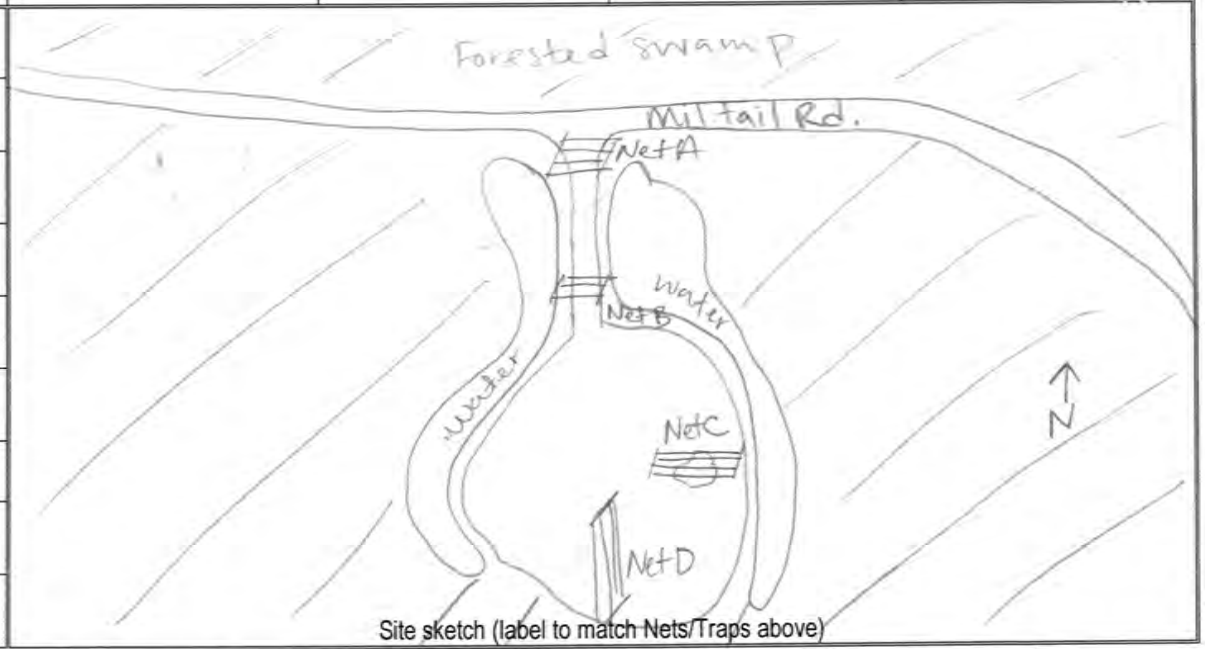
NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	5	**Night#:**	1	**Site Name:**	ARNWR5 Miltail Rd		**Date:**	11/18/17			
Latitude:	35.80357	Longitude:	-75.88571					Datum: NAD83	Elevation: 3		ID By: T.Wetzel				
Observers:	T.Wetzel, S.Cotham							Start Time: 1654			End Time: 2154				
Conditions:	Time 1708	Temp 63	Wind 2	Clouds 75%	Time 1930	Temp 62	Wind 2	Clouds 25%	Time 2200	Temp 64	Wind 3	Clouds 50			
Moon Effect: NAN-CRES	Start: —	Stop: —	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: Forested 61												

NETS/TRAPS:	**A:** 1x3H-9m	**B:** 1x2H-6m	**C:** 1x2H-12m	**D:** 1x2H-12m	**E:**	**F:**
Pool size WxL	—	2x4	5x7	—		
Swoop WxL	—	UnLim	200ft	—		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

Acer rubrum, Liquidambar styraciflua, Pinus taeda,



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 5 Night# 1 Site Name: ARNWR5 Date: 18 Nov 17

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1723	LASSEM	M	A	NR	39	—	11.25	B	1.5	— / 0	62	
2	1730	LASBOR	M	A	NR	40	—	10.0	B	1.0	— / 0	62	
3	1815	MYOSEP	M	A	NR	37	—	8.75	A	1.5	CC2103/0	61	.722
4	1845	NYCHUM	M	A	NR	34	—	11.0	B	2.0	CC2104/0	61	
5	1915	LASBOR	M	A	NR	41.5	—	10.75	B	5.0	— / 0	61	
6	1930	LASBOR	M	A	NR	39	—	9.25	A	3.0	— / 0	62	
7	2115	NYCHUM	F	A	NR	35	—	10.5	A	7.0	CC2106/0	65	
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	5	**Night#:**	2	**Site Name:**	ARNWR 5	**Date:**	21 NOV 2017
Latitude:	35.80357	Longitude:	-75.88571					Datum: NAD 83	Elevation: 3	ID By:	Ray Eaton
Observers:	Ray Eaton, Shelby Cotham							Start Time:	16:50	End Time:	18:30

Conditions:	Time	Temp	Wind	Clouds
	16:55	59°F	1	100
	18:30	56°	2	0
	—	—	—	—

Moon Effect: waxing crescent 12% | Start: — | Stop: —

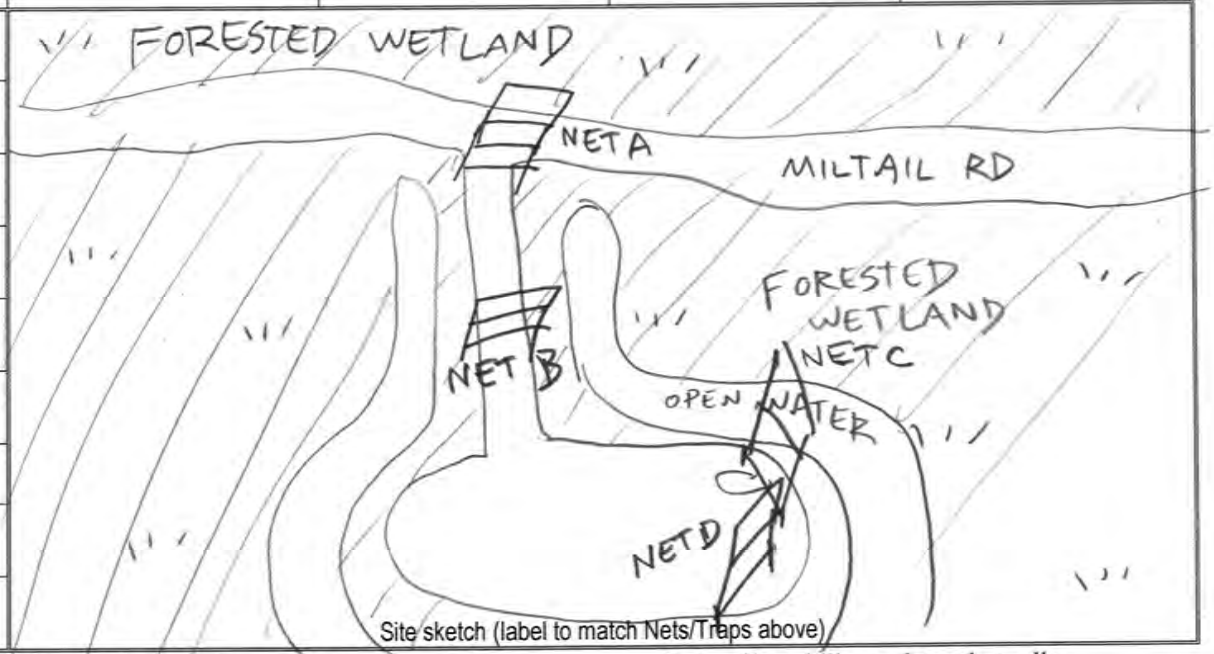
Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: Forested 61

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1×3H-9m	1×2H-6m	1×2H-12m	1×2H-12m	—	—
Pool size WxL	—	2×4	5×7	—	—	—
Swoop WxL	—	unlim.	200 ft	—	—	—
Photo? or #					—	—

Site Description, other than Habitat Info covered on pg 3:

Acer rubrum, Liquidambar styraciflua

Pinus taeda



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Dare Site #: 5 Night# 2 Site Name: ARNWR 5 Date: 21 NOV. 2017

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		NO BATS CAPTURED											
2													
3				NETS CLOSED @ 18:30									
4				BECAUSE Z. BAER CAUGHT									
5				MYSE #6									
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	5	**Night#:**	3	**Site Name:**	ARNWR5 (Mittail Rd)			**Date:**	2/14/18		
Latitude:	35.80357	Longitude:	-75.88571					Datum: NAD83		Elevation: 3		ID By: T. Wetzel			
Observers:	T. Wetzel, M. Raley							Start Time:	1745			End Time:	2245		
Conditions:	Time 1800	Temp 55	Wind 0	Clouds 100	Time 2030	Temp 54	Wind 0	Clouds 0	Time 2245	Temp 52	Wind 0	Clouds 0			
Moon Effect: WAN-CRES	Start: —	Stop: —			**Land Use:** Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*: forested wetland										

NETS/TRAPS:	**A:** 1 X 3H - 9	**B:** 1X2H - 6M	**C:** 1 X 2H - 12M	**D:** 1 X 2H - 12M	**E:**	**F:**
Pool size WxL	—	2 X 4	5 X 7	—		
Swoop WxL	—	Unlim	200 ft	—		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 18 Nov 2017

See data sheet from 18 Nov 2017

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 5 Night# 3 Site Name: ARNWR 5 Date: 2/14/18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1			No BATS CAPTURED										
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	5	**Night#:**	4	**Site Name:**	ARNWR5 (miltail Rd)	**Date:**	2/15/18				
Latitude: 35.60357		Longitude: -75.68571						Datum: NAD83		Elevation: 3		ID By: T. Wetzel			
Observers: T. Wetzel, M. Raley								Start Time: 17:45				End Time: 22:45			
Conditions:	Time 18:13	Temp 66	Wind 0	Clouds 0	Time 2035	Temp 64	Wind 2	Clouds 0	Time 2245	Temp 64	Wind 2	Clouds 100			
Moon Effect: New moon	Start: —				**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: forested wetland										
	Stop: —														

NETS/TRAPS:	**A:** 1 x 3H - 9M	**B:** 1 x 2H-6M	**C:** 1 x 2H-12M	**D:** 1 x 2H-12M	**E:** N/A	**F:** N/A
Pool size WxL	—	2x4	5x7	—	—	—
Swoop WxL	—	unl.m	200 ft	—	—	—
Photo? or #	—	—	—	—	—	—

Site Description, other than Habitat Info covered on pg 3:

See datasheet from 11/18/17

See datasheet from 11/18/17

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 5 Night# 4 Site Name: ARNWR5 Date: 2/15/18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	18:13	NYCHUM	M	A	~~SC~~	35	—	7.75	A	4M	CC2104/0	66	Banded in 2017
2	18:30	EPTFUS	M	A	NR	45	—	13.25	B	2M	NCDOT2149/0	64	
3	18:35	NYCHUM	M	A	NR	35	—	8.25	A	5M	CC2108/0	64	
4	18:35	EPTFUS	M	A	NR	45	—	12.5	A	4M	NCDOT2150/0	64	
5	18:35	EPTFUS	M	A	NR	45	—	12.75	A	3.5M	NCDOT2241/0	64	
6	19:00	NYCHUM	F	A	NR	37	—	10.75	A	6.5M	CC2109 /0	64	
7	19:30	EPTFUS	F	A	NR	47	—	15.25	A	2.5M	NCDOT2242/0	64	
8	2055	EPTFUS	M	A	NR	47	—	14.5	B	3.5M	NCDOT2243/0-P	65	
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSF	**County:**	Dare	**Site#:**	5	**Night#:**	5	**Site Name:**	ARNWR 5	**Date:**	2/16/18
Latitude:	35.80357	Longitude:	-75.88571					Datum: NAD83	Elevation: 3	ID By:	T. Wetzel
Observers:	T. Wetzel, M. Raley							Start Time:	17:46	End Time:	19:45

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:46	64	1	100	19:45	64	1	100	—	—	—	—

Moon Effect:	Start:	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Wax Cres	Stop: —	forested wetland

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1X3H-9m	1X2H-6m	1X2H-12m	1X2H-12m	N/A	N/A
Pool size WxL	—	2x4	5x7	—	—	—
Swoop WxL	—	unlim	200m	—	—	—
Photo? or #	—			—	—	—

Site Description, other than Habitat Info covered on pg 3:

See datasheet from 11/18/17

See data sheet from 11/18/17

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 5 Night# 5 Site Name: ~~AR~~ NWR 5 Date: 2/16/18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	18:28	EPT FUS	m	A	NR	45	—	13.5	B	4m	NCDOT2149/0	64	Banded 2/15/18
2	18:28	EPT FUS	F	A	NR	44	—	15.0	B	3.5m	NCDOT2244/0	64	
3													
4					Rain out								
5					@ 1945								
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	5	**Night#:**	6	**Site Name:**	ARNWRS	**Date:**	2/17/18
Latitude:	35.80357	Longitude:	-75.88571	Datum:	NAD83	Elevation:	3	ID By:	T. Wetzel		
Observers:	T. Wetzel, M. Raley			Start Time:	17:47			End Time:	2056		

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1747	50	0	100	2030	50	0	100	2056	50	1	100

Moon Effect:	Start:	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
waX Cres	Stop:	forested wetland

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1X3H-9m	1X2H-6m	1X2H-12m	1X2H-12m	N/A	N/A
Pool size WxL	—	2X4	5X7	—	—	—
Swoop WxL	—	unk. m	200 ft	—	—	—
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

foggy

Closed nets early because weather did not improve as it was predicted to

See night 1 datasheet

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Dare Site #: 5 Night# 6 Site Name: ARNWR5 Date: 2/17/18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1													
2													
3				NO	CAPTURES								
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	5	**Night#:**	7	**Site Name:**	ARNWR5	**Date:**	2/19/18
Latitude:	35.80357	Longitude:	-75.88571	Datum:	NAD83	Elevation:	3	ID By:	T. Wetzel		
Observers:	T. Wetzel, M. Raley			Start Time:	17:49			End Time:	22.49		

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:49	62	0	0	20:51	60	0	0	22.49	57	0	0

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Wan Cres	Stop:	Forested Wetland

NETS/TRAPS:	A:	B:	C:	D:	E:	F:
	1X3H-9M	1X2H-6m	1X2H-12m	1X2H-12m		
Pool size WxL	—	2X4	5X7	—		
Swoop WxL	—	unlim	200ft	—		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See datasheet from 11/18/17

See datasheet from 11/18/17

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 5 Night# 7 Site Name: ARNWRS Date: 2/19/18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	18:55	MYOSEP	M	A	NR	34	—	6.0	B	2M	CC2110/0	61	Non Temp Sensitive Transmitter 172.741
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

ARNWR5

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	6	**Night#:**	2	**Site Name:**	ARNWR6	**Date:**	1/24/2018
Latitude:	35.831415	Longitude:	-75.904015					Datum: NAD83	Elevation: 5	ID By:	T. Wetzel
Observers:	T. Wetzel, A. Dart-Padover							Start Time: 1720		End Time:	1945

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1720	50	0	0%	1945	38	0	0%	—	—	—	—

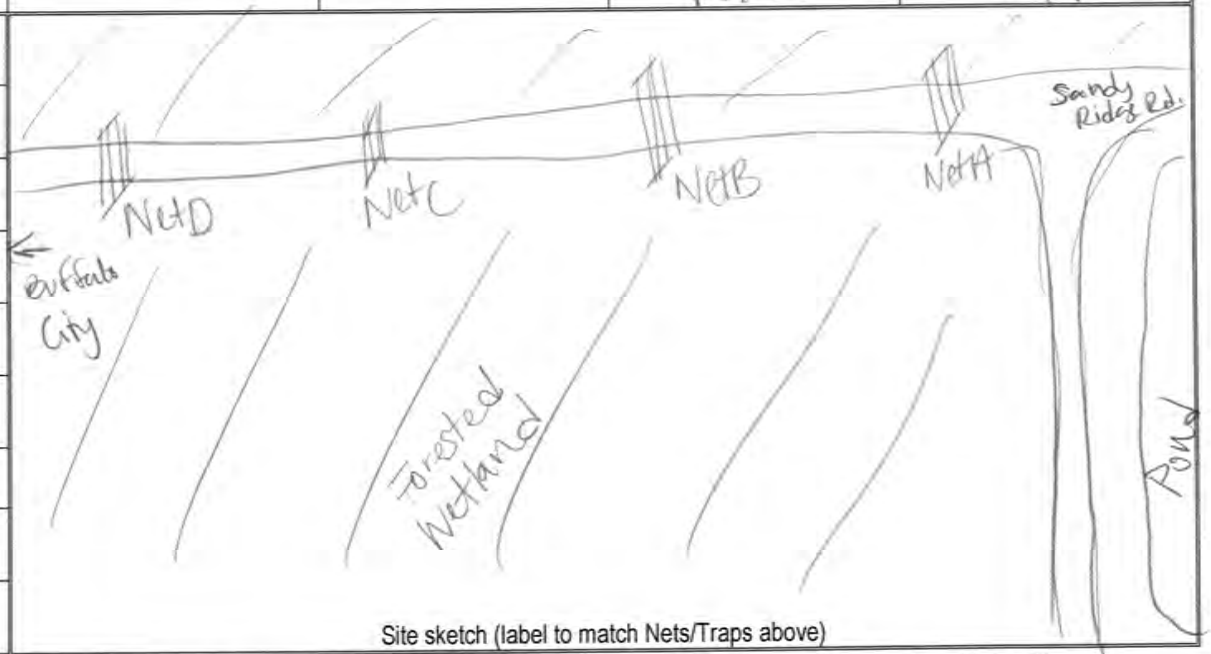
Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*:
Wax Cres	N/A	Forested 6/
	Stop: N/A	

NETS/TRAPS:	A:	B:	C:	D:	E:	F:
	1x2H-6m	1x2H-9m	1x2H-6m	1x2H-6m	N/A	N/A
Pool size WxL	NA	NA	NA	NA	N/A	N/A
Swoop WxL	NA	NA	NA	NA	N/A	N/A
Photo? or #					N/A	N/A

Site Description, other than Habitat Info covered on pg 3:

See datasheet from: 11/21/17

Closed nets @ 2000, due to temperature dropping below 40°F



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 6 Night# 2 Site Name: ARNWR06 Date: 24 Jan 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1													
2			NO BATS CAPTURED										
3				Cold out @ 1945									
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	6	**Night#:**	3	**Site Name:**	ARNWR06	**Date:**	27 Jan 2018
Latitude:	35.831415	Longitude:	-75.904015					Datum: NAD-83	Elevation: 5	ID By: T. Wetzel	
Observers:	T. Wetzel, A. Dart-Padover							Start Time: 1726		End Time: 2226	

Conditions:	Time	Temp	Wind	Clouds
	1726	57	0	75%
	2026	50	0	100%
	2226	52	0	100%

Moon Effect: Wax Gib	Start: 1726 Stop: 1905

Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: Forested 61

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2H-6m	1x2H-9m	1x2H-6m	1x2H-6m	N/A	N/A
Pool size WxL	N/A	N/A	N/A	N/A	N/A	N/A
Swoop WxL	N/A	N/A	N/A	N/A	N/A	N/A
Photo? or #	N/A	N/A	N/A	N/A	N/A	N/A

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 11/21/17

See sketch from 1/24/2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 6 Night# 3 Site Name: ARNWR6 Date: 27Jan2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1					No Bat Captures								
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	6	**Night#:**	1	**Site Name:**	ARNWR 6	**Date:**	11/21/2017
Latitude:	35.831415	Longitude:	-75.904015					Datum: NAD83	Elevation: 5	ID By:	T. Wetzel
Observers:	T. Wetzel, K. Esbler							Start Time:	1653	End Time:	1930

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1700	58	0	100	1930	55	0	100	—	—	—	—

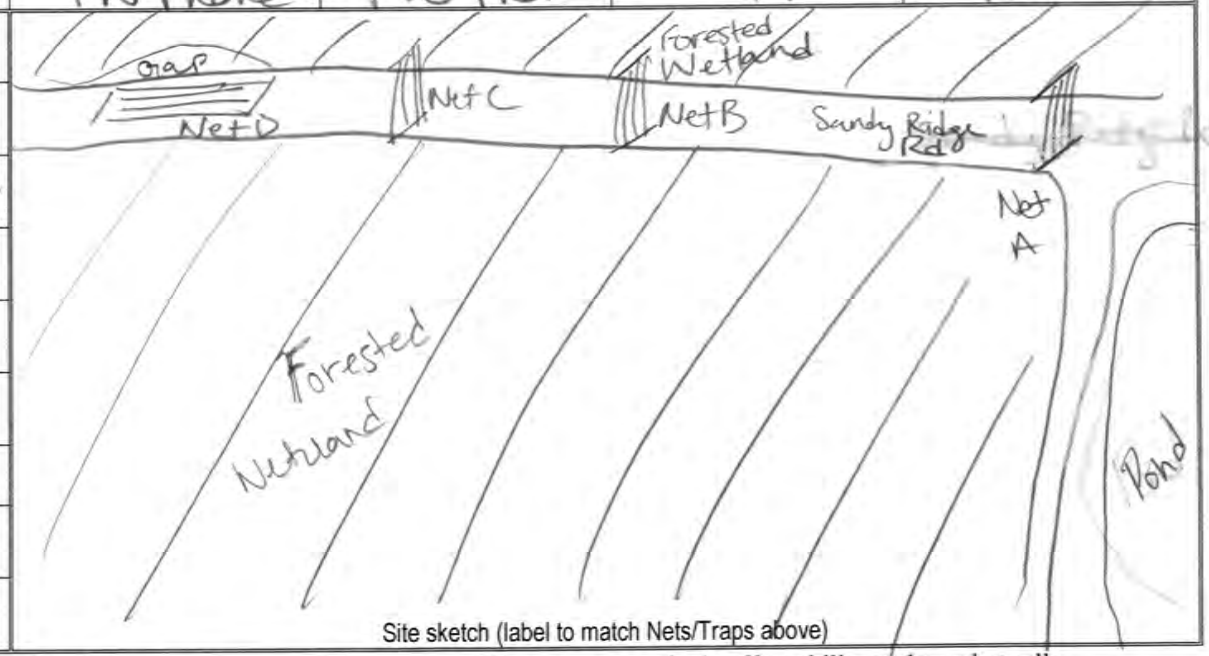
Moon Effect: WAX-GIB — Start: — Stop: —

Land Use: Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*: Forested G1

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1 x 2h - 6m	1 x 2h - 9m	1 x 2h - 6m	1 x 2h - 9m	N/A	N/A
Pool size WxL	—	—	—	—	N/A	N/A
Swoop WxL	—	—	—	—	N/A	N/A
Photo? or #	TW Phone	TW phone	TW Phone	TW Phone	N/A	N/A

Site Description, other than Habitat Info covered on pg 3:

Site is along an old portion of Sandy Ridge Rd. that is no longer maintained. Forested Wetland on both sides of road, roost trees identified south of road in swamp.



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 6 Night# | Site Name: ARNWR 6 Date: 11/21/2017

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1915	MYSE	M	A	TD	36	—	8.25	B	1.5	CC21070	55	
2													closed site early because 4th MYSE was tagged
3					Closed nets				@	1930			
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	6	**Night#:**	4	**Site Name:**	ARNWR6	**Date:**	2/14/2018
Latitude:	35.831415	Longitude:	-75.904015					Datum: NAD83	Elevation: 5	ID By:	G. Janos
Observers:	G. Janos, H. Braunreiter							Start Time: 1743		End Time: 2243	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1800	53	1	100	2030	52	0	50	2300	49	0	0

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Wax-Cres	Stop: N/A	Forested Wetland 61

NETS/TRAPS:	**A:** 1x2h-6m	**B:** 1x2h-9m	**C:** 1x2h-6m	**D:** 1x2h-4m	**E:** N/A	**F:** N/A
Pool size WxL	–	–	–	–	–	–
Swoop WxL	–	–	–	–	–	–
Photo? or #	–	–	–	–	–	–

Site Description, other than Habitat Info covered on pg 3:

See datasheet from 11/21/2017

See sketch from 1/24/2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 6 Night# 4 Site Name: ARNWR6 Date: 2/14/18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1													
2						No Captures							
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**		**Night#:**	5	**Site Name:**	ARNWR6	**Date:**	2/15/18
Latitude:	35.831415	Longitude:	-75.904015					Datum: NAD83	Elevation: 5	ID By:	G. Janos
Observers:	G. Janos, H. Braunreiter							Start Time: 1744		End Time:	2044

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1800	67	1	75	2015	60	1	0	2245	62	2	100

Moon Effect:	Start:	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Wax-Cres	Stop:	Forested Wetland G1

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2h-6m	1x2h-9m	1x2h-6m	1x2h-4m	N/A	N/A
Pool size WxL	—	—	—	—	—	—
Swoop WxL	—	—	—	—	—	—
Photo? or #	—	—	—	—	—	—

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 11/21/17

See sketch from 1/24/18

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 6 Night# 5 Site Name: ARNWR6 Date: 15 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1815	MYSE	M	A	NR	35	0	5.75	D	4.0m	CC0101 / 0	67	Too small to transmitter
2	1830	EPFU	M	A	N	44	0	13.75	A	0.5m	CC0102 / 0	67	
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Estuary NC MYSE	**County:**	DARE	**Site#:**	6	**Night#:**	6	**Site Name:**	ARNWR6	**Date:**	2-16-18
Latitude:	35.831415	Longitude:	-75.904015					Datum: NAD83	Elevation: 5	ID By:	G Janos
Observers:	H. Braunreiter							Start Time: 1745		End Time: 1910	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1745	68	0	100	1910	63	0	100	—	—	—	—

Moon Effect:	Start: 1745	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Way Ctes	Stop: 1840	Forested 61

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2h-6m	1x2h-9m	1x2h-6m	1x2h-4m	N/A	N/A
Pool size WxL	—	—	—	—	—	—
Swoop WxL	—	—	—	—	—	—
Photo? or #	—	—	—	—	—	—

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 11/21/18

See sketch from 1/24/18

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: DARE Site #: 6 Night# 6 Site Name: ARNWR6 Date: 16 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1800	CORA							B	0.5m			ESCAPED FROM HAND
2	1822	EPFU	M	A	NR	c/c		12.75	A	1.0m	cc#279		
3	1837	LABO	M	A	NR	40		10.0	A	2.M			
4													
5					Rainout @ 1910								
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	6	**Night#:**	7	**Site Name:**	ARNWR 6	**Date:**	2/17/18
Latitude:	35.831415	Longitude:	-75.904015					Datum: NAD 83	Elevation: 5ft	ID By:	G. Janos
Observers:	G. Janos, H. Braunreiter							Start Time: 1746		End Time: 2100	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1745	48	0	100	2015	48	0	100	2100	48	0	100

Moon Effect:	Start:	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Wax-Cres	Stop:	Forested 61

NETS/TRAPS:	**A:** 1x2h-6m	**B:** 1x2h-9m	**C:** 1x2h-6m	**D:** 1x2h-4m	**E:** N/A	**F:** N/A
Pool size WxL	—	—	—	—	—	—
Swoop WxL	—	—	—	—	—	—
Photo? or #	—	—	—	—	—	—

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 11/21/2017

See sketch from 1/24/18

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Dare Site #: 6 Night# 7 Site Name: ARNWR6 Date: 2/17/18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1													
2						Cold out @ 2100							
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	6	**Night#:**	8	**Site Name:**	ARNWR6	**Date:**	2/19/18
Latitude:	35.831415	Longitude:	-75.904015					Datum: NAD 83	Elevation: 5	ID By:	G. Janos
Observers:	G. Janos, I Burns							Start Time: 1748		End Time:	2248

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1800	62	0	75	2020	61	0	100	2240	64	1	0

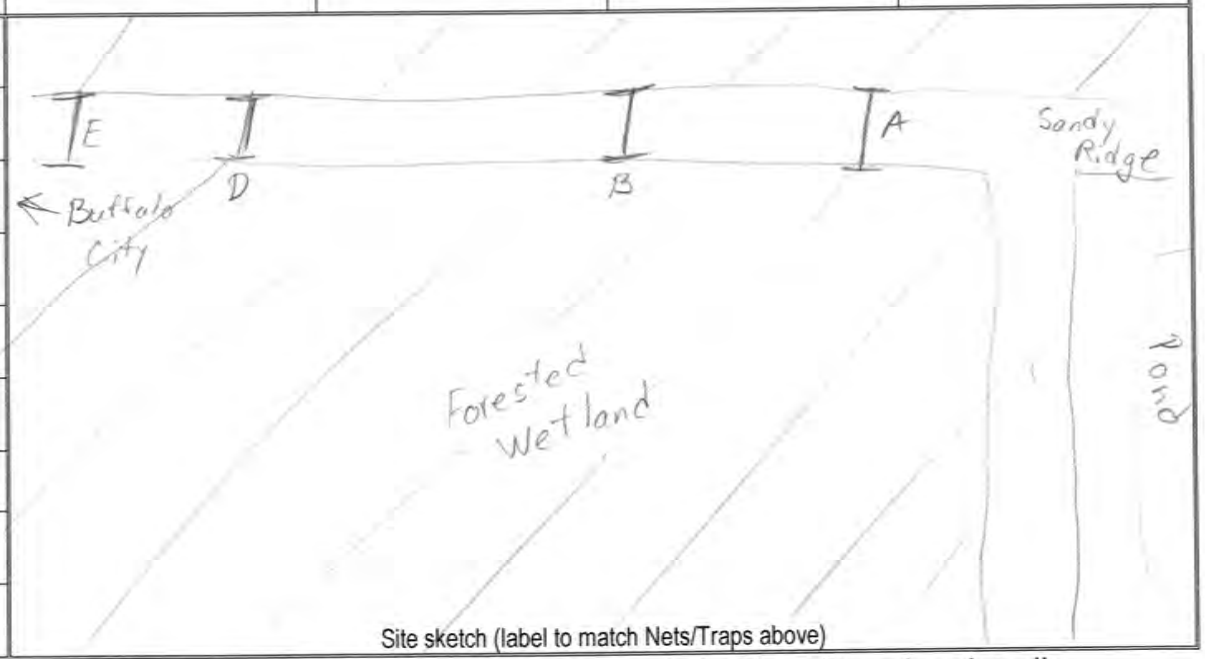
Moon Effect:	Start:	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Wax-Cres	Stop:	Forested 61

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2h-6m	1x2h-9m	NA	1x2h-4m	1x2h-6m	NA
Pool size WxL	—	—	—	—	—	—
Swoop WxL	—	—	—	—	—	—
Photo? or #	—	—	—	—	—	—

Site Description, other than Habitat Info covered on pg 3:

See datasheet

Groom 11/21/18



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 6 Night# 8 Site Name: ARNWR6 Date: 2/19/18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1815	CORA	M	A	TD	41	0	7.75	A	5.0m	CC0275	61	
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

ARNWR0

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	7	**Night#:**	1	**Site Name:**	ARNWR7	**Date:**	24 Jan 2018
Latitude: 35.82521		Longitude: -75.89541						Datum: NAD83	Elevation: 5	ID By: Taylor Culbertson	
Observers: Daniel Batin								Start Time: 1723		End Time: 1930	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1723	43	0	0	1930	33°F	0	0	—	—	—	—

Moon Effect: 1st quarter — Start: 1800 — Stop: 1930

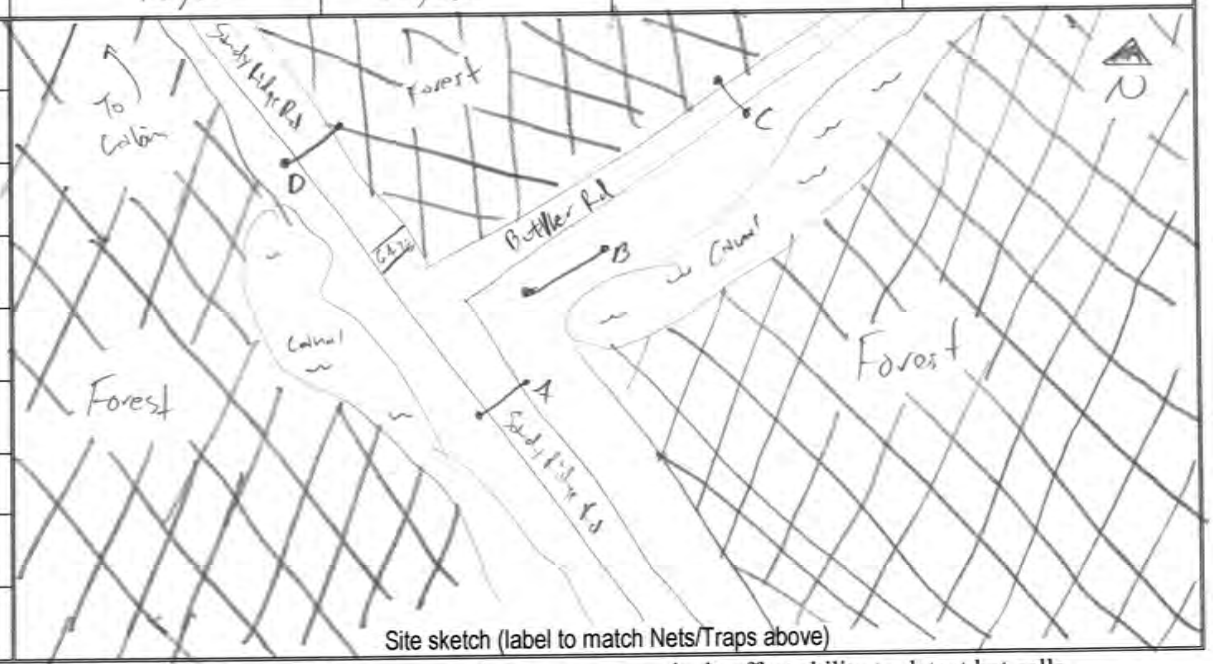
Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: Forested wetland 61

NETS/TRAPS:	**A:** 1 x 2H - 9m	**B:** 1 x 2H - 12m	**C:** 1 x 2H - 9m	**D:** 1 x 2H - 6m	**E:**	**F:**
Pool size WxL	N/A	N/A	N/A	N/A		
Swoop WxL	N/A	N/A	N/A	N/A		
Photo? or #	Taylor	Taylor	Taylor	Taylor		

Site Description, other than Habitat Info covered on pg 3:

Mixed forest with gravel roads leading to old cabin, before gate at intersection. Brackish canals along roads, cluttered forest beyond roads.

Dominant Vegetation: Quercus falcata, Acer rubrum, Pinus taeda



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 7 Night# 1 Site Name: ARNWR7 Date: 24 Jan 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		NO CAPTURES											
2		Cold out @ 1930									- 33°F		
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	EasternNCMYSE	**County:**	DARE	**Site#:**	7	**Night#:**	2	**Site Name:**	ARNWR7	**Date:**	27 Jan 2018
Latitude:	35.82521	Longitude:	-75.89541					Datum: NAD83	Elevation: 5ft	ID By:	Taylor Culbertson
Observers:	Shelby Cotnam							Start Time:	1726	End Time:	2226

Conditions:	Time	Temp	Wind	Clouds
	1726	57	1	25%
	2000	47	0	100%
	2226	47	1	100%

Moon Effect: WAX GIB	Start: 1800	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: Forested Wetland
	Stop: 2100	

NETS/TRAPS:	**A:** 1x2Hx9M	**B:** 1x2Hx12M	**C:** 1x2Hx9M	**D:** 1x2Hx6M	**E:**	**F:**
Pool size WxL	N/A	N/A	N/A	N/A		
Swoop WxL	N/A	N/A	N/A	N/A		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See data sheet for 24 JAN 2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

NO CAPTURES

Project: Eastern NC MYSE County: DARE Site #: 7 Night# 2 Site Name: ~~ARNWR~~ 7 Date: 27 JAN 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1					No Captures								
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

A2NW207

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	08	**Night#:**	1	**Site Name:**	ARNWR08	**Date:**	14 Feb 2018
Latitude:	35.77732	Longitude:	-75.82785					Datum: NAD 83	Elevation: 3 m	ID By:	T. Culbertson
Observers:	I. Burns							Start Time:	1745	End Time:	2245

Conditions:	Time	Temp	Wind	Clouds
	1745	55	0	100
	2015	50	0	100
	2245	47	0	0

Moon Effect: WAX CRES — Start: NA — Stop: NA

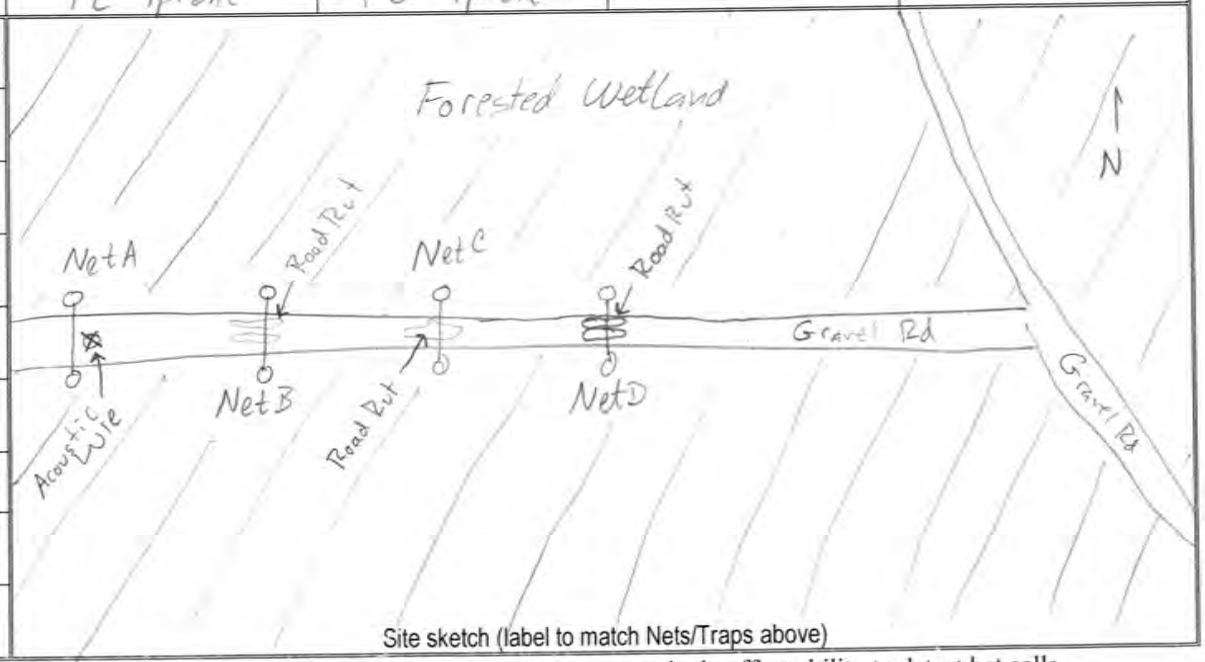
Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: Forested wetland 61

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1 x 2H - 6m	1 x 2H - 6m	1 x 2H - 6m	1 x 2H - 6m		
Pool size WxL	NA	2m x 5m	4m x 6m	2m x 12m		
Swoop WxL	NA	5.5m x UNLIM	6m x UNLIM	5.5 x UNLIM		
Photo? or #	TC iphone	TC iphone	TC iphone	TC iphone		

Site Description, other than Habitat Info covered on pg 3:

Straight gravel rd with multiple ruts through Forested wetland.

Dom ves: Acer rubrum, Liq. dambar styraciflua, Persea palustris, Pinus taeda, Nyssa biflora, taxodium distichum



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 08 Night# 1 Site Name: ARNWR08 Date: 14 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1					No Captures								
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	08	**Night#:**	2	**Site Name:**	ARNWR08	**Date:**	15 Feb 2018
Latitude:	35.77732	Longitude:	-75.82785					Datum: NAD83	Elevation: 3m	ID By:	T. Colbertson
Observers:	I. Burns							Start Time:	1745	End Time:	2245

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1745	65	0	0	2015	58	1	75	2245	61	2	100

Moon Effect: WAX CRES	Start: NA	**Land Use:** Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*:	
	Stop: NA	Forested G1	

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2H-6m	1x2H-6m	1x2H-6m	1x2H-6m		
Pool size WxL	NA	2m x 5m	4m x 6m	2m x 12m		
Swoop WxL	NA	5.5m x UNLIM	6m x UNLIM	5.5m x UNLIM		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See datasheet from 14 Feb 2018

- See datasheet from 14 Feb 2018
- Acoustic Lure not deployed 15 Feb 2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 08 Night# 2 Site Name: ARNWR08 Date: 15 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1856	LASBOR	~~M~~	–	–	–	–	–	C	2.5m	–	59	Net escape
2	1935	NYCHUM	M	A	NR	36	–	7.75	C	2m	CC0943	58	–
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	EASTERN NC MYSE	**County:**	DARE	**Site#:**	08	**Night#:**	3	**Site Name:**	ARNWR08			**Date:**	20 Feb 2018		
Latitude:	35.77732	Longitude:	-75.82785					Datum: NAD83	Elevation: 3M			ID By: T. Culbertson			
Observers:	H. Braunreiter							Start Time:	1749			End Time:	2249		
Conditions:	Time 1749	Temp 67	Wind 1	Clouds 0	Time 2019	Temp 61	Wind 0	Clouds 0	Time 2249	Temp 59	Wind 1	Clouds 0			
Moon Effect: Wax Crescent	Start: 1845	Stop: 2130			**Land Use:** Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*: FORESTED 63										

NETS/TRAPS:	**A:** 1X2H-6M	**B:** 1X2H-6M	**C:** 1X2H-6M	**D:** 1X2H-6M	**E:**	**F:**
Pool size WxL	NA	2MX5M	4MX6M	2MX12M		
Swoop WxL	NA	5.5MX UNLIM	6MX UNLIM	5.5X UNLIM		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See net night 2 (14 Feb)

See net night 1 (14 Feb 2018)
Acoustic Lure not deployed

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: DARE Site #: 8 Night# 3 Site Name: ARNWR08 Date: 20 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / TD / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1					No Captures								
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYE	**County:**	Dare	**Site#:**	08	**Night#:**	4	**Site Name:**	ARNWR08	**Date:**	21 Feb 2018
Latitude:	35.77732	Longitude:	75.82785					Datum: NAD83	Elevation: 3 m	ID By:	T. Colbertson
Observers:	M. Raley							Start Time:	1750	End Time:	2250

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1750	68	1	0	2020	59	0	0	2251	57	0	0

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAX CRES	1830	Forested 63
	Stop: 2230	

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2H-6m	1x2H-6m	1x2H-6m	1x2H-6m		
Pool size WxL	NA	2m x 5m	4m x 6m	2m x 12m		
Swoop WxL	NA	5.5 x UNLIM	6m x UNLIM	5.5 x UNLIM		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See datasheet from 14 Feb 2018

- See datasheet from 14 Feb 2018
- Acoustic Lure not deployed

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Dare Site #: 08 Night# 4 Site Name: ARNWR 08 Date: 21 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1					No Captures								
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

AZNW208

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	DARE	**Site#:**	9	**Night#:**	1	**Site Name:**	ARNWR09	**Date:**	16FEB2018
Latitude:	35.79123	Longitude:	-75.87230					Datum: NAD 83	Elevation: -7ft	ID By:	Rob Stinson
Observers:	Shelby Cotnam							Start Time: 1745		End Time:	1945

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1745	63	2	100%	1915	56	1	100%		—	—	

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*:
NAY CFES	N/A	lol- forested
	Stop: N/A	

NETS/TRAPS:	A: 1x2Hx9m	B: 1x2Hx6m	C: 1x2Hx6m	D: 1x2Hx4m	E:	F:
Pool size WxL	N/A	N/A	2x7m	1x6m		
Swoop WxL			unlimited	unlimited		
Photo? or #	Rob	ROB	ROB	ROB		

Site Description, other than Habitat Info covered on pg 3:

Gravel road with no unmaintained side road dead ending in a mixed forest. Open water to walk to drink from in channels and road ruts. Surrounding forest is wetland. Pinus taeda. Persea palustris, Chamaecyparis thyoides *swamp bay. Atlantic white cedar

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: NCDOT MYSE County: DARE Site #: 9 Night# 1 Site Name: ARNWR09 Date: 2/16/18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	RAIN OUT @ 1945												
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	EasternNCMyse	**County:**	DARE	**Site#:**	9	**Night#:**	2	**Site Name:**	ARNWR09	**Date:**	17FEB2018
Latitude: 35.79123		Longitude: -75.87230						Datum: NAD83	Elevation: -7ft	ID By: Rob Stinson	
Observers: Shelby Cotnam								Start Time: 1746		End Time: 2100	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1746	48	0	100%	2016	47	1	ic%	—	—	—	—

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAX CRES	Stop: N/A	cel-forested

NETS/TRAPS:	A: 1X2HX9M	B: 1X2HX6M	C: 1X2HX6M	D: 1X2HX4M	E:	F:
Pool size WxL	N/A	N/A	2x7m	1x6m		
Swoop WxL			unlimited	unlimited		
Photo? or #	POB	POB	POB	POB		

Site Description, other than Habitat Info covered on pg 3:

See datasheet from 16FEB2018

See datasheet from16FEB2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSF County: DARE Site #: 09 Night# 2 Site Name: ARNWR09 Date: 17 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		COLD out											
2		@ 2100											
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	EasternNCMon	**County:**	DARE	**Site#:**	09	**Night#:**	3	**Site Name:**	NRNWR09	**Date:**	19 Feb 2018
Latitude:	35.79123	Longitude:	-75.87230					Datum: NAD83	Elevation: ~7 ft	ID By:	Rob Stinson
Observers:	Shelby Cotham							Start Time: 1748		End Time:	2248

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1748	59	1	25%	2015	59	1	100%	2248	59	1	0%

Moon Effect: WAX CRES	Start: N/A	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:	
	Stop: N/A	Cel-forested	

NETS/TRAPS:	**A:** 1x2Hx9m	**B:** 1x2Hx6M	**C:** 1x2Hx6M	**D:** 1x2Hx4m	**E:**	**F:**
Pool size WxL	N/A	N/A	2x7m	1x6m		
Swoop WxL			unlimited	unlimited		
Photo? or #	Rob	Rob	Rob	Rob		

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 11eFEB2018

See data sheet from 11eFeb2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Dare Site #: 9 Night# 3 Site Name: ARNWR09 Date: 2/19/18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	2031	MYOSEP	M	A	NR	35	0	7.0	C	4	CC0711	60°	172.302(a) / Robo's Bsle
2	2040	LASBOR	〃	〃	〃	—	—	—	A	1	—	60°	Escaped
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	DARE	**Site#:**	09	**Night#:**	4	**Site Name:**	ARNWR09	**Date:**	20 FEB 18
Latitude:	35.79123	Longitude:	-75.87730	Datum:	NAD83	Elevation:	~7FT	ID By:	Rob Stinson		
Observers:	Ian Burns			Start Time:	1749			End Time:	2249		

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1749	70	1	0%	2015	64	1	0%	2249	60	7	0%

Moon Effect:	Start:	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
waxcres	Stop:	G1 - Forested

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1X2H X9M	1X2H X6M	1X2H X6M	1X2H X4M		
Pool size WxL	N/A	N/A	2X7m	1X6m		
Swoop WxL			unlimited	unlimited		
Photo? or #	Rob	Rob	Rob	Rob		

Site Description, other than Habitat Info covered on pg 3:

See sheet from 16 Feb 2018

See datasheet from 16 Feb 2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NCMYSE County: Dare Site #: 9 Night# 4 Site Name: ARNWR09 Date: 7/20/18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1925	EPTFUS	F	A	NR	47	0	14	A	2.5	CC0725/0	64	
2	2124	EPTFUS	M	A	NR	45	0	12.75	A	3	CC0724/0	62	
3	2300	Corraf	F	A	NR	43	0	8.75	D	1	CC1055	60	
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

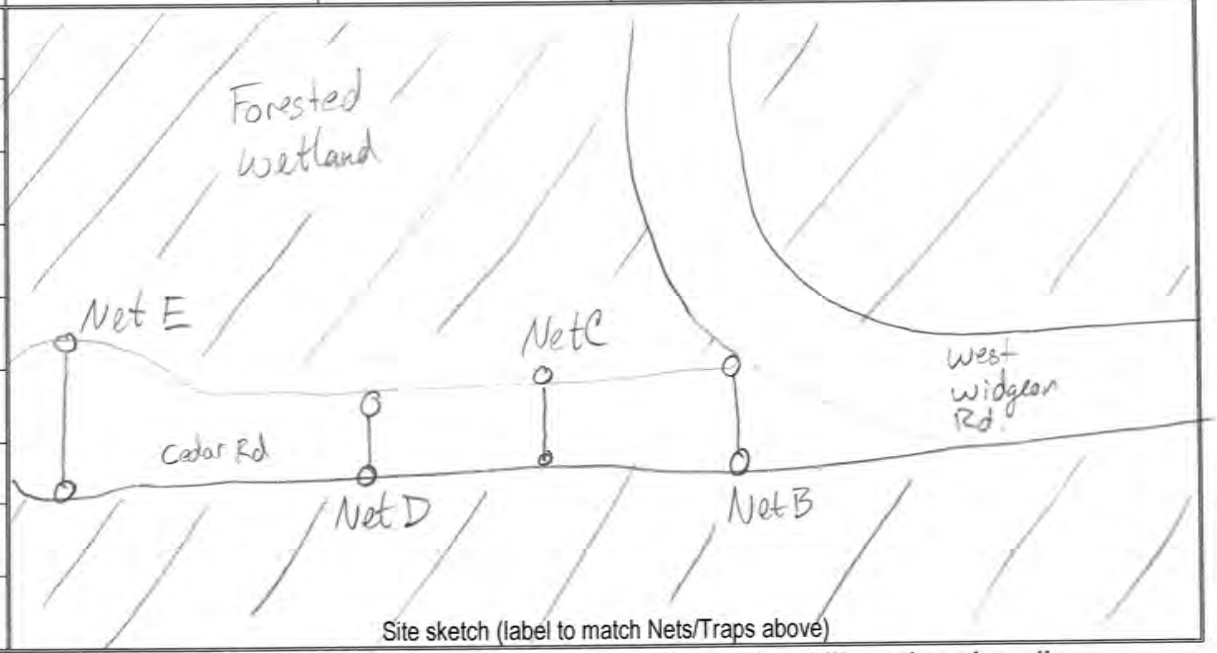
Project:	Easton NC MYSE	**County:**	DARE	**Site#:**	09	**Night#:**	5	**Site Name:**	ARNWR09			**Date:**	22Feb2018		
Latitude:	35.79123	Longitude:	-75.87230					Datum: NAD83		Elevation: -7ft		ID By: T. Culbertson			
Observers:	M. Raley							Start Time:	1752			End Time:	2304		
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds			
	1752	70	0	0	2022	55	0	0	2252	51	1	100			

Moon Effect: WAX CRES	Start: 1830	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: G1 - Forested				
	Stop: 2130					

NETS/TRAPS:	**A:**	**B:** 1x2H-6m	**C:** 1x2H-6m	**D:** 1x2H-4m	**E:** 1x2H-12m	**F:**
Pool size WxL		NA	2x7m	1x6m	NA	
Swoop WxL		NA	Unlimited	Unlimited	NA	
Photo? or #					TC phone	

Site Description, other than Habitat Info covered on pg 3:

See site description from 16Feb2018



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: DARE Site #: 09 Night# 5 Site Name: ARNWR09 Date: 22 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1915	NYCHUM	F	A	NR	38	-	11	E	3	CC1724	62°	
2	2304	MYOSEP	M	A	NR	35	-	5.75	D	2.5	CC1725	51°	- Not Radio Tagged - too light. -Swabbed
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	10	**Night#:**	1	**Site Name:**	ARNWR 10	**Date:**	16 Feb 2018
Latitude:	35.79755	Longitude:	-75.85710					Datum: NAD83	Elevation: 5m	ID By:	T Culbertson
Observers:	L. Burns							Start Time: 1745		End Time:	2015

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1745	65	2	100	2015	58	1	100	—	—	—	—

Moon Effect: Wax Cres — Start: NA — Stop: NA

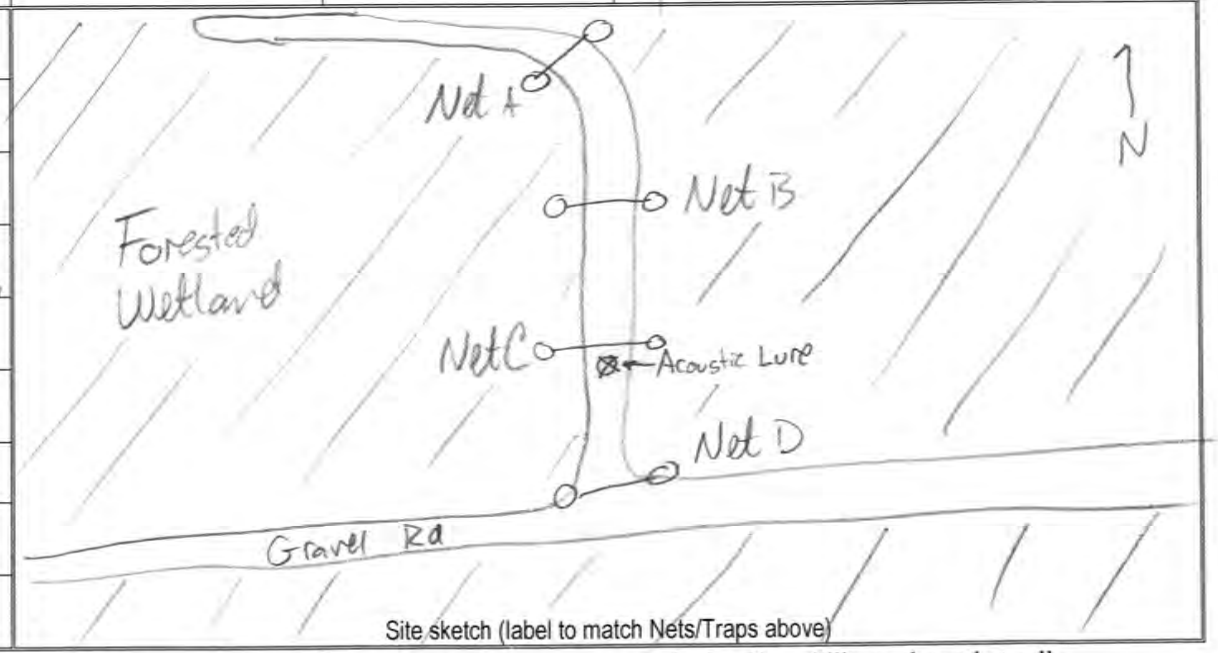
Land Use: Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*:
Forested 61

NETS/TRAPS:	**A:** 1x2H-6m	**B:** 1x2H-4m	**C:** 1x2H-4m	**D:** 1x2H-6m	**E:**	**F:**
Pool size WxL	N/A	N/A	N/A	N/A		
Swoop WxL	N/A	N/A	N/A	N/A		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

Gravel road that travels through forested wetlands

Dom Veg Acer rubrum, Liquidambar Styraciflua, Pinus taeda, Chamaecyparis thyoides, Persea palustris, Morella cybera, Ilex sp., Lyonia ligustrina, Gordonia lasianthus



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: DARE Site #: 10 Night# 1 Site Name: ARNWR 10 Date: 16 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		RAIN	O	U	T								
2		@2015											
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	DARE	**Site#:**	10	**Night#:**	2	**Site Name:**	ARNWR 10	**Date:**	17 Feb 2018
Latitude:	35.79755	Longitude:	75.85710					Datum: NAD83	Elevation: 5M	ID By:	T. Colbertson
Observers:	H. Braunreiter							Start Time:	1746	End Time:	2105

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1746	49	0	100	2016	49	1	100	2105	49	0	100

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*:
WAX CRESCENT	Stop: NA	FORESTED 63

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1X2H-6M	1X2H-4M	1X2H-4M	1X2H-6M		
Pool size WxL	NA	NA	NA	NA		
Swoop WxL	NA	NA	NA	NA		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

see 16 Feb 2018

see data sheet from 16Feb2018 (net night #1)

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

COLDED OUT

Page _____ of _____

Project: Eastern NC MYSE County: DARE Site #: 10 Night# 2 Site Name: ARNWR10 Date: 17 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1					Cold air								
2													
3					@ 2105								
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	DARE	**Site#:**	10	**Night#:**	3	**Site Name:**	ARNWR 10	**Date:**	19 Feb 2018
Latitude: 35.79755		Longitude: 75.85710						Datum: NAD83	Elevation: 5M	ID By: T. Culbertson	
Observers: H. Braunreiter (other)								Start Time: 1749		End Time: 2249	

Conditions:	Time	Temp	Wind	Clouds
	1749	58	2	100
	2019	58	0	100
	2249	58	1	75

Moon Effect: Wax - Crescent — Start: NA — Stop: NA

Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: FORESTED wetland 61

NETS/TRAPS:	**A:** 1X2H-6M	**B:** 1X2H-4M	**C:** 1X2H-4M	**D:** 1X2H-6M	**E:**	**F:**
Pool size WxL	NA	NA	NA	NA		
Swoop WxL	NA	NA	NA	NA		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See 16 Feb 2018

Caught woodcock in net C @ 1820

See data sheet from 16 Feb 2018 (net night #1)

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: DARE Site #: 10 Night# 3 Site Name: ARNWR 10 Date: 19 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / TD/NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1832	MYOSEP	M	A	NR	34	—	6.0	A	2.5	CC1723/6-P	51°	Swabbed TC Phone
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	10	**Night#:**	4	**Site Name:**	ARNWR10	**Date:**	21 Feb 18
Latitude:	35.79755	Longitude:	-75.85710	Datum:	NAD83	Elevation:	5m	ID By:	P. Ruby		
Observers:	K. Eshum			Start Time:	1749			End Time:	2250		

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1749	63	0	0%	2020	58	0	0%	2250	55	0	0%

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAX CRES	N/A	Forested 6%
	Stop: N/A	

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
Pool size WxL	1x2H-4m	1x2H-6m	1x2H-6m	1x2H-6m		
Swoop WxL	N/A	N/A	N/A	N/A		
Photo? or #	N/A	N/A	N/A	N/A		

Site Description, other than Habitat Info covered on pg 3:

See datasheet ARNWR10 from 16 Feb 18

See datasheet ARNWR10 from 16 Feb 18

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NCMWSE County: Dare Site #: 10 Night# 4 Site Name: ARNWR 10 Date: 21 Feb 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		NO BATS											
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	10	**Night#:**	5	**Site Name:**	ARNWR10	**Date:**	22 Feb 18
Latitude:	35.79755	Longitude:	75.85710					Datum: NAD83	Elevation: 5 m	ID By:	P Roby
Observers:	K. Eshler							Start Time:	1751	End Time:	2251

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1751	69	0	0%	2015	58	0	0	2251	55	1	0

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAX CRES	N/A	Forested 61
	Stop: N/A	

NETS/TRAPS:	A:	B:	C:	D:	E:	F:
	1x2H-6m	1x2H-4m	1x2H-6m	1x2H-6m		
Pool size WxL	N/A	N/A	N/A	N/A		
Swoop WxL	N/A	N/A	N/A	N/A		
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See datasheet ARNWR10 from 16 Feb 18

Site sketch (label to match Nets/Traps above)

See datasheet ARNWR10 from 16 Feb 18

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 10 Night# 5 Site Name: ARNWR1D Date: 22 Feb 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1				NO			BATS						
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

AFNWR 10

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Dare	**Site#:**	11	**Night#:**	1	**Site Name:**	ARNWR11	**Date:**	2/20/18
Latitude:	35.83192	Longitude:	-75.90908	Datum:	NAD83	Elevation:	5	ID By:	T. Wetzel		
Observers:	T. Wetzel, M. Raley			Start Time:	17:49			End Time:	2249		

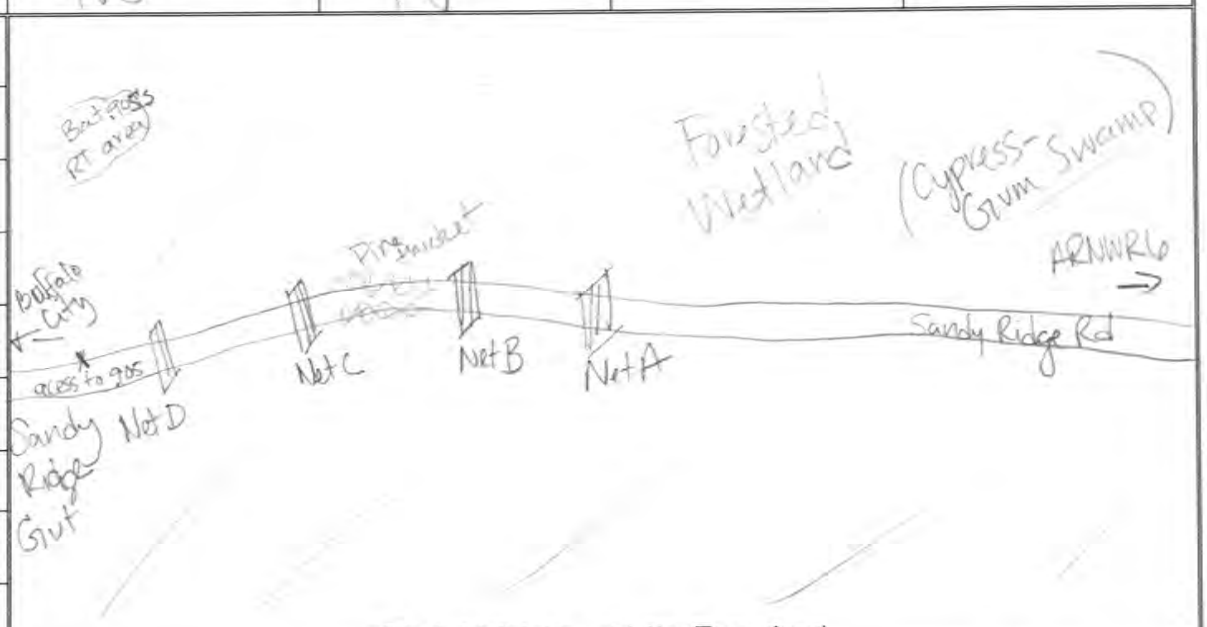
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:49	71	1	50	2028	67	1	0	22:49	65	0	0

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Wax Cres	Stop:	Forested Cl

NETS/TRAPS:	A:	B:	C:	D:	E:	F:
	1X2H-6m	1X2H-6m	1X2H-6m	1X2H-6m	—	—
Pool size WxL	—	—	—	—	—	—
Swoop WxL	—	—	—	—	—	—
Photo? or #	TW	TW	TW	TW	—	—

Site Description, other than Habitat Info covered on pg 3:

Site with canals on at least one side. Trail Corridor cluttered but usable by bats. Vegetation includes: Pinus serotina, Quercus imbricaria, Persea palustris, Magnolia virginiana, morella cerifera, Ilex spp. Taxodium distichum, Lyonia lucidula Acer rubrum.



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Dare Site #: 11 Night# 1 Site Name: ARNWR 11 Date: 2/20/18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1830	EPT FUS	M	A	SC	46	—	12.75	A	2.5m	NCDOT 2157/0	71	Recapt NOSwab
2	1850	EPT FUS	M	A	NR	44	—	12	D	3m	CC 2111/0	68	
3	19:16	EPT FUS	F	A	NR	45	—	16.25	A	3m	NCDOT 2245/0	68	
4	19:29	MYOSEP	F	A	NR	36	—	6.5	A	2m	CC2112/0	68	172.182
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSI	**County:**	Dare	**Site#:**	11	**Night#:**	2	**Site Name:**	ARNWR11	**Date:**	2/21/18
Latitude:	35.83192	Longitude:	-75.90908					Datum: NAD83	Elevation: 5	ID By:	T Wetzel
Observers:	T. Wetzel, H. Brownrigg							Start Time: 1751		End Time:	2251

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1800	71	1	0	2030	68	1	0	2300	66	1	0

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAX CRES	Stop:	Forested 63

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2H-1cm	1x2H-1cm	1x2H-1cm	1x2H-1cm	—	—
Pool size WxL	—	—	—	—	—	—
Swoop WxL	—	—	—	—	—	—
Photo? or #	—	—	—	—	—	—

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 2/20/18

See data sheet from 2/20/18

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: DARE Site #: 11 Night# 2 Site Name: ARNWR11 Date: 21 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	2105	EPTFUS	M	A	SC	45	—	16.5	A	3.5	CC2160/0	67	
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

ARNWR11

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	Eastern NCMYSE	**County:**	DARE	**Site#:**	12	**Night#:**	1	**Site Name:**	ARNWR 12	**Date:**	21 Feb 18
Latitude:	35.80268	Longitude:	-75.93410					Datum: NAD83	Elevation: -2	ID By:	Rob Stinson
Observers:	S. Cotham, I. Burns							Start Time: 1750		End Time:	2250

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1750	69	1	0	2020	66	1	0	2250	65	1	0

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAX CRES	1830	61
	Stop: 2250	

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1X2HX6M	1X2HX4M	1X2HX6M	1X2HX6M		
Pool size WxL	N/A	N/A	N/A	N/A		
Swoop WxL						
Photo? or #	Robs Phone	Robs Phone	Robs Phone	Robs Phone		

Site Description, other than Habitat Info covered on pg 3:

2 gated roads off of Possum rd. Surrounded by swampy wetlands.

P. taeda

T. distichum

Persea palustris

Nyssa spp.

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: DARE Site #: 12 Night# 1 Site Name: ARNWR 12 Date: 21 FEB 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1844	MYOSEP.	A	F	NR	36	15	9	L	.5	—	67	escaped
2	1844	MYOSEP	A	F	NR	37	15	9	C	1	CC0723	67	172.124(6) Jans Phom
3	1900	EPTFUS	A	F	NR	47	0	15	C	1.5	CC0722/0-P	67	Small hole in wing
4	2300	CORRAF	A	F	NR	43	0	8.75	D	1	CC1055/0	60	
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	DARE	**Site#:**	12	**Night#:**	2	**Site Name:**	ARNWR 12	**Date:**	22 Feb 18
Latitude:	35 80268	Longitude:	-75.93910					Datum: NAD 83	Elevation: -2	ID By:	Rob Simpson
Observers:	S. Corum I Burns							Start Time:	1750	End Time:	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1750	63	1	0%								

Moon Effect:	Start: 1830	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAX CRES	Stop: 2250	Forested (o)

NETS/TRAPS:	**A:** 1x2+1x6M	**B:** 1x2+1x9M	**C:** 1x2+1x6M	**D:** 1x2+1x6M	**E:**	**F:**
Pool size WxL	N/A	N/A	N/A	N/A		
Swoop WxL						
Photo? or #	Rob	Rob	Rob	Rob		

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 21 Feb 18

See data from 21 Feb 18

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: EasternNCMYSE County: DARE Site #: 12 Night# 2 Site Name: ARNWR12 Date: 22FEB18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1905	MYOSEP	F	A	NR	37	-	6.75	D	1	C1056/0	64	172.243)/Ian Phone
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

ARNWR12

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	Eastern NC mist	**County:**	Dare	**Site#:**	13	**Night#:**	1	**Site Name:**	ARNWR13	**Date:**	22 Feb 2018
Latitude:	35.83207	Longitude:	-75.90985					Datum: NAD83	Elevation: 3	ID By:	T. Wetzel
Observers:	T. Wetzel, H. Braunreiter							Start Time: 1752		End Time:	2252

Conditions:	Time	Temp	Wind	Clouds
	1800	68	0	0%
	2030	64	0	0%
	2300	54	1	75%

Moon Effect: WAX CRES — Start: N/A — Stop: N/A

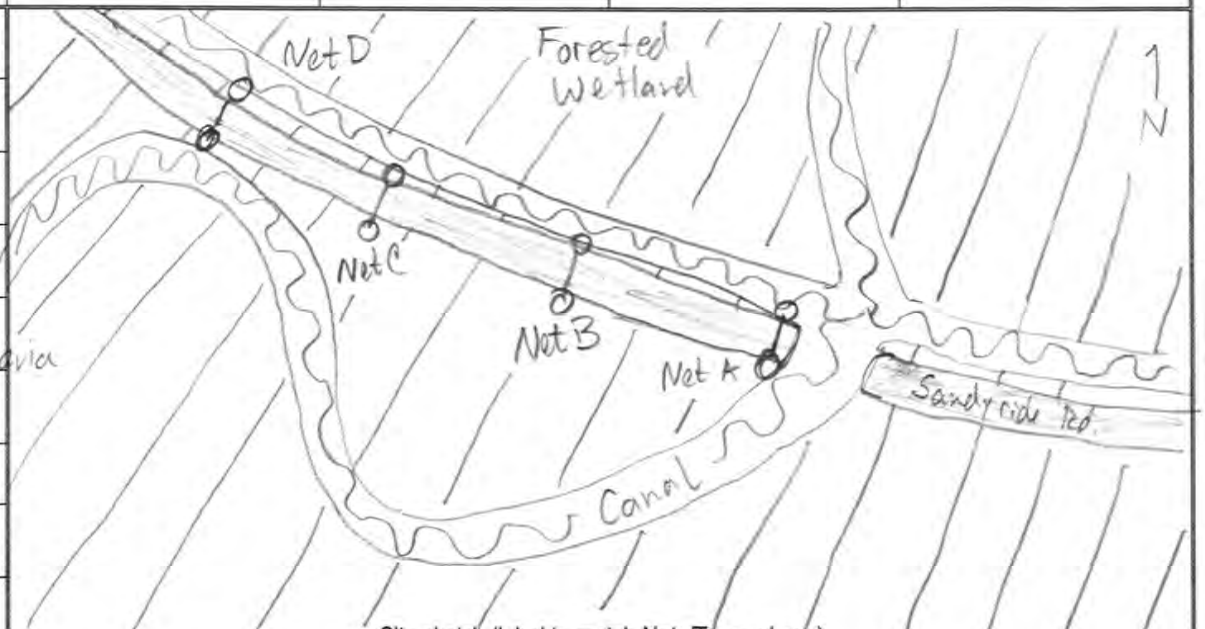
Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: Forested 61

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2H-4m	1x2H-6m	1x2H-6m	1x2H-6m	—	—
Pool size WxL	—	—	—	—	—	—
Swoop WxL	—	—	—	—	—	—
Photo? or #	—	—	—	—	—	—

Site Description, other than Habitat Info covered on pg 3:

Site surrounded by 2-3m wide canals. Trail corridor is cluttered but usable to bats.

Common vegetation: Pinus serotina, Quercus imbricaria Persea palustris, Magnolia virginiana, Morella cerifera, Ilex spp., Taxodium distichum, Lyonia lucidula, Acer rubrum



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: DARE Site #: 13 Night# 1 Site Name: ARNWR 13 Date: 22 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1													
2			NO	BATS		CAPTURED							
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

ARNNR13

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	EasternNC MYSE	**County:**	Hyde	**Site#:**	1	**Night#:**	1	**Site Name:**	GR1	**Date:**	12 Jun 2018
Latitude:	35.365915	Longitude:	-76.159581	Datum:	NAD 83	Elevation:	5 FT	ID By:	ST. Samoray		
Observers:	Shelby Cottam			Start Time:	1717			End Time:	2217		

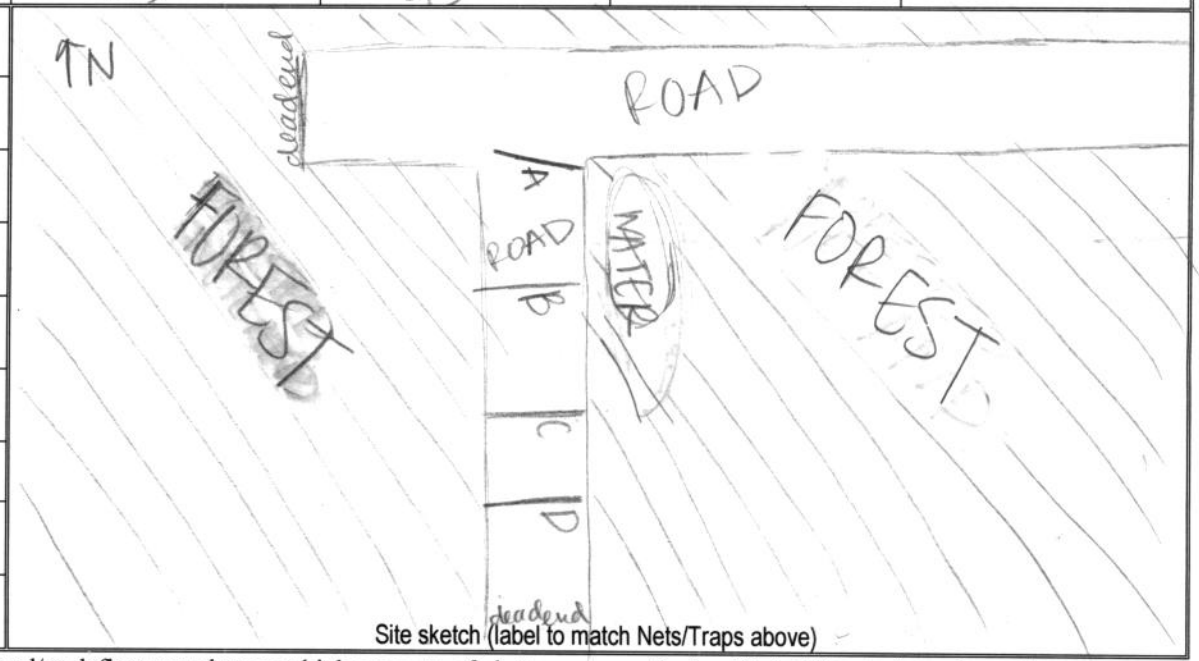
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1717	55F	0	75%	1930	52	0	75%	2217	53	0	75%

Moon Effect:	Start:	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAX CRES	Stop: 2217	43 - Mixed

NETS/TRAPS:	**A:** 1x3Hx9m	**B:** 1x2Hx9m	**C:** 1x2Hx6m	**D:** 1x2Hx6m	**E:**	**F:**
Pool size WxL	N/A	N/A	N/A	N/A		
Swoop WxL	N/A	N/A	N/A	N/A		
Photo? or #	STS	STS	STS	STS		

Site Description, other than Habitat Info covered on pg 3:

mixed forest with dirt roads that dead end. Nets were placed over the road in areas with canopy cover. Standing water around the net sites. Pinus taeda, Pinus ponderosa, Persea palustris



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

NO BATS CAPTURED

Project: Eastern NC MYSE County: HYDE Site #: 1 Night# 2 Site Name: GR1 Date: 22 JAN 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1					No Bat Captures								
2													
3													
4													
5													
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20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	HYDE	**Site#:**	1	**Night#:**	2	**Site Name:**	GR1	**Date:**	23 JAN 2018
Latitude: 35.365915		Longitude: -76.159581						Datum: NAD83	Elevation: 5 FT	ID By: S.T.Samoray	
Observers: Shelby Cotham								Start Time: 1719		End Time: 2219	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1719	53	2	50%	1950	52	0	0%	2219	47	0	0%

Moon Effect:	Start: 1719	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAX CRES	Stop: 2219	43-mixed

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x3H-9m	1x2H-9m	1x2H-6M	1x2H-6m		
Pool size WxL	NA	NA	NA	NA		
Swoop WxL	NA	NA	NA	NA		
Photo? or #	NA	NA	NA	NA		

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 22 Jan 2018

See other data sheet from 22 Jan 2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Hyde Site #: 1 Night# 2 Site Name: GR1 Date: 23 Jan 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1910	NYCHUM	M	A	NR	34.0	8.0	7.0	A	6.0	CC0475/0	52.0	—
2	2000	NYCHUM	F	A	NR	35.0	8.0	8.5	A	5.0	CC0474/0	52.0	—
3													
4													
5													
6													
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NCDOT Mist-Netting Data Form

Project:	647	**County:**	Hyde	**Site#:**	4	**Night#:**	3	**Site Name:**	GR1	**Date:**	19-FEB-2018
Latitude:	35.365915	Longitude:	-76.159581					Datum: NAD-83	Elevation: 5ft	ID By:	Price Sewell
Observers:	Price Sewell, Tyler Blevins							Start Time: 17:50		End Time:	22:50

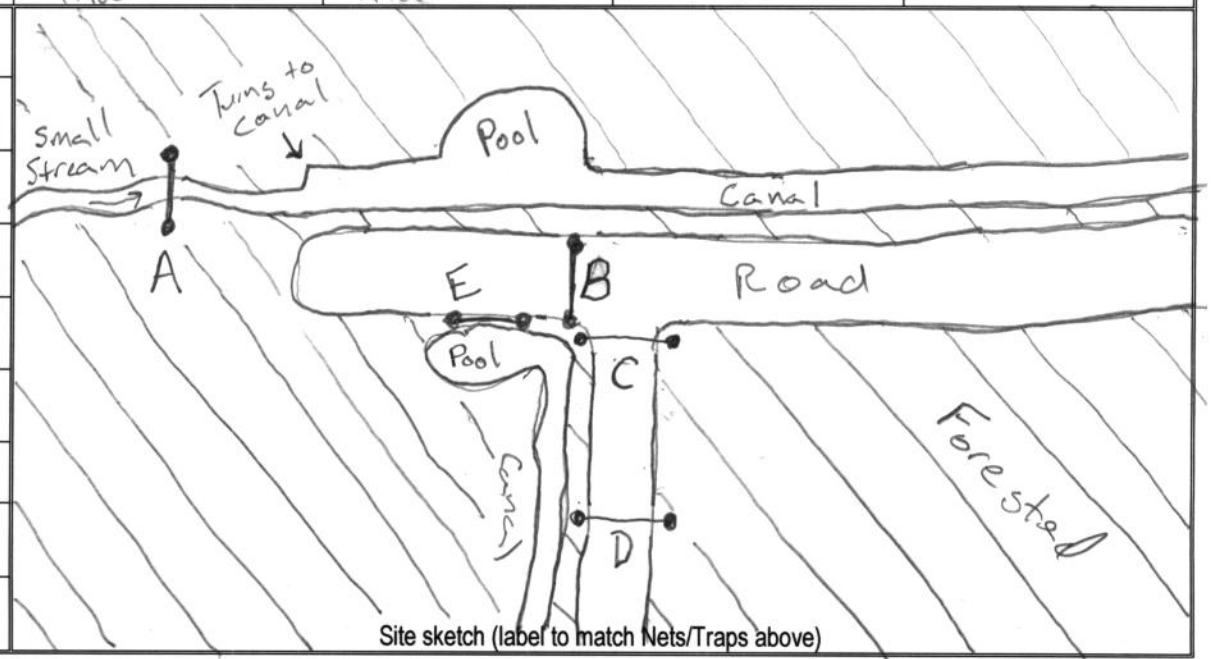
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:50	65	2	25%	20:01	65	2	0%	22:50	66	2	0%

Moon Effect:	Start:	**Land Use:** Urban / Agriculture / (Forest) / Water / (Wetland) / Barren *(describe)*:
WAX CRES	Stop:	43 = Mixed

NETS/TRAPS:	**A:** 1x2H-6m	**B:** 1x2H-9m	**C:** 1x2H-9m	**D:** 1x2H-9m	**E:** 1x2H-6m	**F:**
Pool size WxL	NA	NA	NA	NA	NA	
Swoop WxL	2x NA	NA	NA	NA	NA	
Photo? or #	Price	Price	Price	Price	Price	

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 22-Jan-2018.



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: 647 County: Hyde Site #: 1 Night# 3 Site Name: GR1 Date: 19-FEB-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	18:13	NYCHUM	M	A	NR	34	0	6.5g	C	3m	CC0475/OP	65	Recapture
2	19:43	~~LASBOR~~	M	A	NR	38	0	8.25g	B	2m	/OP	65	
3	18:43	LASSEM							C	4m		65	
4	19:35	EPTFUS	M	A	NR	47	0	16.75g	B	2m	0	65	Swab
5													
6													
7													
8													
9													
10													
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13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647	**County:**	Hyde	**Site#:**	1	**Night#:**	4	**Site Name:**	GR1	**Date:**	20-FEB-2018
Latitude: 35.365915		Longitude: -76.159581						Datum: NAD-83	Elevation: 5Ft	ID By: Price Sewell	
Observers: Price Sewell, Tyler Blevins								Start Time: 17:50		End Time:	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:50	65	2	0	20:14	63	2	0	22:50	61	2	0

Moon Effect:	Start:	**Land Use:** Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WAX - CRES	Stop:	Forested wetland

NETS/TRAPS:	**A:** 1x24-6m	**B:** 1x24-9m	**C:** 1x24-9m	**D:** 1x24-9m	**E:** 1x24-6m	**F:**
Pool size WxL	NA	NA	NA	NA	NA	
Swoop WxL	NA	NA	NA	NA	NA	
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 22-Jan-2018.

See data sheet from 19-FEB-2018.

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: 647 County: Hyde Site #: 1 Night# 4 Site Name: GR1 Date: 20-FEB-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	18:07	NYCHUM	M	A	NR	34	0	6.75g	C	5m	CC0475/OP	64	Recapture
2	18:23	NYCHUM	M	A	NR	35	0	7.5g	D	5m	CC0820/OP	63	
3	18:30	NYCHUM	F	A	NR	35	0	9.5g	B	3m	CC0821/O	63	
4	18.38	NYCHUM	M	A	NR	35	0	7.5g	B	2m	CC0822/O	63	
5	18:38	NYCHUM	M	A	NR	36	0	8.0g	D	2m	CC0823/O	63	
6	18:45	NYCHUM	F	A	NR	35	0	8.25g	B	3m	CC0474/O	63	Recapture
7	19:40	NYCHUM	F	A	NR	39	0	10.25g	B	2m	CC0824/O	63	
8	20:02	EPTFUS	M	A	NR	47	0	16.0g	C	5m		62	No swab taken Recapture 19-FEB
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647: NCDOT MYSE	**County:**	HYDE	**Site#:**	1	**Night#:**	5	**Site Name:**	GR1	**Date:**	21-Feb-2018
Latitude:	35.36591	Longitude:	-76.15958	Datum:	NAD 83	Elevation:	5ft	ID By:	P. Sewell		
Observers:	P. SeWell ; D. Batie			Start Time:	1750			End Time:	2251		

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1750	65.0	1	0	2000	61.0	2	0	2251	58.6	1	0

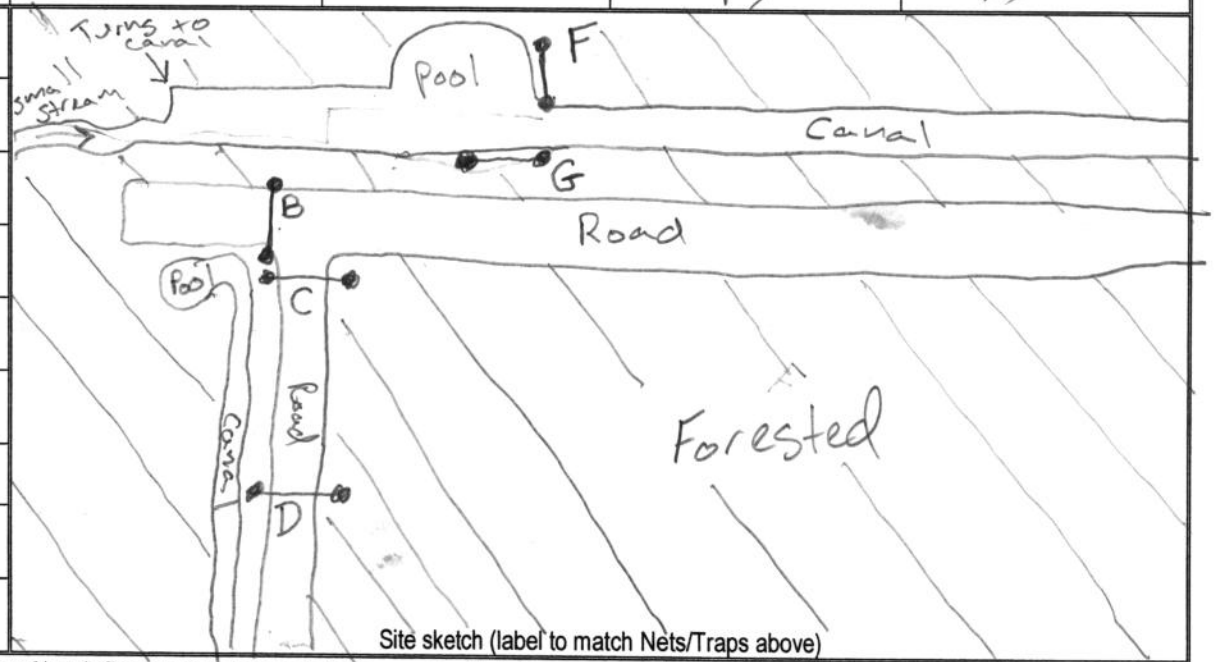
Moon Effect: 1st Quarter — Start: 1750 — Stop: 2251

Land Use: Urban / Agriculture / ~~Forest~~ / Water / ~~Wetland~~ / Barren *(describe)*: 43 = Mixed

NETS/TRAPS:	**A:**	**B:** 1x2H-9m	**C:** 1x2H-9m	**D:** 1x2H-9M	**E:** 1x2H-9m	**F:** 1x2X-6M
Pool size WxL		NA	NA	NA	NA	NA
Swoop WxL		NA	NA	NA	NA	NA
Photo? or #		NA			PS	PS

Site Description, other than Habitat Info covered on pg 3:

See datasheet from 22-Jan-2018



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: 647 NCDOT MYSE County: Hyde Site #: 1 Night# 5 Site Name: GR1 Date: 21-Feb-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1800	NYCHUM	M	A	NR	34	-	6.25	B	2.5	CC0475/0P	65.0	Recap
2	1825	NYCHUM	M	A	NR	37	-	8.25	G	3	CC0850/0	63.3	
3	1825	NYCHUM	M	A	NR	36	-	9.0	G	3.5	CC0825/0	63.3	
4	1825	NYCHUM	M	A	NR	35	-	6.75	B	2	CC0826/0	63.3	
5	1900	NYCHUM	M	A	NR	35	-	7.5	C	5	CC0827/0	63.0	
6	1915	LASBOR	M	A	NR	41	-	9.75	D	4.5	- /0	62	
7	1915	NYCHUM	M	A	NR	35	-	8.5	G	5	CC0829/0	62.0	
8	1915	NYCHUM	F	A	NR	36	-	10.0	G	5	CC0941/0	62.0	
9	1930	NYCHUM	F	A	NR	37	-	10.0	F	3	CC0833/0	62.0	
10	2005	NYCHUM	F	A	NR	37	-	9.25	D	5	CC0829/0	61.5	
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647: NCDOT MYSE	**County:**	Dare	**Site#:**	1	**Night#:**	6	**Site Name:**	GR1	**Date:**	22-Feb-2018
Latitude:	35.365915	Longitude:	-76.159581	Datum:	NAD 83	Elevation:	5 ft	ID By:	P. Sewell		
Observers:	P. Sewell; D. Batie			Start Time:	1751			End Time:			

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1751	65	0	0	2037	59.0	1	0	2251	59	1	0

Moon Effect:	Start: 1751	**Land Use:** Urban / Agriculture / (Forest) / Water / (Wetland) / Barren *(describe)*:
WAX-CRES	Stop: 2251	43 = Mixed

NETS/TRAPS:	**A:**	**B:** 1x2H-9m	**C:** 1x2H-9M	**D:** 1x2H-9M	**E: G:** 1x2H-9M	**F:** 1x2H-6M
Pool size WxL		NA	NA	NA	NA	NA
Swoop WxL		NA	NA	NA	NA	NA
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See datasheet from 22-Jan-2018

See datasheet from 21-Feb-2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: 647 NCDOT MYSE County: Hyde Site #: GR1 Night# 6 Site Name: GR1 Date: 22-Feb-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1815	NYCHUM	M	A	NR	34	-	5.75	D	3	CC0475/OP	63.9	Recap - weight decreasing each night
2	1825	NYCHUM	M	A	NR	35	-	7.75	G	3.5	CC0830/O	61.7	
3	1825	NYCHUM	M	A	NR	36	-	7.25	G	4	Not banded due to prior wing injury/O-P	61.7	Major old wing damage looks like predator encou
4	1845	NYCHUM	M	A	NR	37	-	8.0	D	2	CC0831/O	61.0	
5	1845	NYCHUM	F	A	NR	36	-	8.5	G	4	CC0849/O	61.0	
6	1845	CORRAF	M	A	NR	41	-	8.25	F	0.5	CC0847/OP	61.0	
7	1900	NYCHUM	F	A	NR	37	-	9.25	G	4	CC0848/O	61.0	
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

GR01

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

647 Gull Rock GL

Project:	Eastern NC MYSE	County:	Hyde	Site#:	2	Night#:	1	Site Name:	GR2	Date:	22Jan2018
Latitude:	35.376494	Longitude:	-76.157733	Datum:	NAD-83	Elevation:	5	ID By:	T. Wetzel		
Observers:	T. Wetzel, A. Dart-Padover			Start Time:	1720			End Time:	2220		

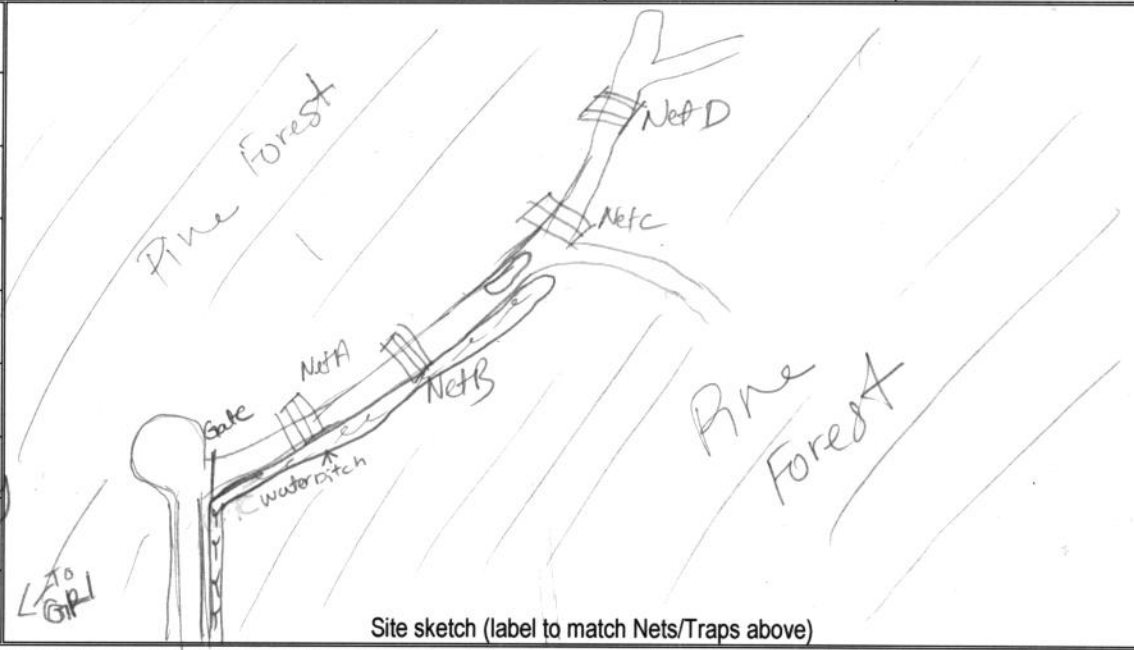
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1720	53	0	25%	2000	53	1	100%	2220	56	0	75%

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Wax CRES	Stop:	Mixed 43

NETS/TRAPS:	A: 1x2H-9m	B: 1x2H-9m	C: 1x2H-6m	D: 1x2H-4m	E: —	F: —
Pool size WxL	—	—	—	—	—	—
Swoop WxL	—	—	—	—	—	—
Photo? or #	TW-3	TW-2	TW-1	TW-4	—	—

Site Description, other than Habitat Info covered on pg 3:

Dominant trees are loblolly pine, pondpine, and American holly. Access road through pine forest. Water filled ditch to the right of road. A few small road ruts, not likely useable by bats. Understory cluttered with cane and greenbrier.



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

temp at 2030, 59°F

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Hyde Site #: 2 Night# 1 Site Name: GR2 Date: 22-Jan-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		No bats seen or captured											
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Hyde	**Site#:**	2	**Night#:**	2	**Site Name:**	GIR2	**Date:**	23Jan2018
Latitude:	35.376494	Longitude:	-76.157733	Datum:	NAD-83	Elevation:	5 ft	ID By:	T. Wetzel		
Observers:	T. Wetzel, A. Dart-Padover			Start Time:	1720			End Time:	2220		

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1720	55	1	50%	2020	53	2	0%	2220	48	0	0%

Moon Effect:	Start:	Land Use: Urban / Agriculture / (Forest) / Water / Wetland / Barren *(describe)*:
Waxcres	Stop: N/A	

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2H-9m	1x2H-9m	1x3H-6m	1x2H-6m	N/A	N/A
Pool size WxL	N/A	N/A	N/A	N/A	N/A	N/A
Swoop WxL	N/A	N/A	N/A	N/A	N/A	N/A
Photo? or #	N/A	N/A	TW-2	TW-1	N/A	N/A

Site Description, other than Habitat Info covered on pg 3:

see site description from 22Jan2018

several American woodcocks seen and heard around the site.

see site drawing from 22Jan2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Hyde Site #: 2 Night# 2 Site Name: GR2 Date: 23Jan-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		No Bat Captures											
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Hyde	**Site#:**	2	**Night#:**	3	**Site Name:**	GR02	**Date:**	19 Feb 2018
Latitude: 35.3763		Longitude: -76.1576						Datum: WGS-84	Elevation: 3ft	ID By: Ray Eaton	
Observers: Daniel Batie								Start Time: 1750		End Time: 2250	

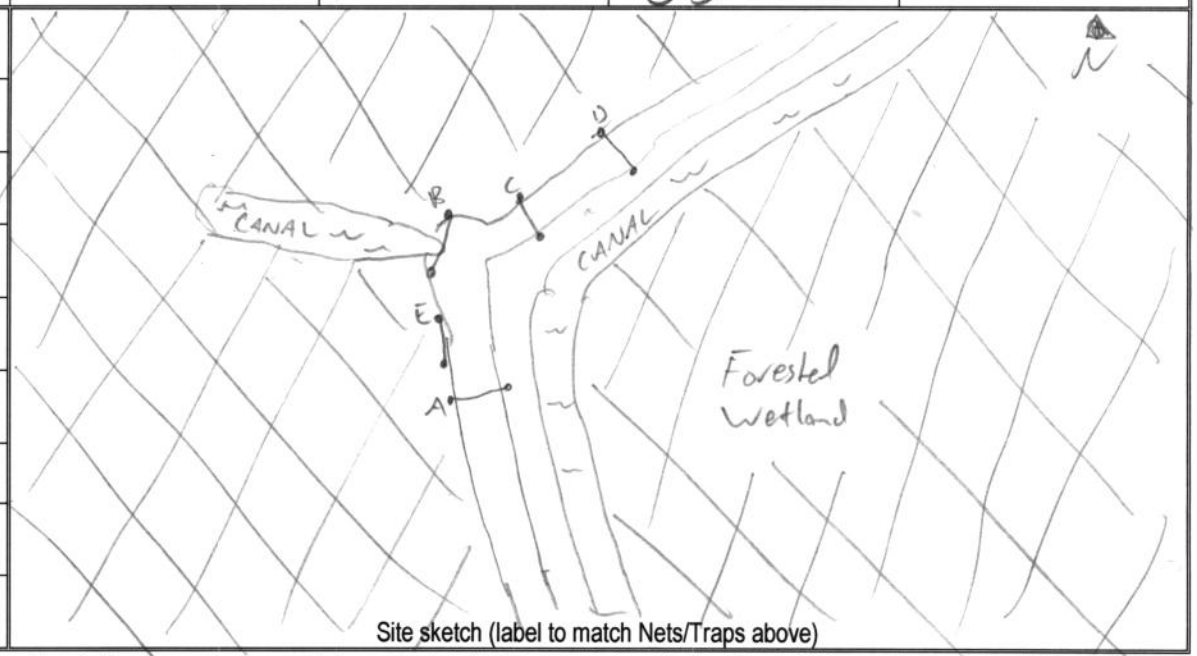
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1750	64	2	25	20:20	64	2	0	2250	66	2	25

Moon Effect:	Start: 1750	**Land Use:** Urban / Agriculture / (Forest) / Water / Wetland / Barren *(describe)*:
WAXING CRES	Stop:	61

NETS/TRAPS:	**A:** 1x2H-12m	**B:** 1x2H-9m	**C:** 1x2H-6m	**D:** 1x2H-9m	**E:** 1x2H x9M	**F:**
Pool size WxL	n/a	n/a	n/a	n/a	NA	
Swoop WxL	n/a	n/a	n/a	n/a	NA	
Photo? or #	DB	DB	DB	DB	DB	

Site Description, other than Habitat Info covered on pg 3:

see previous data sheet for GR02



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: Hyde Site #: 2 Night# 3 Site Name: GR02 Date: 19 Feb 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		NO CAPTURES											
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Hyde	**Site#:**	2	**Night#:**	1	**Site Name:**	GR02	**Date:**	20FEB18
Latitude:	35.3763	Longitude:	-76.1577					Datum: NAD-83	Elevation: 3ft	ID By:	Ray Eaton
Observers:	Ray Eaton, Tyler Blevins							Start Time: 17:53		End Time:	2253

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1750	67	2	0	2020	64	2	25	2250	64	1	0

Moon Effect:	Start:	**Land Use:** Urban / Agriculture / (Forest) / Water / Wetland / Barren *(describe)*:
Wax Cres	Stop: N/A	G1

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1X2H-12m	1X2H-9M	1X2H-6M	1X2H-9M	1X2H-9M	
Pool size WxL	—	—	—	—	—	
Swoop WxL	—	—	—	—	—	
Photo? or #	DB	DB	DB	DB	DB	

Site Description, other than Habitat Info covered on pg 3:

See Previous Datasheet

See Previous Datasheet

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: 647 EasternNC MYSE County: HYDE Site #: 2 Night# 4 Site Name: GR02 Date: 20 FEB 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1840	NYCHUM	F	A	NR	36	0	9.5	D	3.5	CL00775	65	
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647	**County:**	Hyde	**Site#:**	2	**Night#:**	5	**Site Name:**	GR02	**Date:**	22-FEB-2018
Latitude:	35.3763	Longitude:	-76.1576					Datum: NAD-83	Elevation: 3ft	ID By:	Ray Eaton
Observers:	Ray Eaton, Tyler Blevins							Start Time:	17:53	End Time:	2253

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:53	66	2	0	20:22	63	2	0	2253	63	0	0

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Wax Cres	1751	G1
	Stop: 2254	

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2H-12m	1x2H-9m	1x2H-6m	1x2H-9m		
Pool size WxL						
Swoop WxL						
Photo? or #	DB	DB	DB	DB		

Site Description, other than Habitat Info covered on pg 3:

See previous data sheet from GR02

See data sheet from 19-FEB-2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: 647 County: Hyde Site #: 2 Night# 5 Site Name: GR02 Date: 22-FEB-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	18.54	NYCHUM	F	A	NR	37	0	9.5g	A	5m	CC0076	64	
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

GR2

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	NC DOT MYSE	**County:**	Hyde	**Site#:**	3	**Night#:**	1	**Site Name:**	GR03	**Date:**	22 JAN 2018
Latitude: 35.40009		Longitude: -76.11625						Datum: WGS 84	Elevation: 3 ft.	ID By: R. Eaton	
Observers: Ian Burns								Start Time: 17:20		End Time: 22:20	

Conditions:	Time	Temp F	Wind	Clouds	Time	Temp F	Wind	Clouds	Time	Temp F	Wind	Clouds
	17:30	52	0	100	20:00	54	2	75	22:20	54	2	75

Moon Effect: Waxing crescent

Start: 17 30

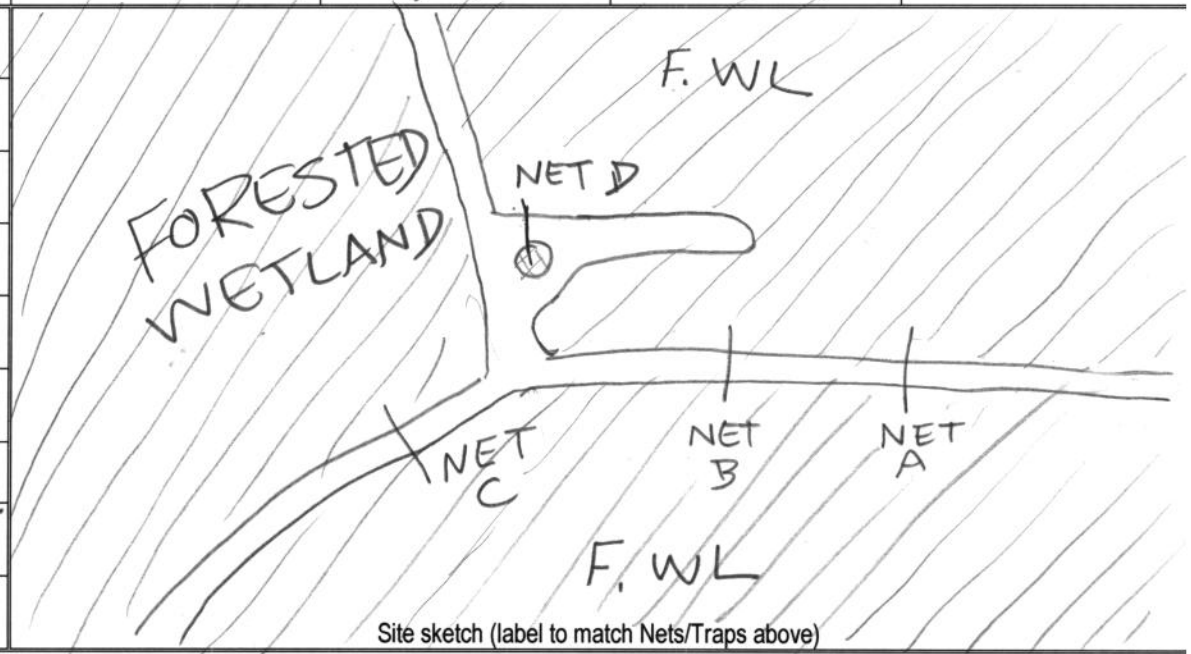
Stop: 22 20

Land Use: Urban / Agriculture / Forest / Water / ~~Wetland~~ / Barren *(describe)*: Mature Forested Wetland Wetlands 43

NETS/TRAPS:	**A:** 1x2H-12m	**B:** 1x2H-9m	**C:** 1x2H-12m	**D:** 1x2H-9m	**E:** —	**F:** —
Pool size WxL	—	—	—	—	—	—
Swoop WxL	—	—	—	—	—	—
Photo? or #	See GR03 night #2				—	—

Site Description, other than Habitat Info covered on pg 3:

mixed forest with primarily Pinus taeda seen in the canopy. Other species included Acer rubrum, Liquidambar styraciflua, and Ilex opaca. understory had Arundinaria gigantea dominating.



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form 35.40009°, -76.11625° Page 1 of 1

Project: NC DOT MYSE County: Hyde Site #: 3 Night# 1 Site Name: GR03 Date: 22 JAN 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	20:00	LASSEM	M	A	NR	40	0	10.75	A	3	CC0078/0	51	
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	NC DOT MYSE	**County:**	Hyde	**Site#:**	3	**Night#:**	2	**Site Name:**	GR03	**Date:**	23 Jan 18
Latitude: 35.40009		Longitude: -76 11625						Datum: WGS84	Elevation: 3 ft	ID By: R. Ecton	
Observers: L Burns								Start Time: 1720		End Time: 2220	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1720	56	3	75	2000	55	2	75	2220	47	0	0

Moon Effect:	Start: 1720	**Land Use:** Urban / Agriculture / ~~Forest~~ / Water / ~~Wetland~~ / Barren *(describe)*:
Waxing Crescent	Stop: ~~2200~~	Matrix of Coastal Wetlands

NETS/TRAPS:	**A:** 1X2H-12m	**B:** 1X2H-9m	**C:** 1X2H-12m	**D:** 1X2H9m	**E:** —	**F:** —
Pool size WxL	—	—	—	—	—	—
Swoop WxL	—	—	—	—	—	—
Photo? or #					—	—

Site Description, other than Habitat Info covered on pg 3:

See GR03 Night #1

See GR03 Night #1

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: NC DoT MySE County: HYDE Site #: 3 Night# 2 Site Name: GR03 Date: 23 Jan 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1750	LASBOR	M	A	NR	37	Ø	8.75	A	5m	"0077/0	55	hair sample
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Hyde	**Site#:**	3	**Night#:**	3	**Site Name:**	GR3	**Date:**	Feb 14 2018
Latitude: 35.40009		Longitude: −76.11625						Datum: WGS-84	Elevation: 3m	ID By: Ray Eston	
Observers: Daniel Batie								Start Time: 1745		End Time: 2245	

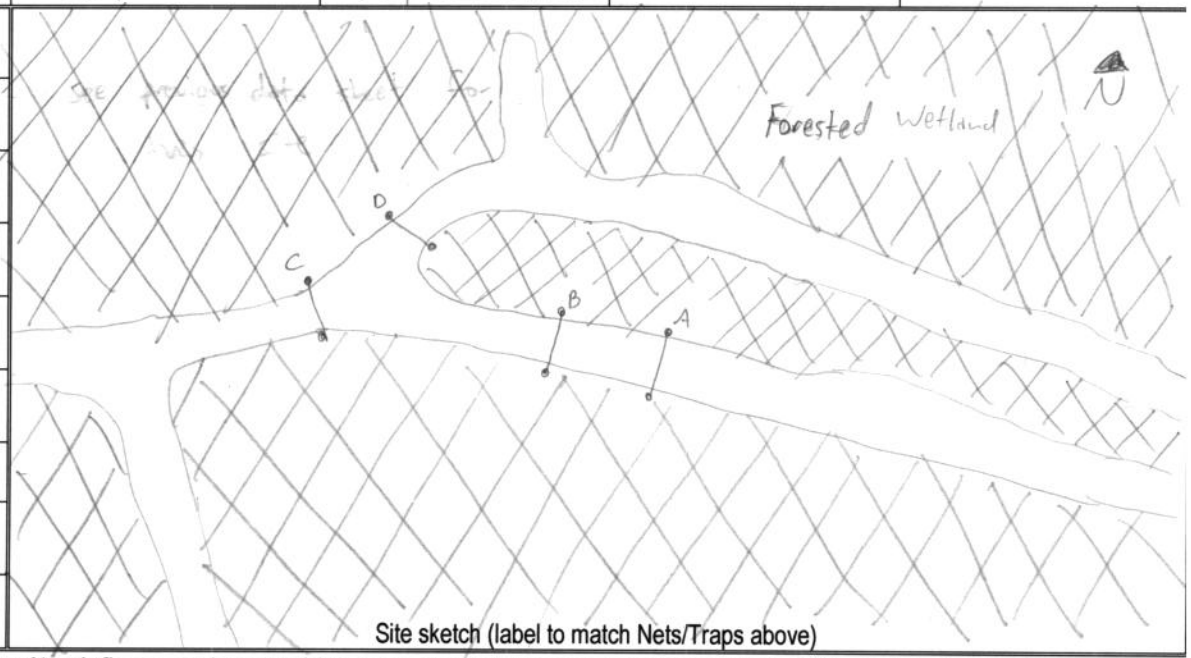
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1745	52	0	75	2045	52	0	~~25~~	2245	51	1	25

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
New Moon WAN-CRES	Start: N/A Stop: N/A	Forested Wetland

NETS/TRAPS:	A:	B:	C:	D:	E:	F:
Pool size WxL	N/A	N/A	N/A	N/A		
Swoop WxL	N/A	N/A	N/A	N/A		
Photo? or #	~~Ray~~ See 15 FEB	~~Ray~~ See 15 FEB	~~Ray~~ see 15 Feb	~~Ray~~ See 15 Feb		

Site Description, other than Habitat Info covered on pg 3:

See previous data sheet for GR3 site description



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: Hyde Site #: 3 Night# 3 Site Name: GR3 Date: Feb 14 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1					No		Captures						
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	HYDE	**Site#:**	3	**Night#:**	4	**Site Name:**	GR03	**Date:**	15 FEB 18
Latitude:	35.40009	Longitude:	-76.11625	Datum:	WGS 84	Elevation:	3	ID By:	Ray Eaton		
Observers:	Daniel Batie			Start Time:	1745			End Time:	2245		

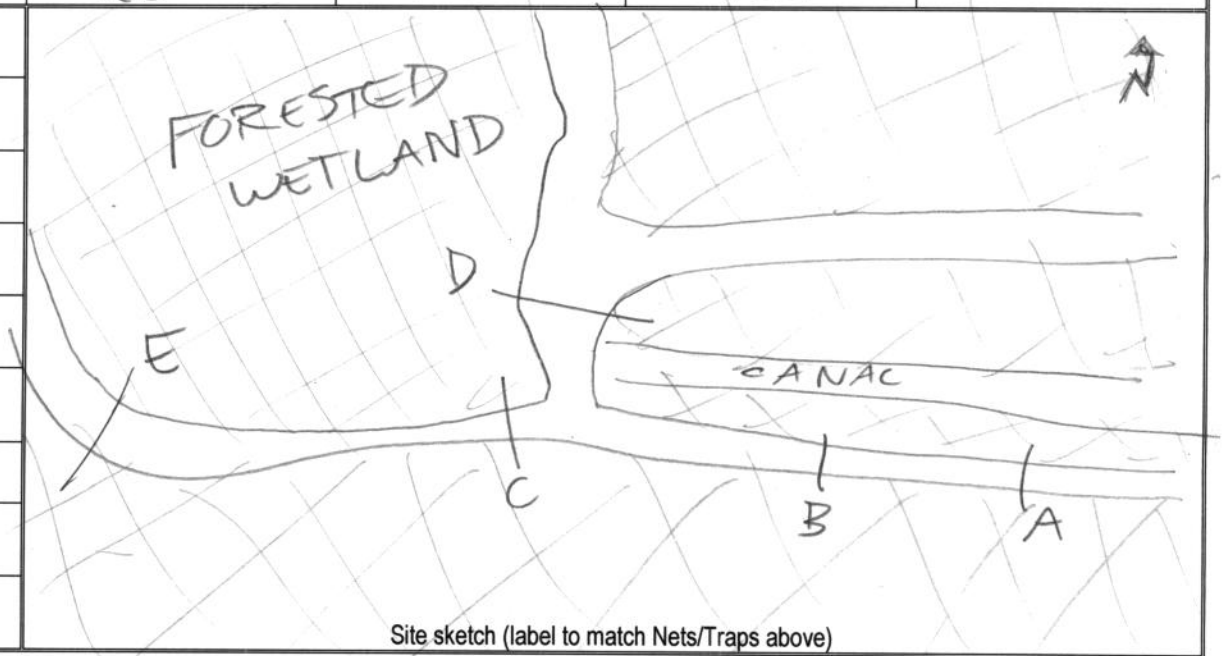
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1745	60	2	75	2045	60	2	100	2245	60	2	100

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Waxing cresent	N/A	61
	Stop: N/A	

NETS/TRAPS:	A:	B:	C:	D:	E:	F:
	1x2H-12m	1x2H-9m	1x2H-12m	1x2H-6m	1x2H-12m	—
Pool size WxL	—	—	—	—	—	—
Swoop WxL	—	—	—	—	—	—
Photo? or #	RE	RE	RE	RE	RE	

Site Description, other than Habitat Info covered on pg 3:

see previous
Site GR03 form



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: NC DOT EASTERN NC MYSE County: HYDE Site #: 03 Night# 4 Site Name: GR03 Date: 15 FEB 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	18:00	LASSEM	M	A	NR	41	0	10.0	C	2.5	cc0078/0	59	Recapture
2	19:30	LASSEM	M	A	NR	41	0	10.0	E	4.0	cc0078/0	59	Recapture
3	20:10	LASBOR	M	A	NR	39	0	9.25	A	2.0	— / 0	60	hair sample
4													
5													
6													
7													
8													
9													
10													
11													
12													
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14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Hyde	**Site#:**	3	**Night#:**	5	**Site Name:**	GR03	**Date:**	16 FEB 18
Latitude:	34.40009	Longitude:	-76.11625					Datum: WGS84	Elevation: 3	ID By:	Ray Eaton
Observers:	Daniel Batie							Start Time:	1745	End Time:	2245

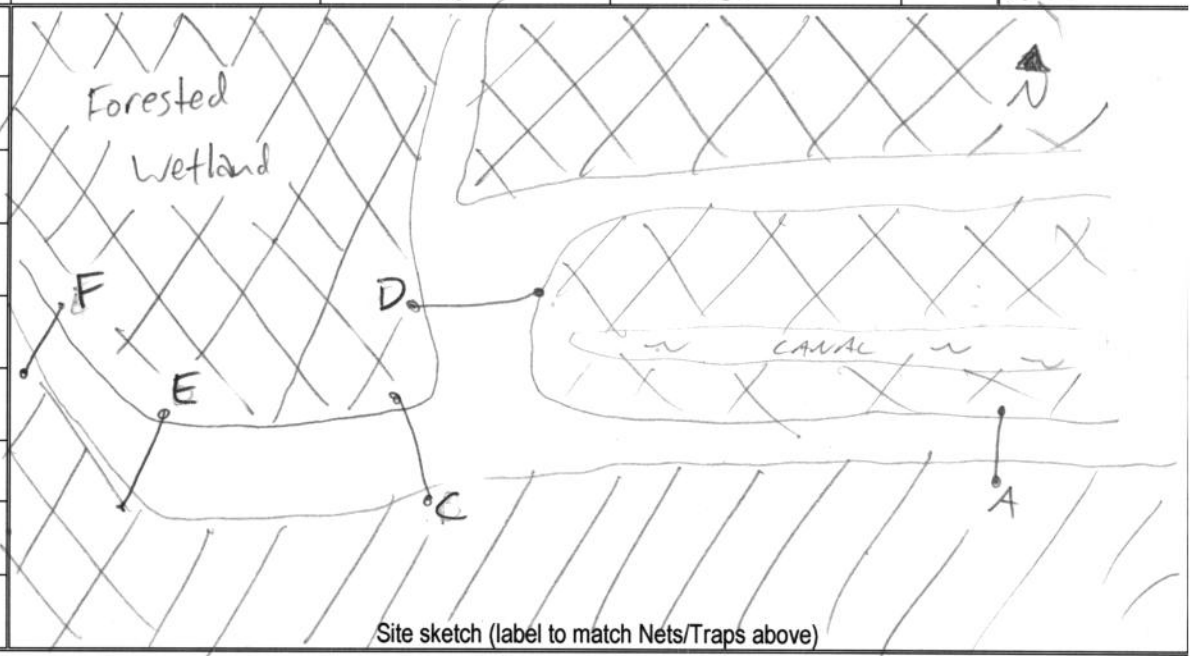
Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1745	66	1	100	2045	60	0	100	2245	59	0	100

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
Waxing Crescent	Stop: N/A	61

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
Pool size WxL	1x2H-12m	moved to F	–	–	–	–
Swoop WxL	–	–	–	–	–	–
Photo? or #	RE		RE	RE	RE	RE

Site Description, other than Habitat Info covered on pg 3:

See Previous site GR03 form



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: HYDE Site #: 3 Night# 5 Site Name: GR03 Date: 16FEB18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1850	LASSEM	A	M	NR	41	0	10,25	F	3.0	<50078	64	recapture
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC Myotis	**County:**	Hyde	**Site#:**	3	**Night#:**	6	**Site Name:**	GR03	**Date:**	17 Feb 18
Latitude:	34.40009	Longitude:	-76.11625	Datum:	WGS-84	Elevation:	3	ID By:	Ray Eaton		
Observers:	David B. Batts			Start Time:	1747			End Time:	2247		

Conditions:	Time	Temp	Wind	Clouds
	1747	52	0	100
	2047	50	1	100
	2247	49	0	100

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*:
WAX - CRES	NA	Forested wetland
	Stop: NA	

NETS/TRAPS:	A: 1x2H-12m	B:	C: 1x2H-12m	D: 1x2H-6m	E: 1x2H-12m	F: 1x2H-12m
Pool size WxL	NA		NA	NA	NA	NA
Swoop WxL	NA		NA	NA	NA	NA
Photo? or #						

Site Description, other than Habitat Info covered on pg 3:

See previous data sheets for GR06

See previous data sheets for GR06

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYS County: Hyde Site #: 3 Night# 6 Site Name: GR03 Date: 17 Feb 18

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	~	NO		BATS			CAPTURED				~		~
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

Mist Net Sites Habitat Info – please **circle** the option that best fits

GR03 22 JAN 2018

RE, IB

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Hyde	**Site#:**	4	**Night#:**	1	**Site Name:**	GR4	**Date:**	22-Jun-2018
Latitude: 35.39989		Longitude: -76.10429						Datum: NAD-83	Elevation: 3 ft	ID By: Taylor Culbertson	
Observers: Daniel Batie								Start Time: 1720		End Time: 2220	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1720	52	0	100	2020	53	2	75	2220	54	1	100

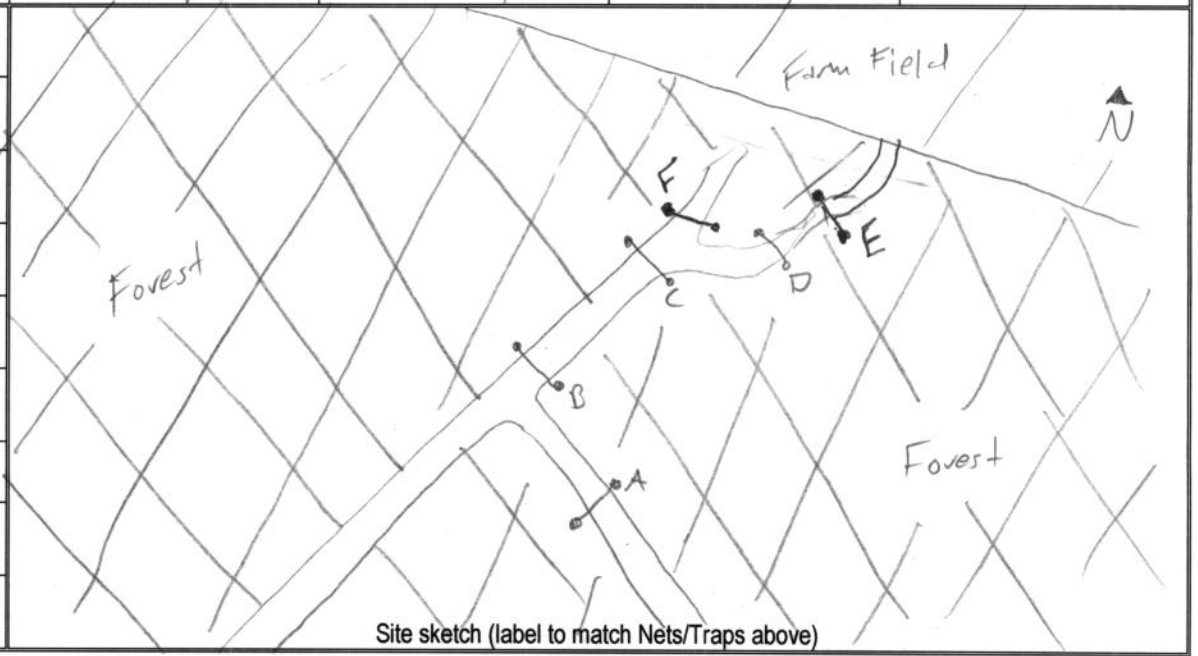
Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
1st quarter	Start: NA	Forested Wetland
	Stop: NA	

NETS/TRAPS:	A:	B:	C:	D:	E:	F:
	1×2H-6m	1×2H-9m	1×2H-12m	1×2H-6m	1×2H-6M	1×2H-9M
Pool size WxL	N/A	N/A	N/A	N/A		
Swoop WxL	N/A	N/A	N/A	N/A		
Photo? or #	Taylor	Taylor	Taylor	Taylor		

Site Description, other than Habitat Info covered on pg 3:

Mixed forest with gravel roads and some trails. Standing water along roadsides.

Liquidambar styraciflua, Pinus taeda, Acer rubrum



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: Eastern NC MYSE County: HYDE Site #: 4 Night# 1 Site Name: GRY Date: 22 Jun 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1735	LASSEM	F	A	NR	41	7.5	16.5	A	2.5	CC0730/0	51°	
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	Eastern NC MYSE	**County:**	Hyde	**Site#:**	4	**Night#:**	2	**Site Name:**	GR4	**Date:**	23 Jan 2018
Latitude:	35.39989	Longitude:	-76.10421	Datum:	NAD83	Elevation:	3 ft	ID By:	T. Culbertson		
Observers:	Daniel Batie			Start Time:	1720			End Time:	2220		

Conditions:	Time	Temp	Wind	Clouds
	1720	55	3	50
	2000	54	1	0
	2220	47	1	25

Moon Effect: Wax-Cres — Start: 1800 — Stop: 2100

Land Use: Urban / Agriculture / Forest / Water / (Wetland) / Barren *(describe)*: Forested wetland

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
Pool size WxL	1x2H-6m	1x2H-9m	1x2H-12m	1x2H-6m		
Swoop WxL	NA	NA	NA	NA		
Photo? or #	NA	NA	NA	NA		
	TC	TC	TC	TC		

Site Description, other than Habitat Info covered on pg 3:

Mixed forest with gravel roads and some trails. Standing water along roadsides.

Liquidambar styraciflua, Pinus taeda, Acer rubrum.

See night #1

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Project: Eastern NC MYSE County: HYDE Site #: 4 Night# 2 Site Name: GR4 Date: 23 Jan 2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	1915	LASBOR	M	A	NR	38	7.75	16.25	C	3.5	CC0077/0	55	Re-cap, hair sample
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647	**County:**	Hyde	**Site#:**	4	**Night#:**	3	**Site Name:**	GR4	**Date:**	14-FEB-2018
Latitude:	35.39989	Longitude:	-76.10429	Datum:	NAD-83	Elevation:	3ft	ID By:	Price Sewell		
Observers:	Price Sewell, Tyler Blevins			Start Time:	17:45			End Time:	22:45		

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:45	52	0	75%	20:06	52	3	0%	22:45	52	3	75%

Moon Effect:	Start:	Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*:
WANCRES	NA	Mixed 43
	Stop: NA	

NETS/TRAPS:	A:	B:	C:	D:	E:	F:
	1x2H-6M	NA	NA	1x2H-6M	1x2H-6M	1x2H-9M
Pool size WxL	NA			4ft x 10ft	NA	NA
Swoop WxL	NA			CANLIN	NA	NA
Photo? or #	Price	1		Price	Price	Price

Site Description, other than Habitat Info covered on pg 3:

Mixed forest with gravel roads and some trails. Standing water along roadsides.

Liquid amber styraciflua, Pinus taeda, Acer rubrum

See Data Sheet from 22-Jan-2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: 647 County: Hyde Site #: 4 Night# 3 Site Name: GR4 Date: 14-FEB-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1		NO BATS											
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647	**County:**	Hyde	**Site#:**	4	**Night#:**	4	**Site Name:**	GR4	**Date:**	15-FEB-2018
Latitude:	35.39989	Longitude:	-76.10429	Datum:	NAD-83	Elevation:	35ft	ID By:	Price Sewell		
Observers:	Price Sewell			Start Time:	17:45			End Time:	22:47		

Conditions:	Time	Temp	Wind	Clouds
	17:45	62	4	25%
	20:07	61	4	0%
	22:47	59	3	0%

Moon Effect: New Moon — Start: NA — Stop: NA

Land Use: Urban / Agriculture / (Forest) / Water / Wetland / Barren *(describe)*: Mixed 43

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2H-6m	1x2H-9m	NA	1x2H-6m	1-2H-6m	1x2H-9m
Pool size WxL	NA	NA		45ft x 10ft	NA	NA
Swoop WxL	NA	NA		UNLIM	NA	NA
Photo? or #	Price	Price		Price	Price	Price

Site Description, other than Habitat Info covered on pg 3:

See Data Sheet from 14-FEB-2018

See Data Sheet From 22-Jan-2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: 647 County: Hyde Site #: 4 Night# 4 Site Name: GR4 Date: 15-FEB-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	18:30	NYCHUM	M	A	NR	33	0	7.25g	A	2m	CC0819 / 0	62	
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647	**County:**	Hyde	**Site#:**	4	**Night#:**	5	**Site Name:**	GR4	**Date:**	16-FEB-2018
Latitude: 35.39989		Longitude: -76.10429						Datum: NAD-83	Elevation: 35ft	ID By: Price Sewell	
Observers: Price Sewell, Tyler Blevins								Start Time: 17:46		End Time: 22:48	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:46	65	3	25%	20:06	65	0	100%	22:46	62	0	100%

Moon Effect:	Start:	Land Use: Urban / Agriculture / (Forest) / Water / Wetland / Barren *(describe)*:
WAX. CRES	NA	Mixed forest 43
	Stop: NA	

NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	1x2H-6m	NA	NA	1x2H-6m	1x2H-6m	1x2H-9m
Pool size WxL	NA			45ft x 10ft	NA	NA
Swoop WxL	NA			UNLIM	NA	NA
Photo? or #	Price			Price	Price	Price

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 22-Jan-2018

Net 6 - Trail 1x2H-6m

See Data Sheet from 22-Jan-2018

Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: 647 County: Hyde Site #: 4 Night# 5 Site Name: GR4 Date: 16-FEB-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1					No Captures								
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

NCDOT Mist-Netting Data Form

Project:	647	**County:**	Hyde	**Site#:**	4	**Night#:**	6	**Site Name:**	GR4	**Date:**	17-FEB-2018
Latitude:	35.39989	Longitude:	-76.10429					Datum: NAD-83	Elevation: 3ft	ID By:	Price Sewell
Observers:	Price Sewell, Tyler Blevins							Start Time: 17:47		End Time:	22:47

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	17:47	52	0	100%	20:14	51	2	100%	23:42	52	0	100%

Moon Effect: WAX-CRES — Start: NA — Stop: NA

Land Use: Urban / Agriculture / Forest / Water / Wetland / Barren *(describe)*: Mixed forest

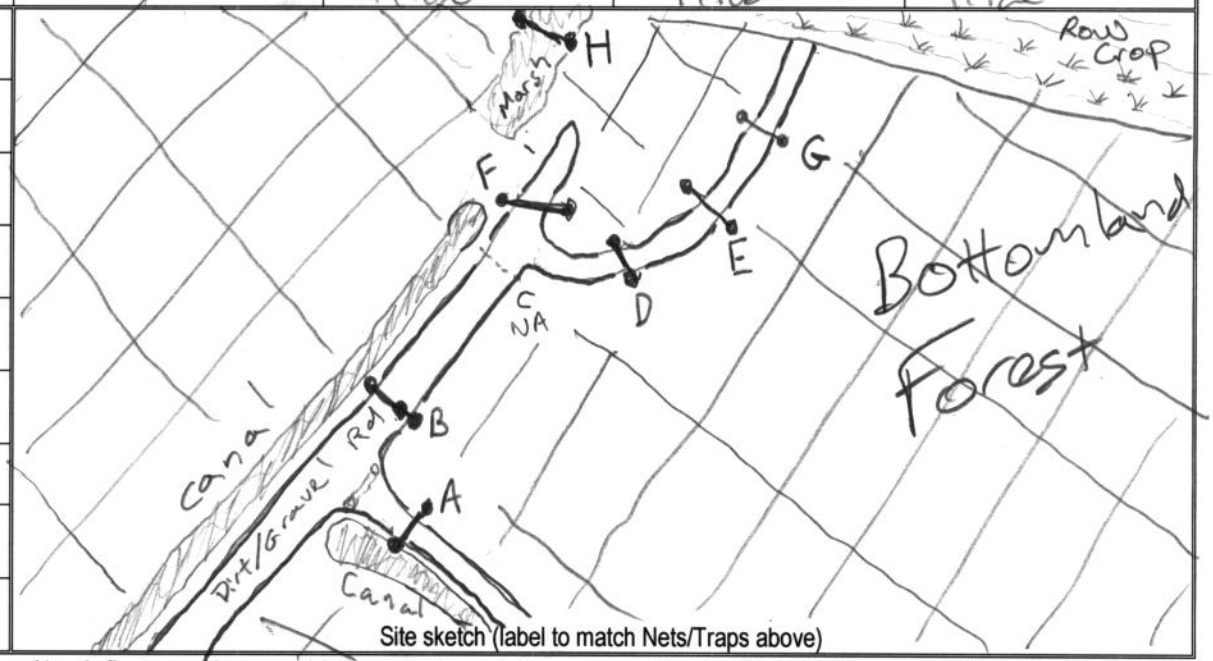
NETS/TRAPS:	**A:**	**B:**	**C:**	**D:**	**E:**	**F:**
	NA	NA	NA	1x2H-6m	1x2H-6m	1x2H-9m
Pool size WxL				4ft x 10ft	NA	NA
Swoop WxL				UNLIM	NA	NA
Photo? or #				Price	Price	Price

Site Description, other than Habitat Info covered on pg 3:

See data sheet from 22-Jan-2018.

Net G - 1x2H-6m

Net H - 1x2H-6m



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: 647 County: Hyde Site #: 4 Night# 6 Site Name: GR4 Date: 17-FEB-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	—	NO BATS											
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

GRO4

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land)/mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

NCDOT Mist-Netting Data Form

Project:	647-NCDOT MYSE	**County:**	Hyde	**Site#:**	5	**Night#:**	1	**Site Name:**	GR 5	**Date:**	23-Feb-2018
Latitude:	35.363014	Longitude:	-76.156731					Datum: NAD 83	Elevation: 3 ft	ID By:	Price Sewell
Observers:	P. Sewell ; T. Blevins							Start Time: 1752		End Time:	

Conditions:	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds	Time	Temp	Wind	Clouds
	1752	58	0	0	2015	53.4	0	0	2252	49.6	0	0

Moon Effect: 1st Quarter

Start: 1752

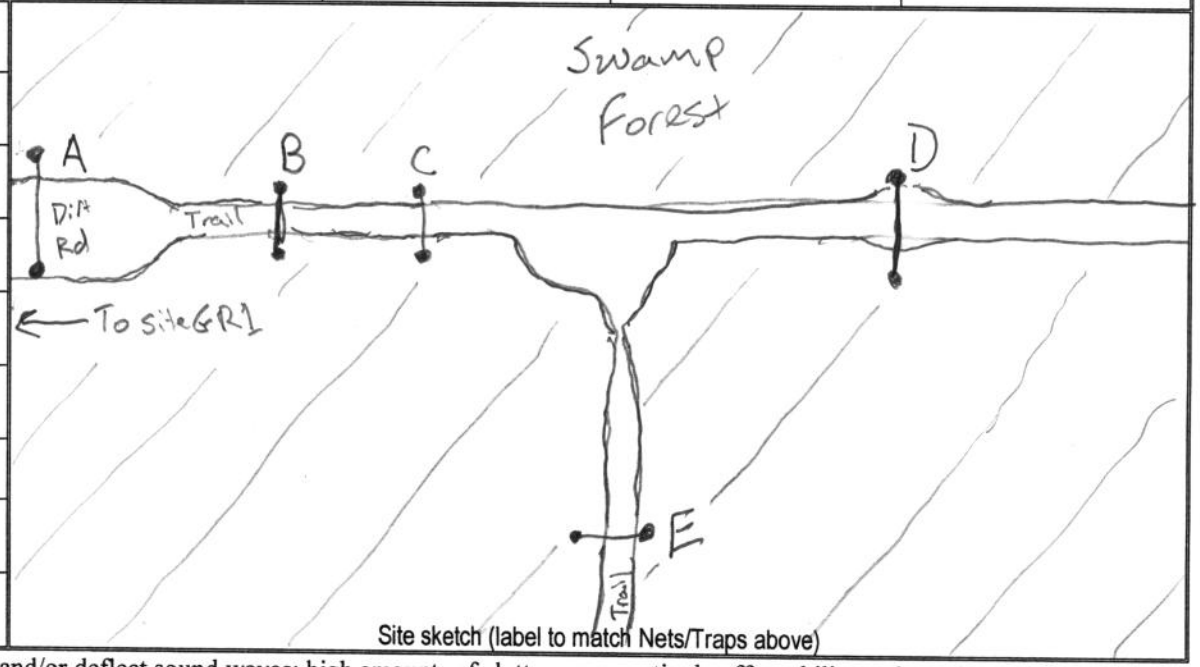
Stop: 2252

Land Use: Urban / Agriculture / (Forest) / Water / (Wetland) / Barren *(describe)*:

NETS/TRAPS:	**A:** 1X2H-9m	**B:** 1x1H-4m	**C:** 1X2H-4m	**D:** 1x2H-6m	**E:** 1x1H-6M	**F:**
Pool size WxL	NA	NA	NA	NA	NA	
Swoop WxL	NA	NA	NA	NA	NA	
Photo? or #	P. Sewell	P. Sewell	P. Sewell	P. Sewell	P. Sewell	

Site Description, other than Habitat Info covered on pg 3:

Tight Corridors w/ low canopy Inundated Forest - Mixed. Dirt road ends in trail along berms through inundated forest. Persea borbonia, Persea palustris, Nyssa aquatica, Pinus serotina, Pinus strobus



Site sketch (label to match Nets/Traps above)

*Clutter: Physical/structural components of the environment that block and/or deflect sound waves; high amounts of clutter can negatively affect ability to detect bat calls. Consider all vegetative strata together when estimating cover (shrub, mid and canopy). For **mist net sites**, record clutter as an average number representing the surrounding forest where all nets were set, not specifically the flyway (see pg3).

Bat Survey Data Form

Page _____ of _____

Project: 647 NCDOT County: Hyde Site #: 5 Night# 1 Site Name: GR5 Date: 23-Feb-2018

	TIME	SPECIES	Sex	Age	P / L / PL / NR	FA	Bag WT	WT	Net #	Height	Band / WS	Temp (F)	Comment / Photo #
1	~	No Bats											
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

GR5 23-February-2018

P. Sewell

T. Blevins

Mist Net Sites Habitat Info – please **circle** the option that best fits

Pine / hardwood / mixed / unforested

Upland / bottomland

Managed (thinned, burned, pine plantation or otherwise disturbed) / unmanaged

Mature forest / <20 years old forest or cutover

Natural (>50% wooded), rural (>50% agricultural land) / mixed (primary land use is not wooded or agricultural)

Mist Net Sites Clutter Estimate: record clutter as an **average number** representing the surrounding forest where all nets were set, looking at all strata. So, if you are in a *40-50 year unmanaged pine stand with a dense gallberry/bayberry understory*, average the strata together and then ask, is it greater than 75% cover or less than? So, let's say the canopy is 65%, mid is 35% and under is 90% (each strata represents its own canopy estimate up to 100%) the average for this scenario would then be 63%, which would put it in the med (3) category. If there is only one strata, a dense monoculture of young pines with 95% cover, then you would only have one estimate and that would fall in the high (4) category. If you are in a fairly mature long leaf pine/wiregrass savanna and the canopy is 55%, mid is 15% and under is 10%, the average would be 27% and you would be in the low (2) category. Think about cover estimates in this context: Physical/structural components of the environment that block and/or deflect sound waves. Don't think about cover in the typical vegetation monitoring sense of how much is shading the ground/veg beneath (vertically). Think of it instead as what would deflect sound waves as the bat moves through it horizontally. If the bat cannot move through it at all then that would be 90-100% like the gallberry understory example.

(1) sparse/no, < 10% cover
(2) low, 10–39% cover
(3) medium, 40–75% cover
(4) high, > 75% cover

Any Other Habitat Notes:

Appendix D
Photographs of Mist-Nets

Winter 2017-2018 Mist-Net Site Photographs

Alligator River National Wildlife Refuge Sites

Site ARNWR01 Net A

Site ARNWR01 Net B

Site ARNWR01 Net C

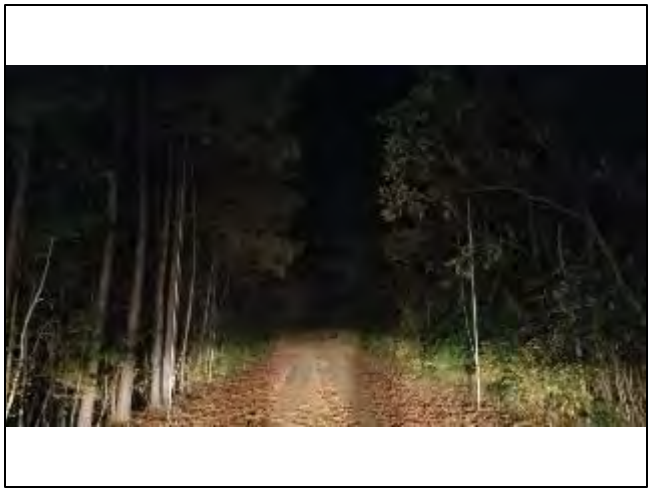
Site ARNWR01 Net D

Site ARNWR01 Net E

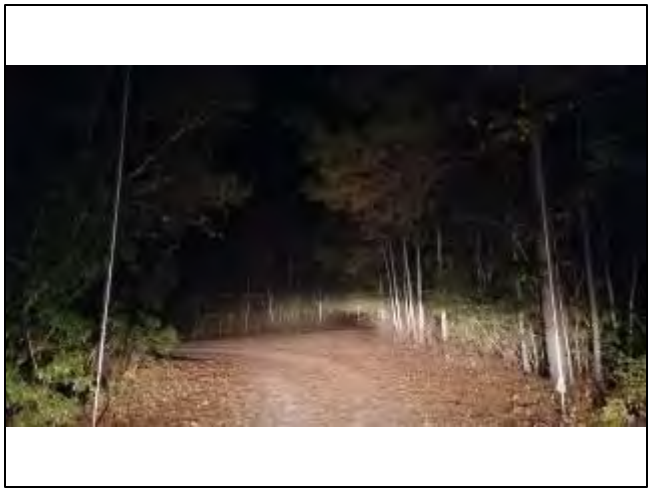
Site ARNWR01 Net F

Site ARNWR01 Net G

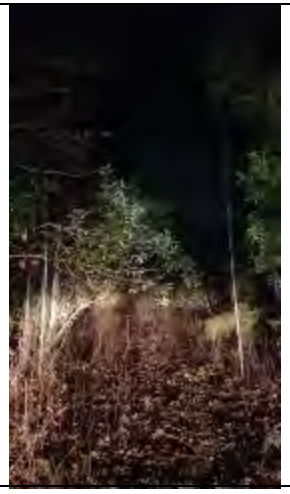
Site ARNWR01 Net H



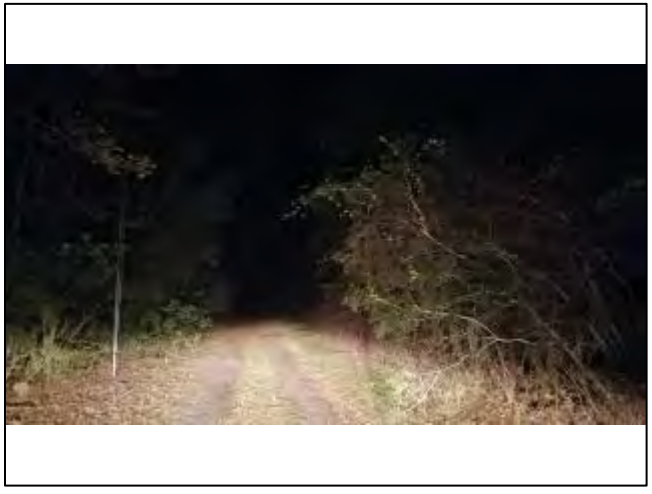
Site ARNWR02 Net A



Site ARNWR02 Net B



Site ARNWR02 Net C



Site ARNWR02 Net D

Site ARNWR03 Net A

Site ARNWR03 Net B

Site ARNWR03 Net C

Site ARNWR03 Net D

Site ARNWR04 Net A

Site ARNWR04 Net B

Site ARNWR04 Net C

Site ARNWR04 Net D

Site ARNWR04 Net E

Site ARNWR04 Net F

Site ARNWR05 Net A

Site ARNWR05 Net B

Site ARNWR05 Net C

Site ARNWR05 Net D

Site ARNWR06 Net A

Site ARNWR06 Net B

Site ARNWR06 Net C

Site ARNWR06 Net D

Site ARNWR07 Net A

Site ARNWR07 Net B

Site ARNWR07 Net C

Site ARNWR07 Net D

Site ARNWR08 Net A

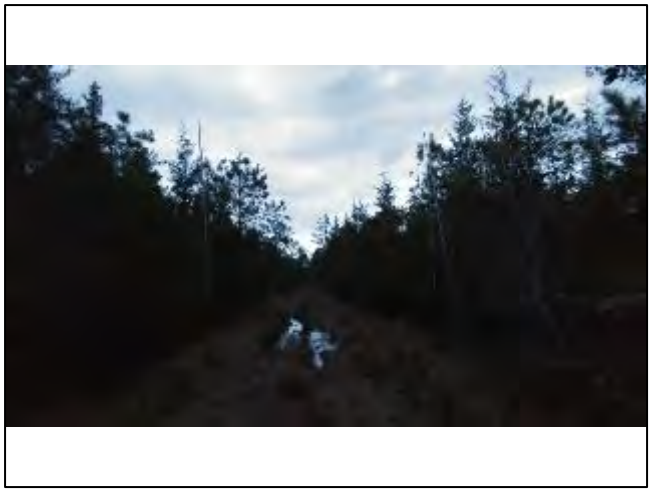
Site ARNWR08 Net B

Site ARNWR08 Net C

Site ARNWR08 Net D

Site ARNWR09 Net A

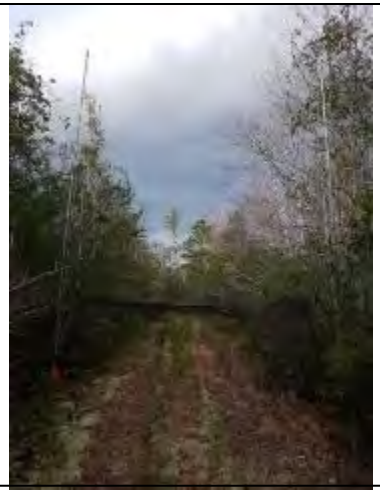
Site ARNWR09 Net B



Site ARNWR09 Net C

Site ARNWR09 Net D

Site ARNWR10 Net A

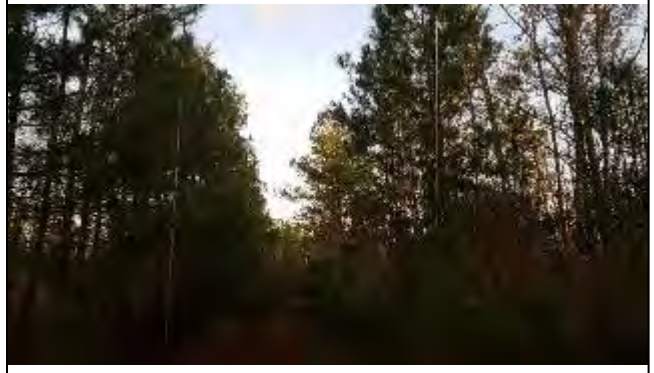


Site ARNWR10 Net B

Site ARNWR10 Net C

Site ARNWR10 Net D

Site ARNWR11 Net A



Site ARNWR11 Net B

Site ARNWR11 Net C

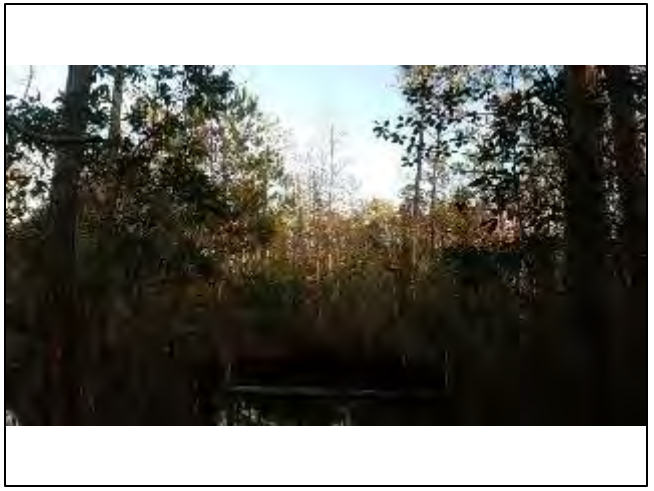
Site ARNWR11 Net D

Site ARNWR12 Net A

Site ARNWR12 Net B

Site ARNWR12 Net C

Site ARNWR12 Net D



Site ARNWR13 Net A

Site ARNWR13 Net B

Site ARNWR13 Net C

Winter 2017-2018 Mist-Net Site Photographs

Gull Rock State Gameland Sites

Site GR01 Net A

Site GR01 Net A Feb 2018

Site GR01 Net B

Site GR01 Net B Feb 2018

Site GR01 Net C

Site GR01 Net C Feb 2018

Site GR01 Net D

Site GR01 Net D Feb 2018

Site GR01 Net E

Site GR01 Net F

Site GR01 Net G

Site GR02 Net A

Site GR02 Net A Feb 2018

Site GR02 Net B

Site GR02 Net B Feb 2018

Site GR02 Net C

Site GR02 Net C Feb 2018

Site GR02 Net D

Site GR02 Net D Feb 2018

Site GR02 Net E

Site GR03 Net A

Site GR03 Net B

Site GR03 Net C

Site GR03 Net D

Site GR03 Net E

Site GR04 Net A

Site GR04 Net A Feb 2018

Site GR04 Net B

Site GR04 Net C

Site GR04 Net D

Site GR04 Net D Feb 2018

Site GR04 Net E

Site GR04 Net C

Site GR05 Net A

Site GR05 Net B

Site GR05 Net C

Site GR05 Net D

Site GR05 Net E

Appendix E
Photographs of Captured *Myotis septentrionalis*

Captured Northern Long-Eared Bats (*Myotis septentrionalis*)

NCDOT1630, Site ARNWR01, November 15, 2017

CC1700, Site ARNWR01, November 15, 2017

CC1451, Site ARNWR02, November 15, 2017

CC1453, Site ARNWR03, November 18, 2017

Captured Northern Long-Eared Bats (*Myotis septentrionalis*)

CC2103, Site ARNWR05, November 18, 2017 (Face)

CC2103, Site ARNWR05, November 18, 2017 (Foot)

CC1691, Site ARNWR04, November 21, 2017 (Face)

CC1691, Site ARNWR04, November 21, 2017 (Foot)

Captured Northern Long-Eared Bats (*Myotis septentrionalis*)

CC2107, Site ARNWR06, November 21, 2017 (Face)

CC2107, Site ARNWR06, November 21, 2017 (Foot)

CC0100, Site ARNWR01, February 7, 2018 (Face)

CC0100, Site ARNWR01, February 7, 2018 (Foot)

Captured Northern Long-Eared Bats (*Myotis septentrionalis*)

CC0101, Site ARNWR06, February 15, 2018

CC2110, Site ARNWR05, February 19, 2018 (Face)

CC2110, Site ARNWR05, February 19, 2018 (Foot)

CC0711, Site ARNWR09, February 19, 2018

Captured Northern Long-Eared Bats (*Myotis septentrionalis*)

CC1723, Site ARNWR03, February 19, 2018 (Face)

CC1723, Site ARNWR03, February 19, 2018 (Foot)

CC2112, Site ARNWR11, February 20, 2018 (Face)

CC2112, Site ARNWR11, February 20, 2018 (Foot)

Captured Northern Long-Eared Bats (*Myotis septentrionalis*)

CC0723, ARNWR12, February 21, 2018 (Face)

CC0723, ARNWR12, February 21, 2018 (Foot)

CC1725, Site ARNWR09, February 22, 2018 (Face)

CC1725, Site ARNWR09, February 22, 2018 (Foot)

Captured Northern Long-Eared Bats (*Myotis septentrionalis*)

CC1056, Site ARNWR12, February 22, 2018 (Face)

CC1056, Site ARNWR12, February 22, 2018 (Foot)

Appendix F
Completed Roost Tree and Emergence Datasheets

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/.063 **Band #** CC1451 Sheet 1 of 1

Roost No. 900 **Project.Phase#** 647 **Project Name** 647 NCDOT MYSE **Date First Found** 16 NOV. 17

Location Halfway between Sandy Ridge Cut and ponds south of Sandy Ridge Rd **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** R. Eaton, K. Eshler **Datum** NAD 83

Lat/Long or UTM (circle one): N/Easting 35.830613 **W/Northing** 75.906914 **UTM Zone** –

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	900	Nyssa aquatica		3.5		7	60	40	SC	
2		"		13		1	0	100	C	
3		"		14		1	0	100	C	
4		"		7		3	5	80	SC	
5		Ukn snag		3		7	0	0	SC	
6		Nyssa aquatica		12		1	0	1000	C	
7		"		11		1	0	100	C	
8		"		10		1	0	100	C	
9		"		12		1	0	100	C	
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
60	30	90

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure: 15

Roost Type[4]: Tree-dead

MicroHabitat[5] **Used by Bat:** exfoliating bark

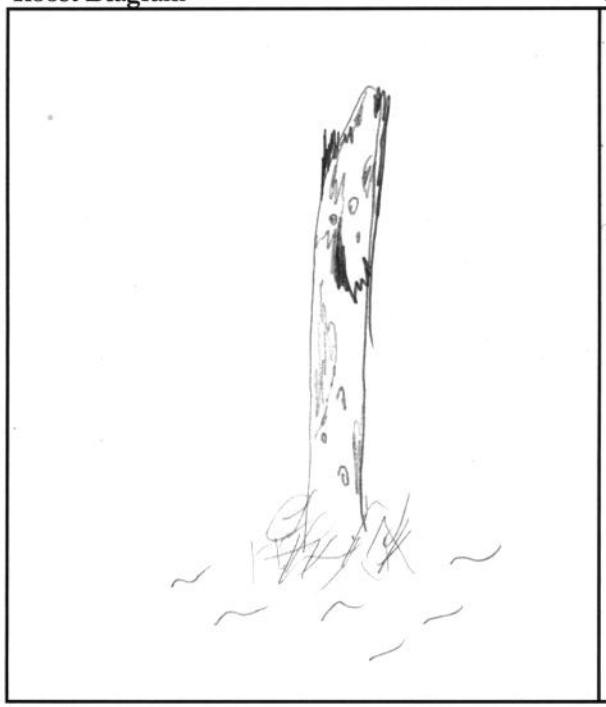
Notes Some Nyssa trees are now thought to be N. biflora

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 900 **Bat Species/Sex/Frequency:** MYSE/M/.003 **Band #** CC1451

Roost Diagram



Location Diagram

Bat Days

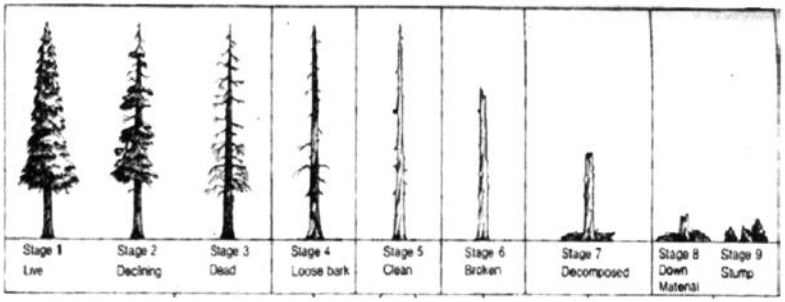
No.	Date 20___	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	16 NOV17	603	CC1451	M	–
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	16 NOV17	55	Clear	1	1653	1739	1739	1	1	RE/KE
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 16 Nov 17 **Surveyor(s) Full Name:** Ray Eaton, Kelsie Eshler

State: NC **County:** Dare **Project Name:** 6047 NCDOT MYSE

Site Name/#: ARNWR 2 **Roost Name/#** 900 **Bat #:** CC1451

Lat/Long or UTM of Roost: 35.82943, -75.96092

Description of Roost/Habitat Feature Surveyed: Dead snag with multiple cracks/crevices and exfoliating bark

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis

Other Suspected Bat Species (explain):

Weather Conditions during Survey (temperature, precipitation, wind speed):
55° F, Clear, No wind

Survey Start Time: 1620 **Time of Sunset:** 1653 **Survey End Time:** 1800

NOTE: Emergence surveys should begin ½ hour before sunset and continue for a minimum of 1 hour or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
17:39	1	Confirmed with radio transmitter

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/.063 **Band #** CC1451 Sheet 1 of 1

Roost No. 14 **Project.Phase#** 647 **Project Name** 647 NCDOT MYSE **Date First Found** 17 NOV 17

Location West of ponds, south of Sandy Ridge Rd, east of RT 900 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** R. Eaton, K. Eshler **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.83088 W/Northing -75.90517 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	14	Acer rubrum	11.0	7.5	4.5	2	5	65	SC	
2		Pinus taeda	14.9	14		1	5	100	C	
3		Nyssa aquatica	12.0	13.5		1	0	100	SC	
4		"	13.3	14		1	0	100	C	
5		"	20.5	17		1	0	100	C	
6		"	20	2.5		6	5	75	SC	
7		Pinus taeda	34.5	22		1	5	100	C	
8		Persea palustris	10.0	15		1	0	100	C	
9		Pinus taeda	14.9	17		1	0	100	C	
10		Holly/myrtle	13.5	12		1	5	100	SC	
11		Nyssa aquatica	10.3	13		1	0	100	C	
12		"	8.7	11		1	0	100	SC	
13		"	7.9	10		1	0	100	SC	
14		Taxodium distichum	8.5	8		1	0	100	SC	
15		Nyssa aquatica	8.1	9		1	0	100	SC	
16		"	12.3	10.5		1	0	100	C	
17		Acer rubrum	8.5	3		7	10	60	SC	
18		Pinus taeda	24.2	23.5		2	5	95	C	
19		Nyssa aquatica	8.7	8		1	0	100	SC	
20		"	10.4	13		2	5	100	SC	
21		"	8.0	9		1	0	100	SC	
22		"	10.4	15		1	0	100	C	

Basal Area (#trees × 10)

Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
200	20	220

↓ **Roost Only** ↓

Habitat (Circle One)

Interior	Edge	Open

% Canopy Closure

65

Roost Type[4]

Tree-Live

MicroHabitat[5] **Used by Bat**

Crevice/crack

Notes #14 said cypress - not positive T. distichum is

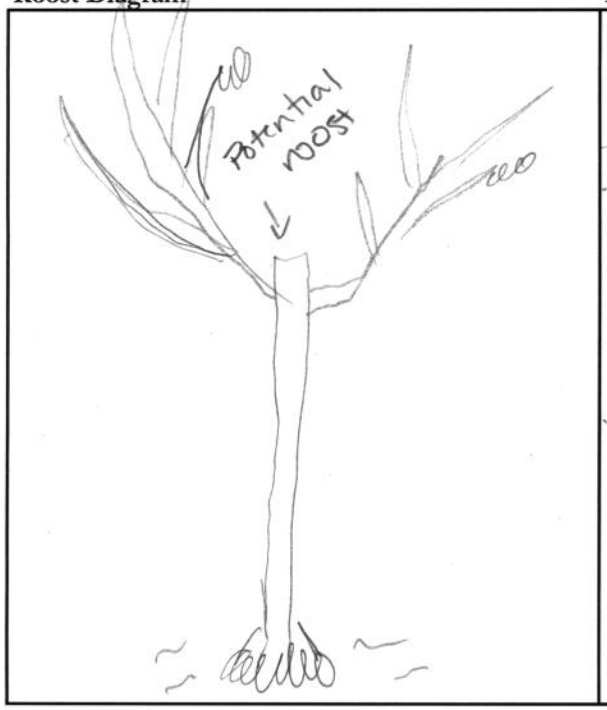
A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

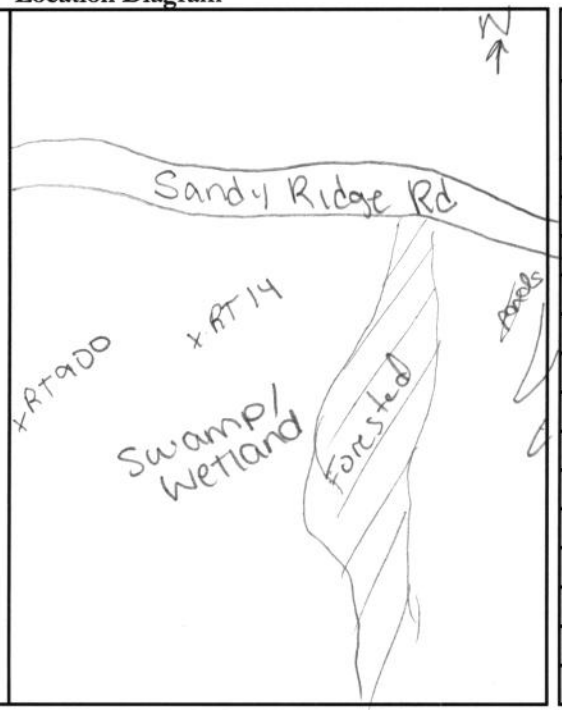
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 14 **Bat Species/Sex/Frequency:** MYSE/M/.063 **Band #** CC1451

Roost Diagram



Location Diagram



Bat Days

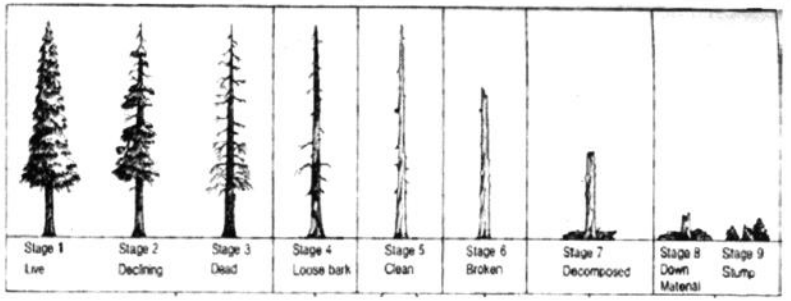
No.	Date 20___	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	17Nov17	.063	CC1451	M	—
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	17NOV17	45	Clear	0	1653	—	—	—	0	RE
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 17 Nov 17 **Surveyor(s) Full Name:** Ray Eaton

State: NC **County:** Dare **Project Name:** Eastern NC M.YSE

Site Name/#: _____ **Roost Name/#** 14 **Bat #:** CC1451

Lat/Long or UTM of Roost: 35.83088, -75.90517

Description of Roost/Habitat Feature Surveyed:

Crack in live tree

Bat Species Known to be using this Roost/Feature (if not known, leave blank):

Myotis septentrionalis

Other Suspected Bat Species (explain): _____

Weather Conditions during Survey (temperature, precipitation, wind speed):

45°, clear.

Survey Start Time: 1620 **Time of Sunset:** 1653 **Survey End Time:** 1753

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
—	—	No bats emerged

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/.065 **Band #** CC1451 Sheet 1 of 1

Roost No. 422 **Project.Phase#** 1647 **Project Name** NCDOT MYSE **Date First Found** 18 Nov 2017

Location Nest of ponds, south of Sandy Ridge Rd. east of RT900 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Wethel, J. Burns **Datum** NAD83

Lat/Long or UTM (circle one): (N)/Easting 35.83085 (W)/Northing 75.90514 **UTM Zone** ——

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	422	A. rubrum	6.4	5	3	2	0	100	Sub	cavity
2		Nyssa biflora	8.4	7		1	0	100	Sub	
3		"	8.1	7		1	0	100	Sub	
4		"	8.1	7		1	0	100	Sub	
5		Taxodium distichum	8.7	7.5		1	0	100	Sub	
6		N. biflora	8.1	7		1	0	100	Sub	
7		"	3.6	6		1	0	100	Sub	
8	14	A. rubrum	11.0	7.5		2	5	45	Sub	cavity
9		Pinus serotina	24.1	14		1	0	100	Canopy	
10		N. biflora	7.4	7.5		1	0	100	Sub	
11		"	9.0	7		1	0	100	Sub	
12		"	5.5	5		1	0	100	Sub	cavity
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
120	0	120

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 30

Roost Type[4]: Tree-Live

MicroHabitat[5] **Used by Bat**: cavity

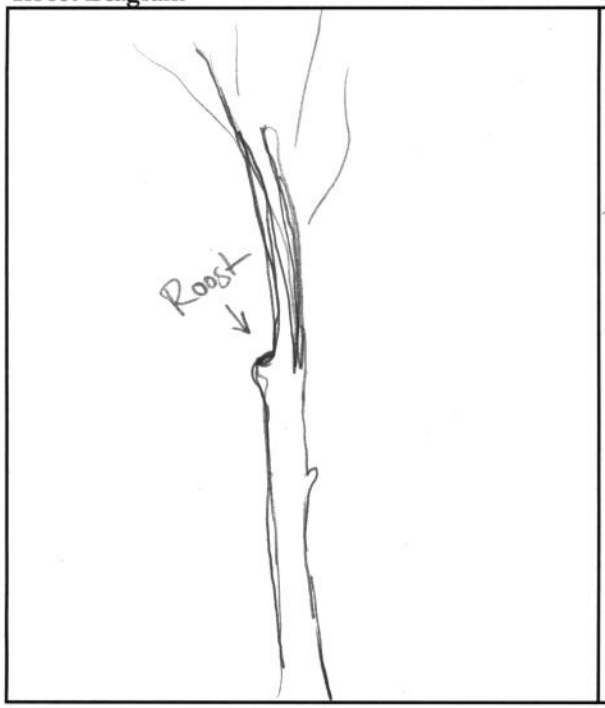
Notes ——

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 422 **Bat Species/Sex/Frequency:** MYSE/M/.063 **Band #** CC1451

Roost Diagram



Location Diagram

Bat Days

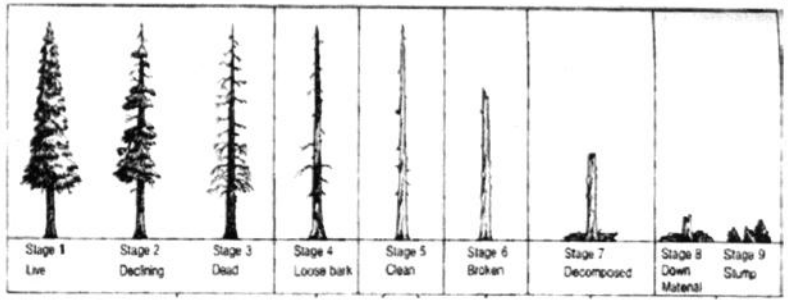
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	17Nov17				
2	18Nov17	.063	CC1451	m	
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	18 Nov	62	clear	0	1653	—	—	=	—	TW
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1						
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 18 NOV 17 **Surveyor(s) Full Name:** Ian Burns

State: NC **County:** Dare **Project Name:** MYSE Eastern Research Project

Site Name/#: ARNWR2 **Roost Name/#** 422 **Bat #:** CC1451

Lat/Long or UTM of Roost: 35.83085 , -75.90514

Description of Roost/Habitat Feature Surveyed: Small Acer rubrum with cavity approx. 3 meters from ground.

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis

Other Suspected Bat Species (explain):

Weather Conditions during Survey (temperature, precipitation, wind speed):
62°, light wind.

Survey Start Time: 1624 **Time of Sunset:** 1654 **Survey End Time:** 1854

NOTE: Emergence surveys should begin ½ hour before sunset and continue for a minimum of 1 hour or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1742	1	Too dark to see - tagged bat

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR 2 **Roost Name/#:** 422

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	1	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

Bat emerged at 1742. It was too dark to see it emerse. Heard it leave with a receiver.

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE / Male / 172.063 **Band #** CC1451 Sheet 1 of 1

Roost No. 17 **Project.Phase#** 647.04 **Project Name** Easter NC MYSE **Date First Found** 19-Nov-2017

Location In wooded swamp south of Sandy Ridge Rd, West of fresh water ponds **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Zack Baer, Ian Burns **Datum** NAD-83

Lat/Long or UTM (circle one): N/Easting 35.83055 **W/Northing** -75.90617 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	17	Nyssa aquatica	7.9	10	4	1	0	100	SC	broken branch
2		Nyssa aquatica	17.4	13	—	2	0	100	SC	
3		Chamaecyparis thyoides	29.5	19	—	3	0	100	C	
4		Nyssa aquatica	9.5	12	—	1	0	100	SC	
5		Nyssa aquatica	10.9	10	—	1	0	100	SC	
6		Nyssa aquatica	10.8	11	—	1	0	100	SC	
7		Nyssa aquatica	12.7	14	—	1	0	100	SC	
8		Nyssa aquatica	7.9	8	—	2	0	100	U	
9		Nyssa aquatica	9.0	12	—	2	0	100	SC	
10		Nyssa aquatica	13.5	16	—	1	0	100	SC	
11		Chamaecyparis thyoides	23.3	18	—	1	0	100	C	
12		Nyssa aquatica	11.3	12	—	1	0	100	SC	
13		Chamaecyparis thyoides	21.0	16	—	1	0	100	SC	
14		Pinus taeda	19.4	18	—	1	0	100	C	
15		Nyssa aquatica	11.3	14	—	1	0	100	SC	
16		Nyssa aquatica	20.0	18	—	1	0	100	C	
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
15	1	160

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 100

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat**: Cavity

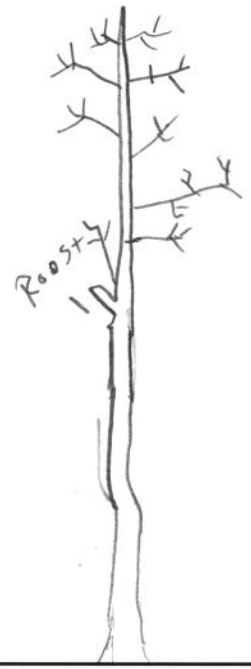
Notes Roost located in Cavity from rotten branch

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

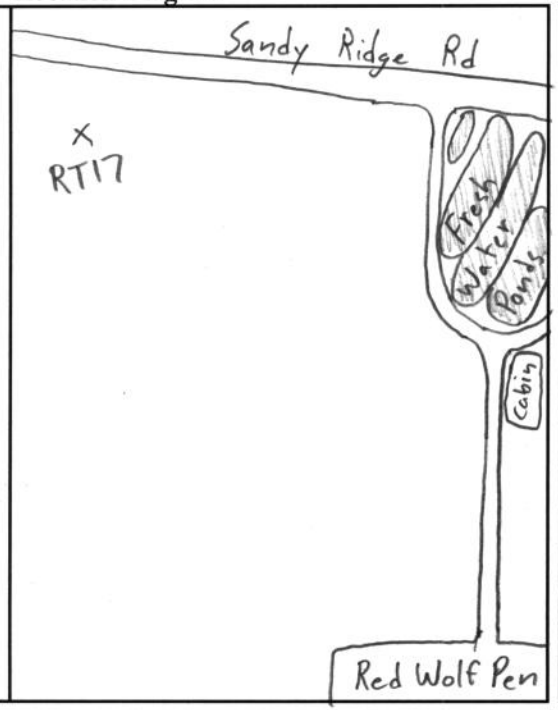
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 17 Bat Species/Sex/Frequency: MYSE / Male / 172.063 Band # CC1451

Roost Diagram



Location Diagram



Bat Days

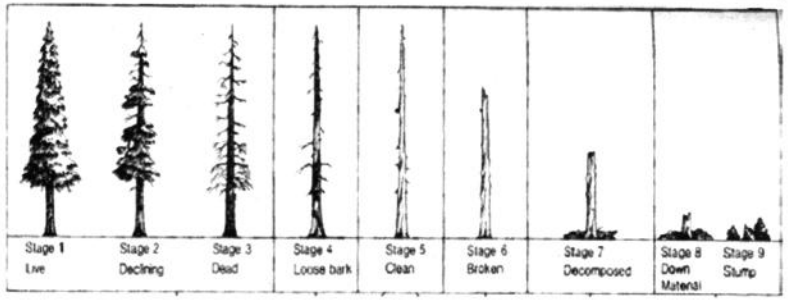
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	19-Nov	063	CC1451	M	no emerge count
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	20-Nov	46	clear	0	1652	N/A	N/A	N/A	N/A	Z. Baer *
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Cavity	161	2	2	4	
2						
3						
4						



Comments: * = bat .063 not in roost during exit count, no bats emerged.

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 20-Nov-2017 **Surveyor(s) Full Name:** Zack Baer
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: ARNWR02 **Roost Name/#** 17 **Bat #:** CC1451
Lat/Long or UTM of Roost: 35.83055 -75.90617
Description of Roost/Habitat Feature Surveyed: Nyssa aquatica in wooded swamp
Bat Species Known to be using this Roost/Feature (if not known, leave blank): MYSE
Other Suspected Bat Species (explain): NONE
Weather Conditions during Survey (temperature, precipitation, wind speed): 46°, Clear
Survey Start Time: 1622 **Time of Sunset:** 16:52 **Survey End Time:** 1740

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
	0	No Bats Emerged

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR02 **Roost Name/#:** 17

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	0	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

No radio-tagged bat was roosting in the tree

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/Male/172.063 **Band #** CC1451 Sheet 1 of 1

Roost No. 21 **Project.Phase#** 647.04 **Project Name** Eastern NC MYSE **Date First Found** 20-Nov-2017

Location Edge of Woodlot, Southwest of Freshwater Ponds **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Zach Baer, Ian Burns **Datum** NAD-83

Lat/Long or UTM (circle one): N/Easting 35.82955 **W/Northing** -75.90286 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	21	Liquidambar Styraciflua	36.2	24	17	1	0	100	C	
2		Liquidambar Styraciflua	28.5	16	—	1	0	100	S-C	
3		Pinus taeda	48.9	25	—	1	0	100	C	
4		Liquidam Styraciflua	20.2	17	—	1	0	100	S-C	
5		Pinus taeda	51.6	26	—	1	0	100	C	
6		Pinus taeda	69.5	28	—	1	0	100	C	
7		Pinus taeda	36.0	24	—	1	0	100	C	
8		Liquidambar Styraciflua	16.4	15	—	1	0	100	S-C	
9		Liquidambar Styraciflua	19.0	15	—	1	0	100	S-C	
10		Liquidambar Styraciflua	11.5	2	—	2	0	70	U	
11		Pinus taeda	51.9	23	—	1	0	100	C	
12		Liquidambar Styraciflua	46.5	26	—	1	0	100	C	
13		Liquidambar Styraciflua	12.2	14	—	1	0	100	U	
14		Pinus taeda	61.0	25	—	1	0	100	C	
15		Liquidambar Styraciflua	26.1	20	—	1	0	100	S-C	
16		Unk. Spp	55.6	7	—	7	0	0	U	
17		Liquidambar Styraciflua	10.2	13	—	1	0	100	U	
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
160	10	170

↓ **Roost Only** ↓

Habitat (Circle One): Interior | (Edge) | Open

% Canopy Closure: 90

Roost Type[4]: Tree-Live

MicroHabitat[5] **Used by Bat**: Cavity

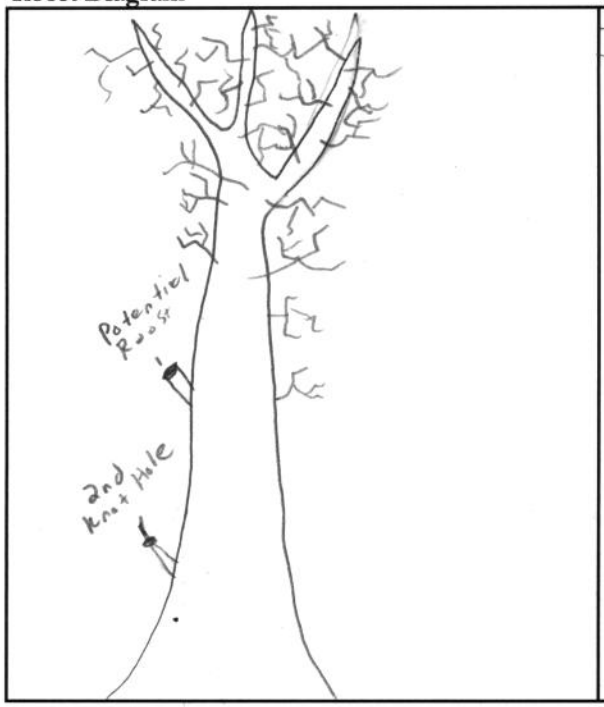
Notes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

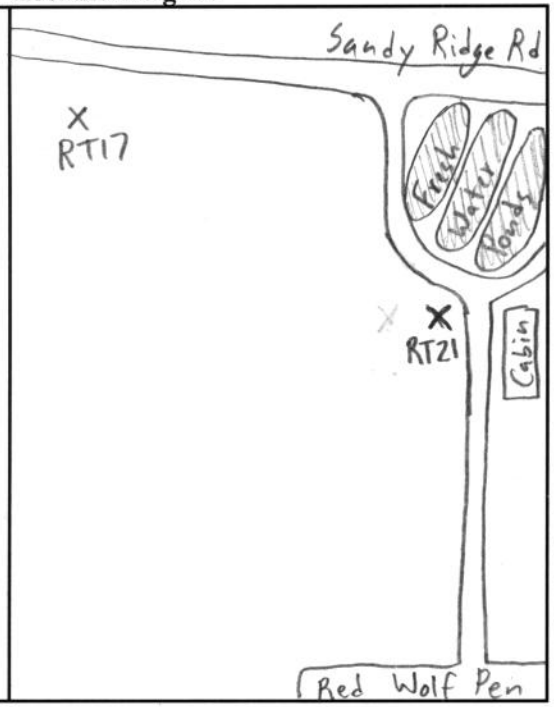
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 21 Bat Species/Sex/Frequency: MYSE / Male / 173.063 Band # CC1451

Roost Diagram



Location Diagram



Bat Days

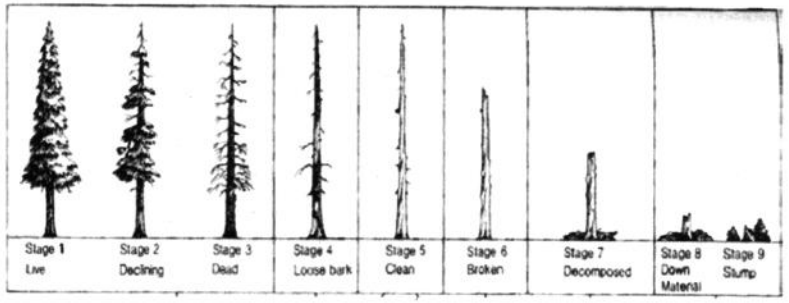
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	20-Nov	.063	CC1451	M	no emergence data
2	21-Nov	.063	CC1451	M	
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	21-NOV	59	Overcast	1	1652	1538	1538	1538	1	IB *
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1	Cavity	282	2	2	12	
2						
3						
4						



Comments: * Too dark to see bat emerge. Only heard it leave with receiver

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 21-Nov-17 **Surveyor(s) Full Name:** Ian Burns

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: ARNWR2 **Roost Name/#** 21 **Bat #:** CC1451

Lat/Long or UTM of Roost: 35.82955 -75.90286

Description of Roost/Habitat Feature Surveyed: Possibly in a cavity at the top of Sweet Gum tree.

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis Septentrionalis

Other Suspected Bat Species (explain):

Weather Conditions during Survey (temperature, precipitation, wind speed):
59°, Overcast, low wind

Survey Start Time: 1622 **Time of Sunset:** 1652 **Survey End Time:** 1740

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1738	1	Too dark to see emerse. Heard leave w/ receiver.

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR 2 **Roost Name/#:** 21

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	1	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

Bat emerged at 1738, at that time it was too dark to see it emerge. It was heard leaving with a receiver.

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/063 **Band #** CC1451 Sheet 1 of 1

Roost No. 431 **Project.Phase#** 647 **Project Name** Eastern NC MYSE **Date First Found** 22 Nov 17

Location South of Sandy Ridge Rd + north of RT900 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Wethel, K. Eshler **Datum** NAD83

Lat/Long or UTM (circle one): **N**/Easting 35.83190 **W**/Northing 75.90649 **UTM Zone**

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	431	Nyssa biflora	9.3	3.5	3.5	7	30	40	Sub	cavity
2		Nyssa biflora	8.2	6	—	1	0	100	Sub	
3		"	12.4	7.5	—	1	5	100	Can	
4		"	6.1	5.5	—	1	0	100	Sub	
5		Acer rubrum	16.3	9	—	1	0	100	Can	
6		Pinus serotina	36.0	16	—	1	0	100	Can	
7		N. biflora	9.7	6	—	1	0	100	Sub	
8		Pinus serotina	32.1	17	—	1	0	100	Can	
9		Liquidambar styraciflua	7.9	6	—	1	0	100	Sub	
10		N. biflora	13.8	9	—	1	0	100	Can	
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
90	10	100

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure
30

Roost Type[4]
Tree Dead

MicroHabitat[5] Used by Bat
Crack/crevice

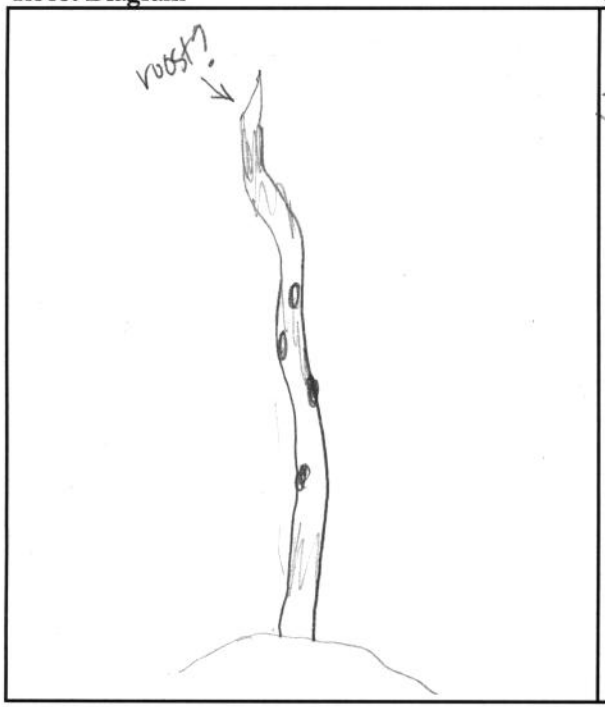
Notes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

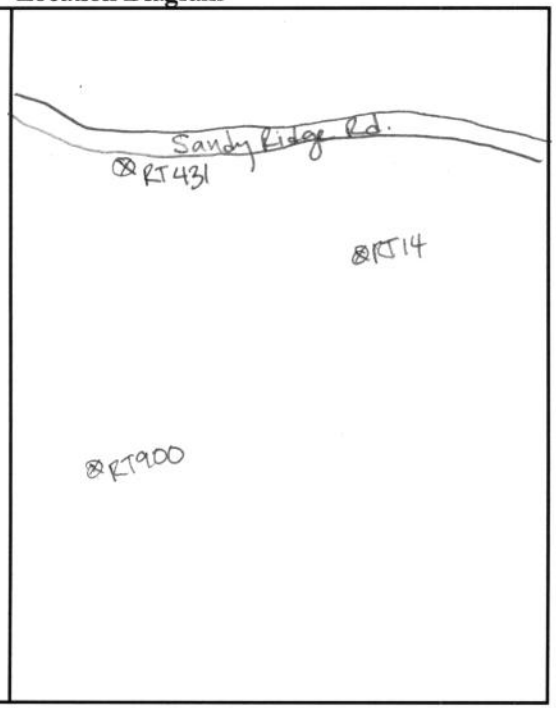
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 431 **Bat Species/Sex/Frequency:** MYSE/M/063 **Band #** CC1451

Roost Diagram



Location Diagram



Bat Days

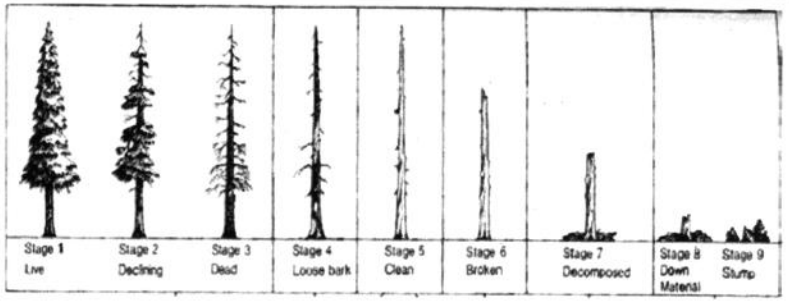
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	11/22	063	CC1451	M	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	11/22	54	partly cloudy	1	1653	1744	1744	1744	1	1. Burns
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1						
2						
3						
4						



Comments: 11/22 - too dark to see bat emerge, confirmed w/receiver

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 11/22/2017 **Surveyor(s) Full Name:** Ian Burns
State: NC **County:** Dare **Project Name:** NCDOT EasternNC MYSE
Site Name/#: _____ **Roost Name/#** 431 **Bat #:** << 1451
Lat/Long or UTM of Roost: 35.83190, -75.90649
Description of Roost/Habitat Feature Surveyed: Nyssa biflora 3.5m tall 9.3cm DBH
Bat Species Known to be using this Roost/Feature (if not known, leave blank): MYSE 172.063
Other Suspected Bat Species (explain): —
Weather Conditions during Survey (temperature, precipitation, wind speed): 54F, clear
Survey Start Time: 1621 **Time of Sunset:** 1651 **Survey End Time:** 1751

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1744	1	—

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/.003 **Band #** CC1451 Sheet 1 of 1

Roost No. 437 **Project.Phase#** 647. **Project Name** NCDOT MYSE **Date First Found** 23 NOV 17

Location South of Sandy Ridge Rd, West of ponds, near RT900 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Wetzel, K. Esnler **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.83042 W/Northing 75.90627 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	437	Nyssa biflora	38.8	13.5	6.5	7	25	90	C	
2		Pinus serotina	16.0	14		3	5	90	C	
3		Nyssa biflora	12.9	12		1	0	100	SC	
4		Pinus serotina	22.1	15		2	5	95	C	
5		Nyssa biflora	12.3	8		1	5	95	SC	
6		C. thyoides	29.8	17		1	5	100	C	
7		"	16.3	15		1	0	100	C	
8		Nyssa biflora	20.0	14		1	5	95	C	
9		"	13.6	12.5		1	0	100	C	
10		Pinus serotina	23.3	16.5		1	5	100	C	
11		Nyssa biflora	8.0	7.5		1	0	100	SC	
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
100	10	110

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure: 60

Roost Type[4]: Tree-Live

MicroHabitat[5] **Used by Bat**: Cavity

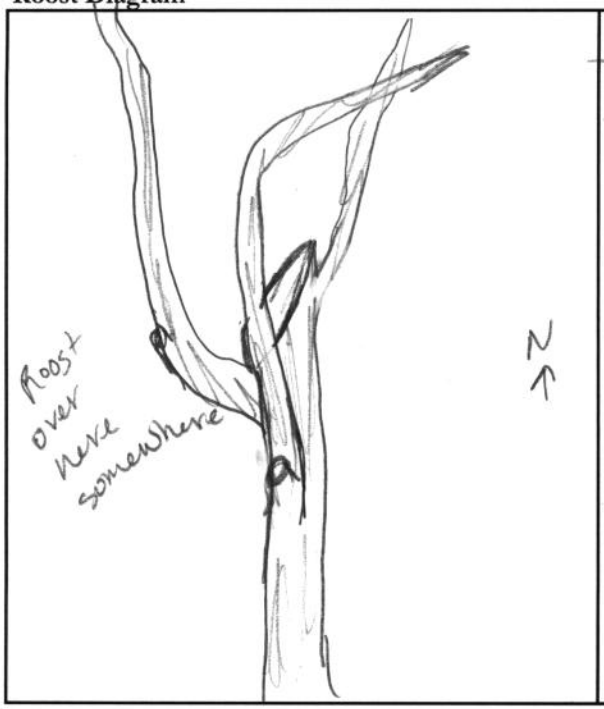
Notes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

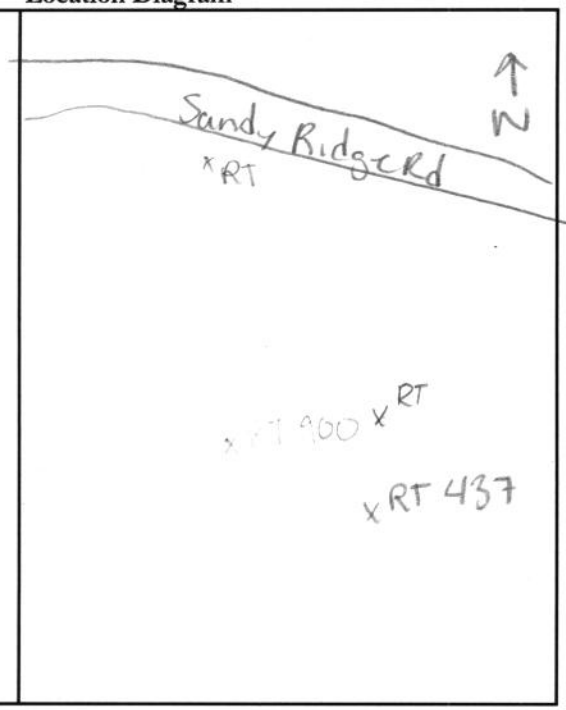
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 437 **Bat Species/Sex/Frequency:** MYSE/M/.063 **Band #** CC1451

Roost Diagram



Location Diagram



Bat Days

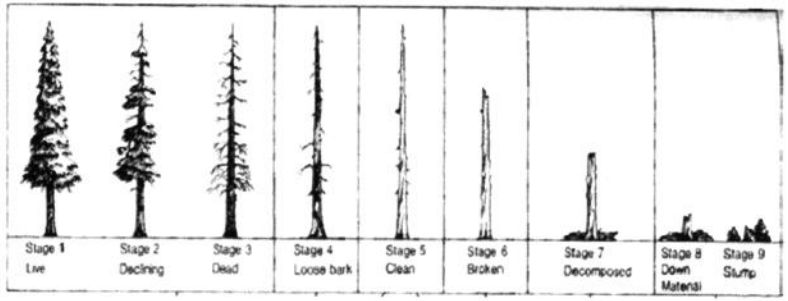
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	23 Nov17	.063	CC1451	M	
2	24 Nov	.063	CC1451	M	
3	25 Nov	063	CC1451	M	
4	26 Nov	063	CC1451	M	
5	27 Nov	063	CC1451	M	
6	28 Nov	063	CC1451	M	
7	29 Nov	063	CC1451	M	
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	24Nov	48	P.cloudy	0	1650	—	—	—	—	K.Eshler
2	29Nov	57	Cool/clear	0	1650	1756	1756	1756	756	P.Sewell
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 24 Nov 17 **Surveyor(s) Full Name:** Kelsie Eshler, Ray Eaton
State: NC **County:** Dare **Project Name:** 6047 NCDOT MYSE
Site Name/#: ABNWR2 **Roost Name/#** BT 437 **Bat #:** CC1451
Lat/Long or UTM of Roost: 35.83042, -75.90627
Description of Roost/Habitat Feature Surveyed: Declining Nyssa biflora with multiple potential roost features (bark, cavities, + cracks)
Bat Species Known to be using this Roost/Feature (if not known, leave blank): Myotis septentrionalis
Other Suspected Bat Species (explain):
Weather Conditions during Survey (temperature, precipitation, wind speed): 48°F, Partly Cloudy, NO wind
Survey Start Time: 1620 **Time of Sunset:** 1650 **Survey End Time:** 1750

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1750	0	No emergence, confirmed with radio transmitter

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 11/29/2017 **Surveyor(s) Full Name:** Haley Price, Price Sewell
State: NC **County:** Dare **Project Name:** Eastern NC MYSE '17-'18
Site Name/#: _____ **Roost Name/#** 437 **Bat #:** CC1451
Lat/Long or UTM of Roost: 35.83042, -75.90627
Description of Roost/Habitat Feature Surveyed: Nyssa biflora, 13.5m tall, 38.8cm dbh

Bat Species Known to be using this Roost/Feature (if not known, leave blank):

Other Suspected Bat Species (explain): —

Weather Conditions during Survey (temperature, precipitation, wind speed):
57°F, Clear

Survey Start Time: 1620 **Time of Sunset:** 1650 **Survey End Time:** 18:00

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1756	1	tagged bat

Roost Data Form 2017 **Bat Species/Sex/Frequency:** Myse/M/.063 **Band #** CC1457 Sheet 1 of 1

Roost No. 983 **Project.Phase#** 647 **Project Name** Eastern NC MYSE **Date First Found** 30-November-17

Location South of Sandy Ridge Rd, West of ponds, Near Rt 900 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** P. Sewell D. Batie **Datum** WGS84

Lat/Long or UTM (circle one): N/Easting 35.83047 **W/Northing** -75.90634 **UTM Zone**

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	983	Chamaecyparis thyoides	16.2	15.0	5.5	1	0	98	C	
2		Nyssa biflora	22.0	15.0		12	0	100	C	
3		C. thyoides	14.5	13.0		1	0	100	C	
4		Taxodium distichum	13.3	16.0		1	0	100	C	
5		N. biflora	6.5	11.0		1	0	100	SC	
6		N. biflora	6.5	11.0		1	0	100	SC	
7		N. biflora	10.9	15.0		1	0	100	C	
8		Persea palustris	9.4	9.0		1	0	100	SC	
9		N. biflora	12.0	13		1	0	100	C	
10		N. biflora	7.9	6.0		2	0	100	SC	
11		C. thyoides	20.0	16.0		1	0	100	C	
12		N. biflora	16.2	16.0		1	0	100	C	
13		N. biflora	10.3	11.0		1	0	100	SC	
14		Pinus serotina	23.0	17.0		1	0	100	C	
15		N. biflora	13.3	12		1	0	100	C	
16		N. biflora	10.3	10		1	0	100	C	
17	437	N. biflora	36.2	13		1	0	98	C	live-damaged
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
170	0	170

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure: 60

Roost Type[4]: Tree/Live

MicroHabitat[5] **Used by Bat**: Crevice/Crack

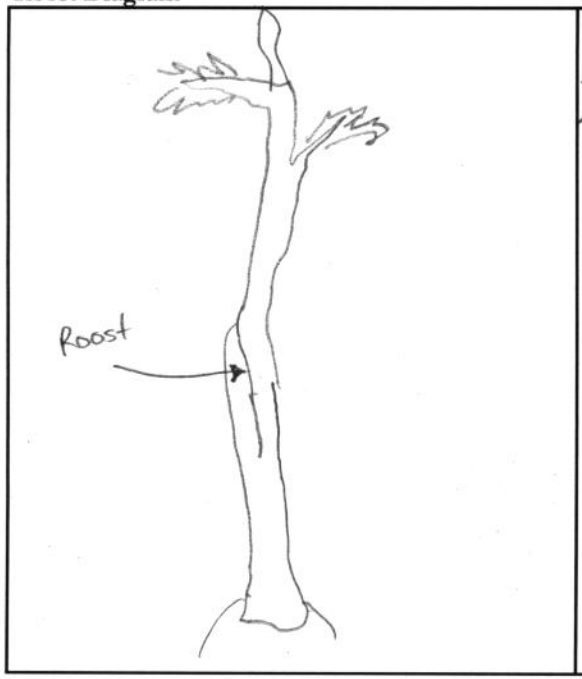
Notes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

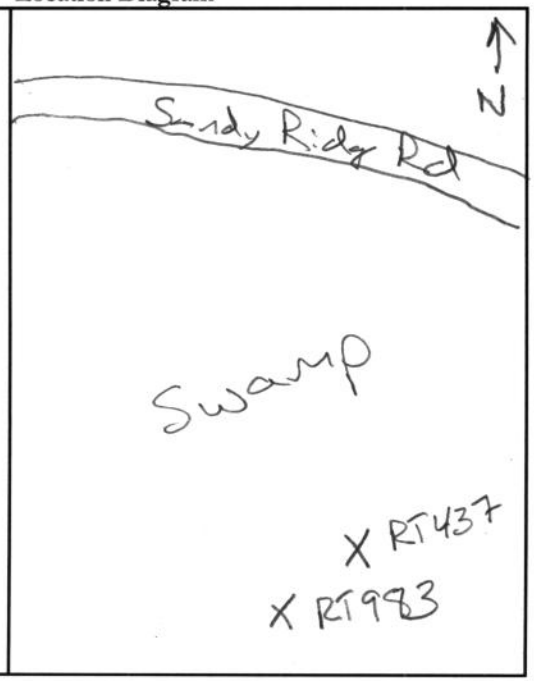
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 983 Bat Species/Sex/Frequency: MYSE/M/.063 Band # CC 1451

Roost Diagram



Location Diagram



Bat Days

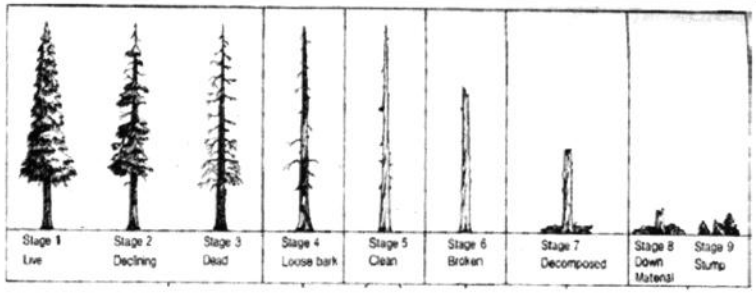
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	Nov 30	063	CC1451	M	
2	Dec 1	063	CC1451	M	
3	Dec 2	063	CC1451	M	
4	Dec 3	063	CC1451	M	
5	Dec 4	063	CC1451	M	
6	Dec 5	063	CC1451	M	
7	Dec 6	063	CC1451	M	
8	Dec 7	063	CC1451	M	
9	Dec 8	063	CC1451	M	
10	Dec 9	063	CC1451	M	
11	Dec 10	063	CC1451	M	
12	Dec 11	063	CC 1451	M	
13	Dec 12	063	CC 1451	M	
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	Nov 30	55	cool/clear	0	1650	—	—	—	—	Didn't exit
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Crevice	104	4	100	5.5	
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: Nov 30, 2017 **Surveyor(s) Full Name:** P. Sewell, ~~D. Bahe~~

State: NC **County:** Dare **Project Name:** NC DOT MySe

Site Name/#: ARNWR2 **Roost Name/#** 983 **Bat #:** CC1451

Lat/Long or UTM of Roost: 35.83047/-75.90634

Description of Roost/Habitat Feature Surveyed: Cavity of live tree (Nyssa biflora)

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MySe

Other Suspected Bat Species (explain): None

Weather Conditions during Survey (temperature, precipitation, wind speed):
55, Cool + Clear

Survey Start Time: 16:30 **Time of Sunset:** 16:50 **Survey End Time:** 17:50

NOTE: Emergence surveys should begin ½ hour before sunset and continue for a minimum of 1 hour or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
	0	No bats emerged

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR2 **Roost Name/#:** 437

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	0	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

No Bats emerged

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE / M / 172 063 **Band #** CC1451 Sheet 1 of 1

Roost No. RT 678 **Project.Phase#** 647.09 **Project Name** NCDOT NLEB winter tracking **Date First Found** 12/14/2017

Location Alligator River NWR - past gate on Sandy Ridge Rd, south of walking path **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Alexi Dart-Padover **Datum** NAD 83

Lat/Long or UTM (circle one): N/Easting 35.83104 **W/Northing** -75.90641 **UTM Zone**

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	678	Nyssa biflora	19.0	9	6 ?	1	0	100	SC	
2		Nyssa biflora	10.6	9	–	1	0	100	SC	
3		N. biflora	7.4	7	–	1	0	100	SC	
4		N. biflora	7.3	6	–	1	0	100	SC	
5		N. biflora	6.8	6	–	1	0	100	SC	
6		N. biflora	11.1	10	–	1	0	100	SC	
7		N. biflora	13.8	9	–	1	0	100	SC	
8		N. biflora	17.8	4	–	6	30	90	U	
9		N. biflora	20.8	12	–	1	0	100	C	
10		N. biflora	17.6	7	–	1	0	100	SC	
11		N. biflora	5.6	5	–	3	5	100	U	
12		N. biflora	5.9	6	–	1	0	100	SC	
13		N. biflora	4.8	5	–	1	0	100	SC	
14		Magnolia virginiana	6.6	6	–	1	0	100	SC	
15		N. biflora	17.8	8	–	1	0	100	SC	
16		N. biflora	23.1	9	–	2	0	100	SC	
17		M. virginiana	3.9	6	–	1	0	100	U	
18		N. biflora	16.0	8	–	1	0	100	SC	
19		N. biflora	11.6	9	–	1	0	100	SC	
20		Pinus serotina	22.1	16	–	1	30	100	C	
21		N. biflora	13.6	9	–	1	0	100	SC	
22		Acer rubrum	4.9	5	–	1	0	100	SC	

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
200	20	220

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure

70 * including sub canopy

Roost Type[4]

Tree - Live

MicroHabitat[5] **Used by Bat**

Cavity

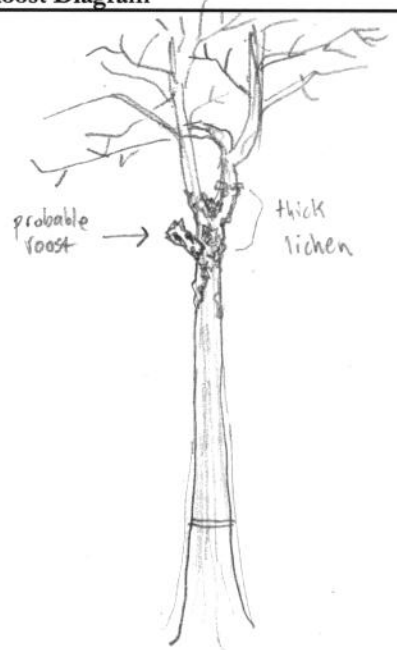
Notes Likely roost is in a 30 cm long dead branch jutting out from trunck with several holes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

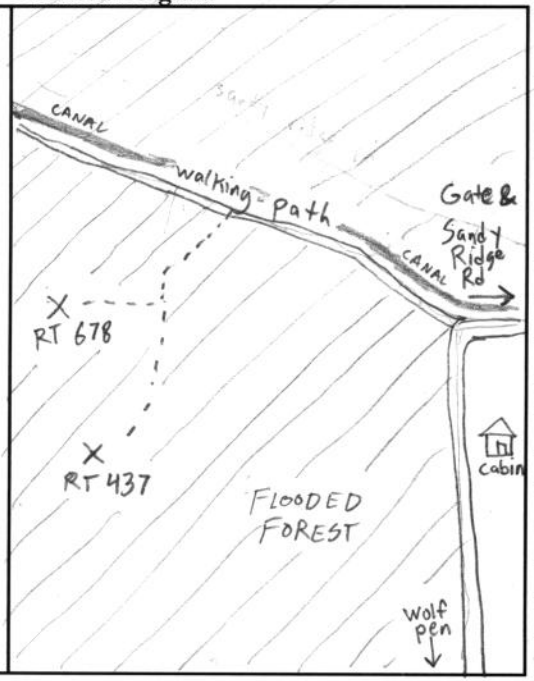
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 678 **Bat Species/Sex/Frequency:** MYSE / M / 172063 **Band #** CC1451

Roost Diagram



Location Diagram



Bat Days

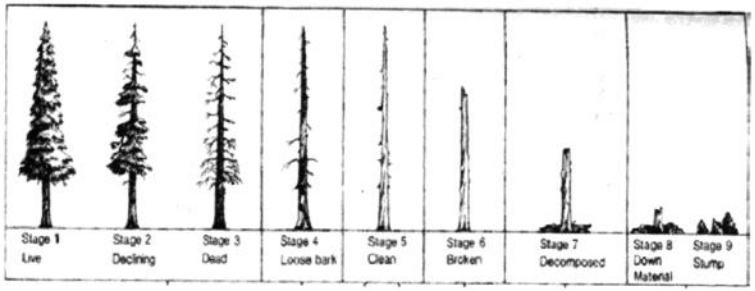
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	12/14	063	CC1451	M	
2	12/15	063	CC1451	M	
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	12/14	48°	partly cloudy	0	1650	–	–	–	–	No Bats
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	cavity	135	3	3	6	in dead blue gum stump
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 14Dec 2017 **Surveyor(s) Full Name:** Alexi Dart-Padova, Tyler Blevins

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: ARNWR2 **Roost Name/#** RT 678 **Bat #:** 172.063

Lat/Long or UTM of Roost: 35.83104 - 75.9064) CC1451

Description of Roost/Habitat Feature Surveyed: Nyssa biflora in a swamp.

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE

Other Suspected Bat Species (explain):

Weather Conditions during Survey (temperature, precipitation, wind speed):
48°, Partly Cloudy

Survey Start Time: 1620 **Time of Sunset:** 1650 **Survey End Time:** 1750

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		no bats emerged.

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/.6669 **Band #** CC1700 Sheet 1 of 1

Roost No. 762 **Project.Phase#** 647 **Project Name** 647 NCDOT MYSE **Date First Found** 16 NOV 17

Location West of Ponds off Sandy Ridge Rd past forested land **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** R. Eaton, K. Eshler **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.83041 W/Northing 75.90387 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	762	Nyssa aquatica	12.5	9.5		1	5	95	SC	
2		"	15	11		1	0	95	SC	
3		"	17	9		1	0	95	SC	
4		"	23.5	12		1	5	100	C	
5		"	25.7	14		2	0	80	C	
6		"	15.5	9		1	0	100	SC	
7		"	13.2	8.5		1	0	100	SC	
8		Pinus serotina	29.0	18		1	5	95	C	
9		Nyssa aquatica	31.9	7.5		4	15	80	SC	
10		Pinus serotina	30.5	9.5		5	10	60	SC	
11		Nyssa aquatica	26.8	4		7	0	0	SC	
12		"	22.4	13		1	5	100	C	
13		"	34.7	10.5		1	0	100	SC	
14		"	39.5	14		1	5	95	C	
15		Acer saccharinum	27.7	5		4	5	55	SC	
16		Pinus serotina	37.9	20		5	15	30	C	
17		Nyssa aquatica	25.4	12		1	0	100	C	
18		Pinus serotina	15.4	10		3	10	70	C	
19		Shrub	17	3.5		2	10	90	SC	
20		Magnolia virginiana	14.3	10		1	0	100	C	
21		Pinus serotina	19.8	11.5		2	5	95	C	
22		"	29.9	14		5	35	25	C	

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
160	70	230

↓ **Roost Only** ↓

Habitat (Circle One)

(Interior) Edge Open

% Canopy Closure

55

Roost Type[4]

Tree-Live

MicroHabitat[5] **Used by Bat**

Cavity

Notes

IButton-1H

Some Nyssa trees are presumed to be N. biflora

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

1 Ownership: Private; Federal; State; City; Other; Unknown

2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)

3 Tree Ranking: Canopy; Sub-Canopy; Understory

4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown

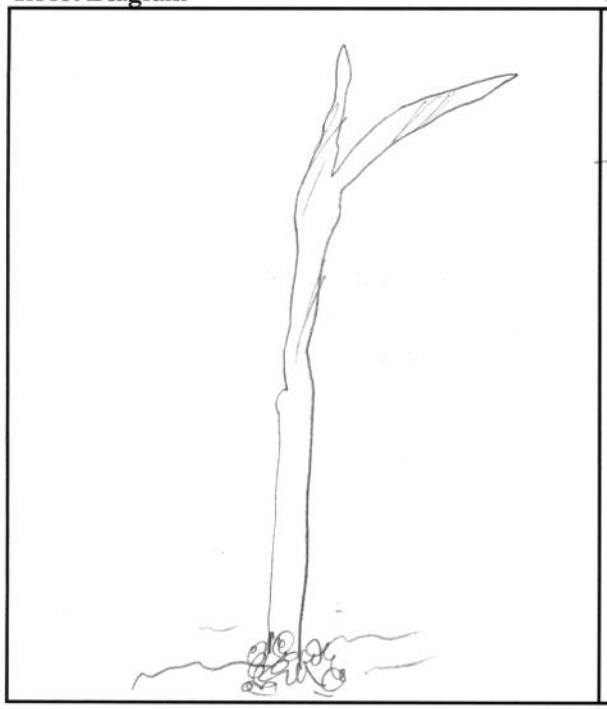
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

23 | | Pinus taeda | 34.6 | 12 | | 1 | 5 | 100 | C

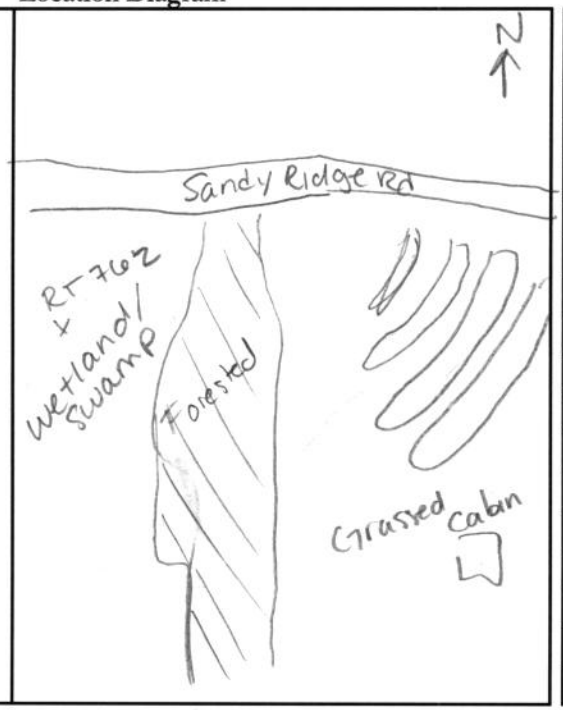
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 762 Bat Species/Sex/Frequency: MYSE/M/6664 Band # CC1700

Roost Diagram



Location Diagram



Bat Days

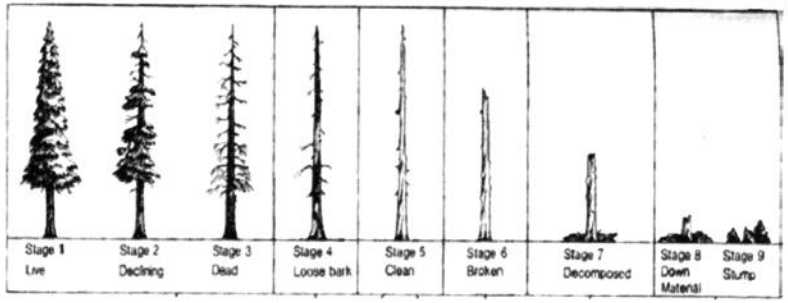
No.	Date 20___	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	16NOV17	6664	CC1700	M	—
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	16NOV17	55	Clear	1	1653	1751	1751	1751	1	JB
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 16 Nov 17 **Surveyor(s) Full Name:** Ian Burns
State: NC **County:** Dare **Project Name:** Myse Eastern Research Project
Site Name/#: ARNWR 1 **Roost Name/#** 762 **Bat #:** CC1700
Lat/Long or UTM of Roost: 35.83041, -75.90387
Description of Roost/Habitat Feature Surveyed: _____

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis Septentrionalis
Other Suspected Bat Species (explain): _____
Weather Conditions during Survey (temperature, precipitation, wind speed):
54°, Clear Sky, Light Wind
Survey Start Time: 1626 **Time of Sunset:** 1656 **Survey End Time:** 1756

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1751	1	Too dark to see, head leave w/ receiver

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR 1 **Roost Name/#:** 762

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	1	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

Bat did not leave roost until 1751. It was too dark to see bat emerge. Heard it leave with receiver.

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/.664 **Band #** CC1700 Sheet 1 of 1

Roost No. 16 **Project.Phase#** 647 **Project Name** 647 NCDOT MYSE **Date First Found** 17 NOV 17

Location West of ponds, south of Sandy Ridge Rd, South of AT7100 **Ownership**[1] Federal

County Dare **State** **Observer(s)** R. Eaton, K. Eshler **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.83047 W/Northing 75.90382 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m) Tree	Height (m) Roost	Decay State[2] (1-9)	Bark Cover Usable (%)	Bark Cover Total (%)	Tree Ranking[3]	Observation
1	16	Nyssa aquatica	22.2	13.5	13	2	5	95	SC	
2	—	"	22.6	17	—	1	0	100	C	
3	—	"	10.0	14	—	1	0	100	SC	
4	—	Acer rubrum	26.2	18	—	1	0	100	C	
5	—	Nyssa aquatica	15.7	16	—	1	0	100	SC	
6	—	"	14.1	15	—	1	0	100	SC	
7	—	"	12.1	8.5	—	2	5	95	SC	
8	—	Pinus serotina	34.5	24	—	1	5	95	C	
9	—	Nyssa aquatica	17.8	16	—	1	0	100	SC	
10	—	"	22.9	12	—	1	0	100	SC	
11	—	"	20.3	17	—	1	0	100	SC	
12	—	"	22.8	16.5	—	1	0	100	C	
13	—	"	38.6	18	—	3	5	95	C	
14	—	"	34.0	18.5	—	2	15	90	C	
15	—		22.0	15	—	1	5	100	SC	
16	—	Pinus serotina	30.4	14	—	5	10	55	SC	
17	—	Pinus serotina	16.4	5	—	7	15	0	SC	No bark but fraying
18	—	Acer rubrum	27.1	5.5	—	6	35	15	SC	
19	—	Pinus serotina	37.2	25	—	5	45	20	SC	
20	—	Nyssa aquatica	8.2	13	—	1	0	100	SC	
21	—	"	25.8	23	—	1	5	95	C	
22	—	"	13.1	16	—	1	0	100	C	

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
170	50	220

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 15

Roost Type[4]: Tree-Live

MicroHabitat[5] **Used by Bat:** Crevice/Crack

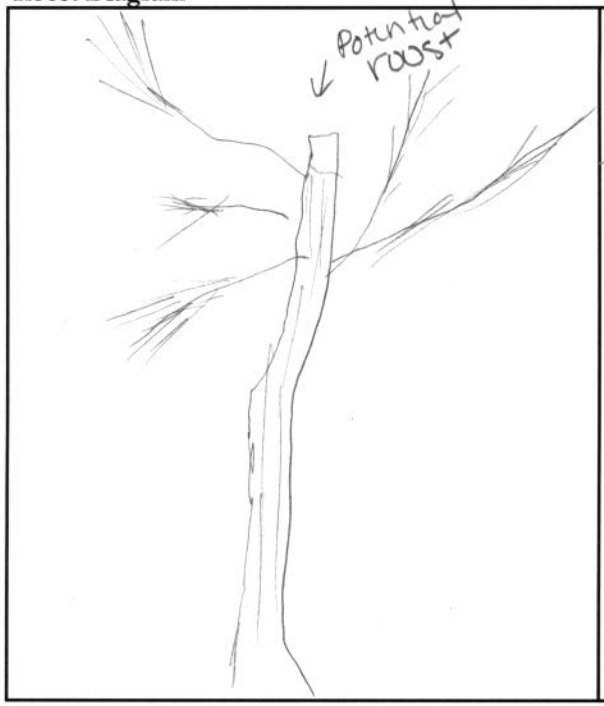
Notes: Some Nyssa trees are now thought to be N. biflora

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

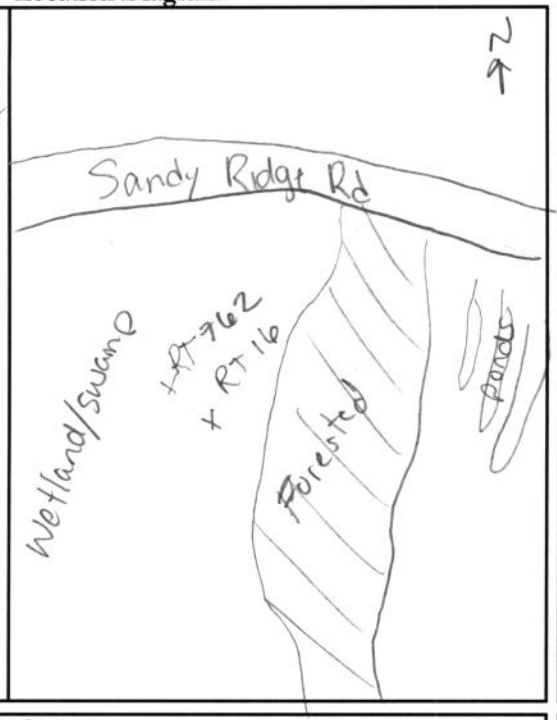
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 16 **Bat Species/Sex/Frequency:** MYSE/M/.663 **Band #** CC1700

Roost Diagram



Location Diagram



Bat Days

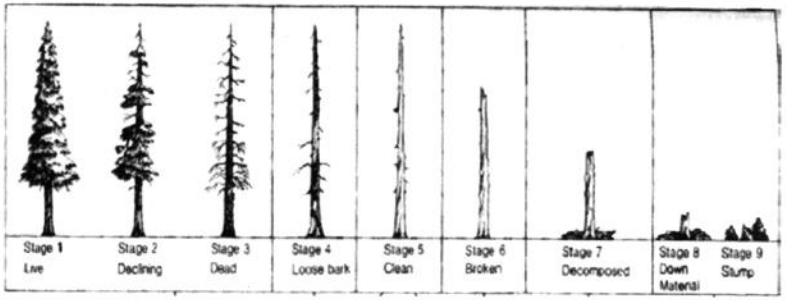
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	17 NOV17	663	CC1700	M	—
2	18 NOV 17	663	CC1700	M	—
3	22 NOV	663	CC1700	M	—
4	23 NOV	663	CC1700	M	—
5	24 NOV	663	CC1700	M	—
6	25 NOV	663	CC1700	M	—
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	17 NOV17	45	Clear	0	16:53	—	—	—	0	KE
2	18 NOV17	62	Clear	1	16:54	1721	1721	1721	1	KE
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1						
2						
3						
4						



Comments: 26 Nov 17 - signal only beeping once every ~30secs, transmitter off bat and likely in water.

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 17 Nov 17 **Surveyor(s) Full Name:** Kelsie Eshler
State: NC **County:** Dare **Project Name:** 647 NCDOT MYSE
Site Name/#: ARNWR 1 **Roost Name/#** 16 **Bat #:** CC1700
Lat/Long or UTM of Roost: 35.83047, -75.90382
Description of Roost/Habitat Feature Surveyed: Live Nyssa aquatica with top broken off
Bat Species Known to be using this Roost/Feature (if not known, leave blank): Myotis septentrionalis
Other Suspected Bat Species (explain):
Weather Conditions during Survey (temperature, precipitation, wind speed): 45°F, Clear, NO Wind
Survey Start Time: 1620 **Time of Sunset:** 1653 **Survey End Time:** 1800

NOTE: Emergence surveys should begin ½ hour before sunset and continue for a minimum of 1 hour or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1800	0	No bat emergence, confirmed w/ radio transm

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 18 Nov 17 **Surveyor(s) Full Name:** Kelsie Eshler
State: NC **County:** Dare **Project Name:** C647 NCDOT MYSE
Site Name/#: ARNWR1 **Roost Name/#** 16 **Bat #:** CC1700
Lat/Long or UTM of Roost: _____
Description of Roost/Habitat Feature Surveyed: _____
_____
Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis
Other Suspected Bat Species (explain): _____
Weather Conditions during Survey (temperature, precipitation, wind speed):
62°F, clear, no wind
Survey Start Time: 1620 **Time of Sunset:** 1654 **Survey End Time:** 1750

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1721	1	Bat emergence confirmed with radio transmitter

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/Male/ 172.664 **Band #** CC1700 Sheet 1 of 1

Roost No. 406 **Project.Phase#** 647.04 **Project Name** Eastern NC MYSE **Date First Found** 19-Nov-2017

Location In wooded swamp south of Sandy Ridge Rd, West of fresh water ponds **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Zack Baer, Ian Burns **Datum** NAD-83

Lat/Long or UTM (circle one): N/Easting 35.83018 -75. **W/Northing** -75.90417 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	406	Nyssa aquatica	10.7	10	1.5	1	0	100	S-C	Knot hole
2		Nyssa aquatica	13.5	12	—	1	0	100	S-C	
3		Nyssa aquatica	12.2	12	—	1	0	100	S-C	
4		Cyrilla racemiflora	14.4	8	—	2	0	95	U	
5		Pinus taeda	31.3	18	—	2	0	100	C	
6		Nyssa aquatica	10.2	11	—	1	0	100	S-C	
7		Chamaecyparis thyoides	22.2	12	—	1	0	100	S-C	
8		Nyssa aquatica	9.8	12	—	1	0	100	S-C	
9		Nyssa aquatica	9.9	12	—	1	0	100	S-C	
10		Cyrilla racemiflora	7.1	6	—	1	0	100	U	
11		Cyrilla racemiflora	6.0	6	—	1	0	100	U	
12		Nyssa aquatica	15.2	12	—	1	0	100	SC	
13		Pinus taeda	24.4	16	—	1	0	100	C	
14										
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
13	0	130

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 90

Roost Type[4]: Tree - live

MicroHabitat[5] **Used by Bat**: Cavity

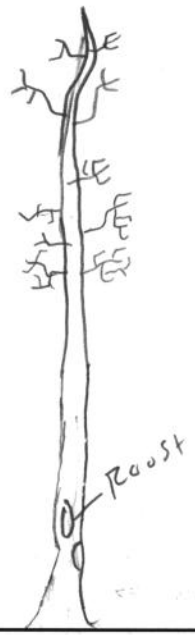
Notes can see transmitter antena in cavity

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

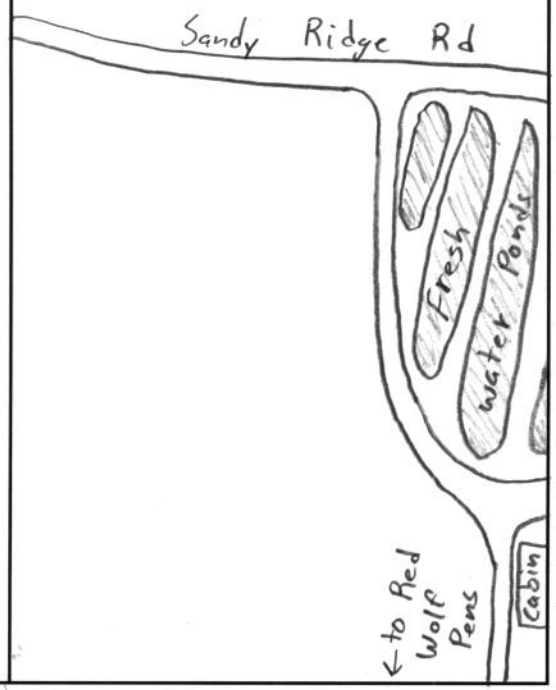
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 406 Bat Species/Sex/Frequency: MYSE/Male/172.664 Band # CC1700

Roost Diagram



Location Diagram



Bat Days

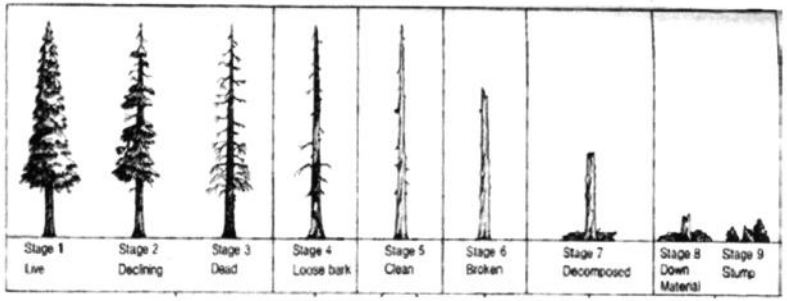
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	19-Nov	664	CC1700	M	saw transmitter
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	19-Nov	55	clear	0	1653	N/A	N/A	N/A	N/A	*
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1	Cavity	234°	2	4	1.5	knot hole
2						
3						
4						



Comments: * could see transmitter antena in tree but bat did not emerge

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 19-NOV-17 **Surveyor(s) Full Name:** Ian Burns

State: NC **County:** Dare **Project Name:** Eastern Myse Research

Site Name/#: [redacted]ARNWR1 **Roost Name/#** 406 **Bat #:** CC1700

Lat/Long or UTM of Roost: 35.83018 ,-75.90417

Description of Roost/Habitat Feature Surveyed: Cavity in Nyssa aquatica, about 1.5 meters off ground

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis

Other Suspected Bat Species (explain):

Weather Conditions during Survey (temperature, precipitation, wind speed):
55°, clear, light wind

Survey Start Time: 1623 **Time of Sunset:** 1653 **Survey End Time:** 1753

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
	0	No bats emersed

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR1 **Roost Name/#:** 406

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	N/A	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

Bat was close to roost opening. Could see transmitter. Bat never emerged.

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE / M / .664 **Band #** CC 1700 Sheet 1 of 1

Roost No. Ø19 **Project.Phase#** 647 **Project Name** NC DOT MYSE **Date First Found** 20 NOV 2017

Location South of Sandyridge Rd, West of Wolf Pen ponds, in forested wetland **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Ray Eaton, Kelsie Eshler **Datum** WGS 84

Lat/Long or UTM (circle one): (N) Easting 35.83036 (W) Northing 75.90395 **UTM Zone** –

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	Ø19	Nyssa bicolor	34.8	15	10	2	90	95	Canopy	
2	–	Acer rubrum	14.4	12	–	1	5	100	Sub-can	
3	–	Pinus serotina	21.2	1	–	8	0	0	und	
4	–	Chamaecyparis thyoides	8.5	3	–	3	10	95	und.	
5	–	N. bicolor	35.9	14	–	2	10	95	mid	
6	–	N. bicolor	12.5	9.5	–	1	0	100	mid	
7	–	Ilex	15.7	4	–	2	5	90	und	
8	–	honey cup	7.1	4	–	1	5	95	und	
9	–	N. bicolor	27	14	–	2	5	95	can	
10	–	N. bicolor	18.2	13	–	1	0	100	sub	
11	–	P. serotina	27.9	16	–	5	25	40	can	
12	–	A. rubrum	27.4	15	–	1	0	100	can	
13	–	N. bicolor	18.7	14.5	–	1	5	100	sub	
14	–	N. bicolor	13	14.0	–	1	0	100	sub	
15	–	P. serotina	27.0	18	–	1	5	95	can	
16	–	N. bicolor	10.5	9	–	1	5	95	sub	
17	–	P. serotina	37.1	18	–	1	10	95	can	
18	–	P serotina	27.0	18	–	1	5	95	can	
19	–	N. bicolor	11.2	13.5	–	1	0	100	sub	
20	–	N. bicolor	14.7	14.0	–	1	5	95	sub	
21	–	P. serotina	35.0	17	–	3	10	95	can	
22	–	P. serotina	31.6	18	–	2	10	90	can	

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
180	40	220

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 85

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat**: cavity or exf. bark

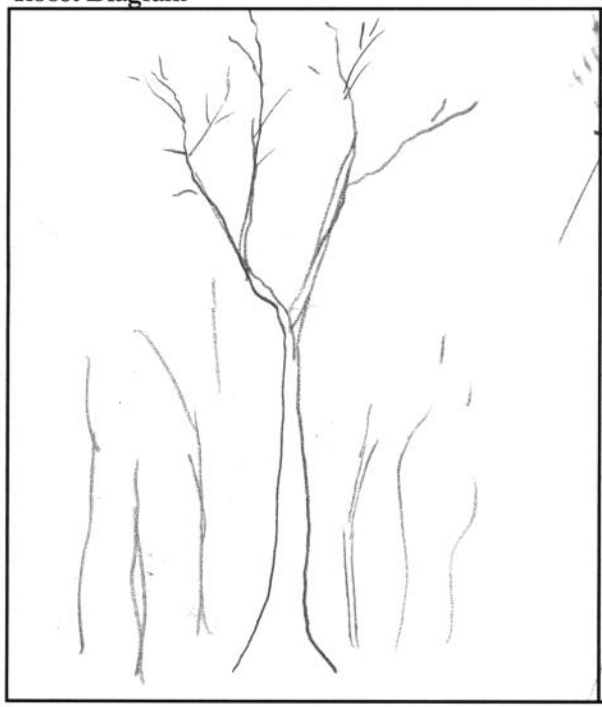
Notes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. Ø19 Bat Species/Sex/Frequency: MYOSEP/M/172.669 Band # CC1700

Roost Diagram



Location Diagram

Bat Days

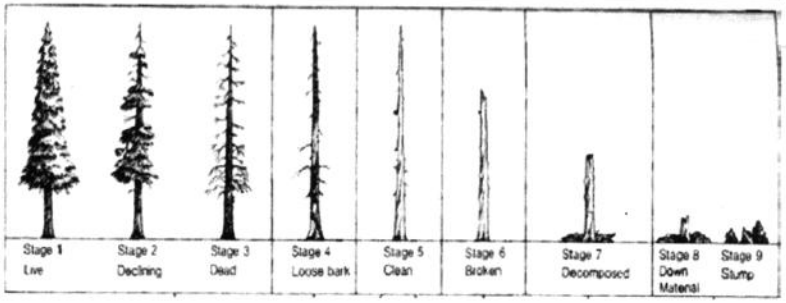
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	20 NOV	172.669	CC1700	M	
2	21-Nov	.669	CC1700	M	
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	20 Nov 17	47	Clear	0	1651	—	—	—	0	KE
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 20 Nov 17 **Surveyor(s) Full Name:** Kelsie Eshler
State: NC **County:** Dare **Project Name:** 6047 NCDOT muse
Site Name/#: ARNWR1 **Roost Name/#** 19 **Bat #:** CC1700
Lat/Long or UTM of Roost: 35.83080, -75.90395
Description of Roost/Habitat Feature Surveyed: Declining Nyssa bicolor

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis
Other Suspected Bat Species (explain):
Weather Conditions during Survey (temperature, precipitation, wind speed):
47°F, Clear, No Wind
Survey Start Time: **Time of Sunset:** 1751 **Survey End Time:** 1751

NOTE: Emergence surveys should begin ½ hour before sunset and continue for a minimum of 1 hour or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1751	0	Bat did not emerge, confirmed with radio transmitter

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE / F / 6043 **Band #** NCDOT1630 Sheet 1 of 1

Roost No. 891 **Project.Phase#** 647 **Project Name** NCDOT MYSE **Date First Found** 16 NOV 17

Location East of ponds off of Sandy Ridge Road **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** R. Eaton, K. Eshles **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.82943 W/Northing 75.90092 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	891	Nyssa aquatica	10.6	15		2	5	100	SC	
2	—	"	21.6	20		1	5	100	C	
3	—	"	23	16		2	10	95	SC	
4	—	Magnolia virginiana	17.8	18		3	0	90	C	
5	—	Nyssa aquatica	36.9	22		1	5	100	C	
6	—	"	32.4	18		2	10	85	SC	
7	—	"	28.5	20		1	0	100	C	
8	—	"	17.2	17		1	0	100	C	
9	—	"	22.6	18		2	5	95	C	
10	—	"	14.2	16		1	0	100	SC	
11	—	"	12.5	14		1	0	100	SC	
12	—	"	14.0	16		2	5	100	SC	
13	—	Magnolia virginiana	26.2	18		1	0	100	C	
14	—	Nyssa aquatica	18.0	16		1	0	100	C	
15	—	"	14.6	15		1	0	100	C	
16	—	Magnolia virginiana	19.0	16		1	0	100	C	
17	—	Nyssa aquatica	16.8	13		1	0	100	SC	
18	—	"	11.7	14		1	0	100	C	
19	—	"	23.4	17		1	0	100	C	
20	—									
21	—									
22	—									

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
190	0	190

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure: 45

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat:** Crack / Crevice

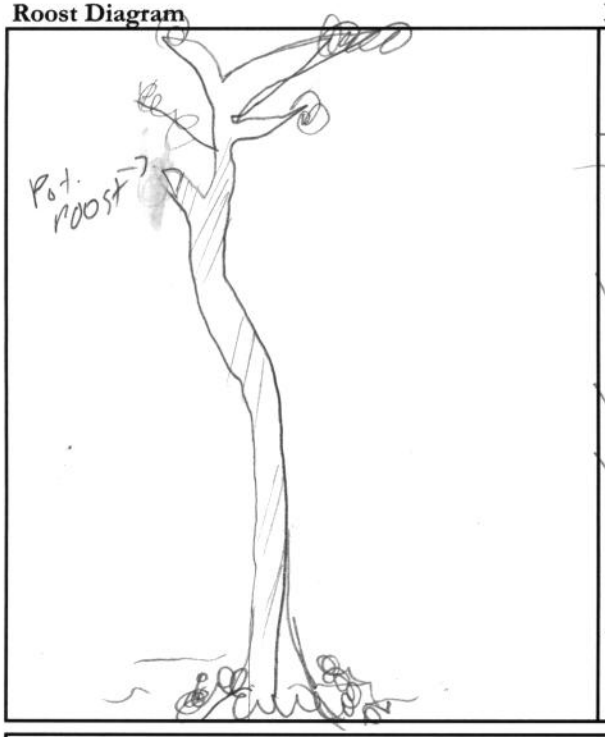
Notes: Some Nyssa tree are now believed to be N. bicolor

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

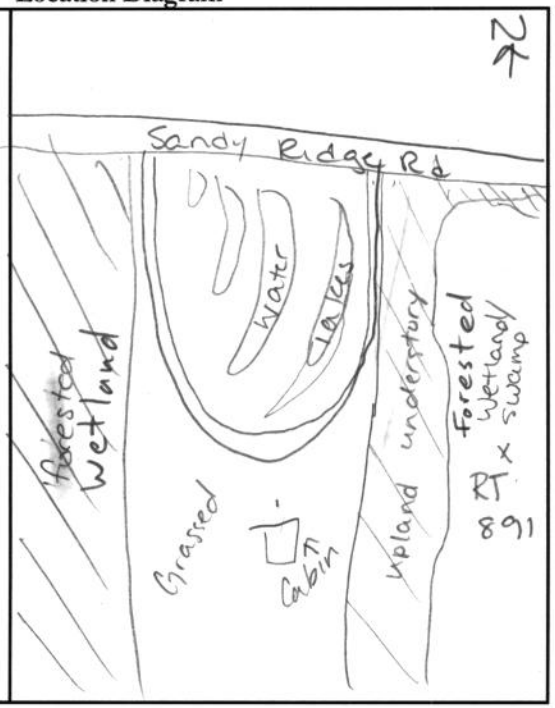
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 891 **Bat Species/Sex/Frequency:** MYSE/F/603 **Band #** NCDOT1630

Roost Diagram



Location Diagram



Bat Days

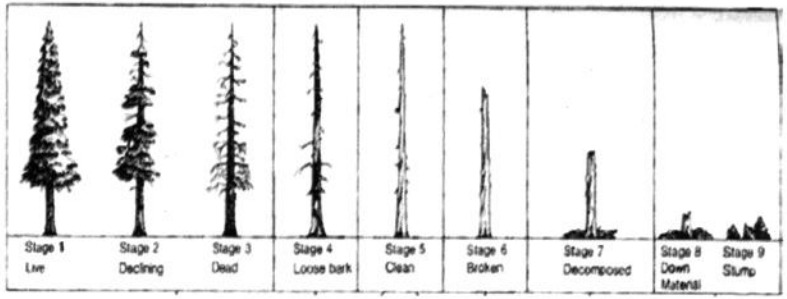
No.	Date 20___	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	16 NOV	.603	NCDOT1630	F	—
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	16 Nov 17	55	Clear	1	1653	1727	1727	1787	1	SC
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 16 Nov 17 **Surveyor(s) Full Name:** Shelby Cotham
State: NC **County:** Dare **Project Name:** 1647 NCDOT MYSE
Site Name/#: ARNWR1 **Roost Name/#** 891 **Bat #:** NCDOT1630
Lat/Long or UTM of Roost: 35.82943, -75.90072
Description of Roost/Habitat Feature Surveyed: broken off branch

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis
Other Suspected Bat Species (explain):
Weather Conditions during Survey (temperature, precipitation, wind speed):
55, clear, no wind
Survey Start Time: 1620 **Time of Sunset:** 1653 **Survey End Time:** 1800

NOTE: Emergence surveys should begin ½ hour before sunset and continue for a minimum of 1 hour or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1727	1	confirmed with radio telemetry

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/F/1.609 **Band #** NCDOT1630 Sheet 1 of 1

Roost No. 32 **Project.Phase#** 6047 **Project Name** 6047 NCDOT MYSE **Date First Found** 17 NOV 17

Location East of ponds, south of Sandy Ridge Rd, SE of Rt 891 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** R.Eaton, K.Eshler **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.82902 **W/Northing** 75.90145 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m) Tree	Height (m) Roost	Decay State[2] (1-9)	Bark Cover Usable (%)	Bark Cover Total (%)	Tree Ranking[3]	Observation
1	32	Nyssa aquatica	25.2	18	14	1	5	95	C	
2		Magnolia virginiana	13.2	15		1	5	100	SC	
3		Nyssa aquatica	25.3	22		1	5	100	C	
4		"	21.4	21		1	0	100	C	
5		Magnolia virginiana	21.0	16		1	0	100	SC	
6		Nyssa aquatica	18.1	17		1	0	100	SC	
7		"	17.3	5		6	10	60	SC	
8			26.3	23		1	0	100	C	
9		Acer rubrum	36.4	21		2	10	85	C	
10		Nyssa aquatica	42.6	16.5		2	15	90	SC	
11		Magnolia virginiana	30.2	17		1	0	100	C	
12		Nyssa aquatica	24.4	20		1	0	100	C	
13		"	18.2	16.5		1	0	100	C	
14		mag. virg.	20.8	15		1	5	95	C	
15		"	21.3	14		1	0	100	C	
16		Nyssa aquatica	26.4	24		1	5	100	C	
17		"	17.2	17		1	0	100	SC	
18		mag. virg.	23.8	17		1	0	100	SC	
19		"	19.2	17.5		1	0	100	C	
20		"	20.0	18		1	0	100	C	
21		Nyssa aquatica	10.9	10.5		1	5	100	SC	
22		"	24.4	16.5		1	0	100		

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
210	10	220

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 35

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat:** crevice/crack

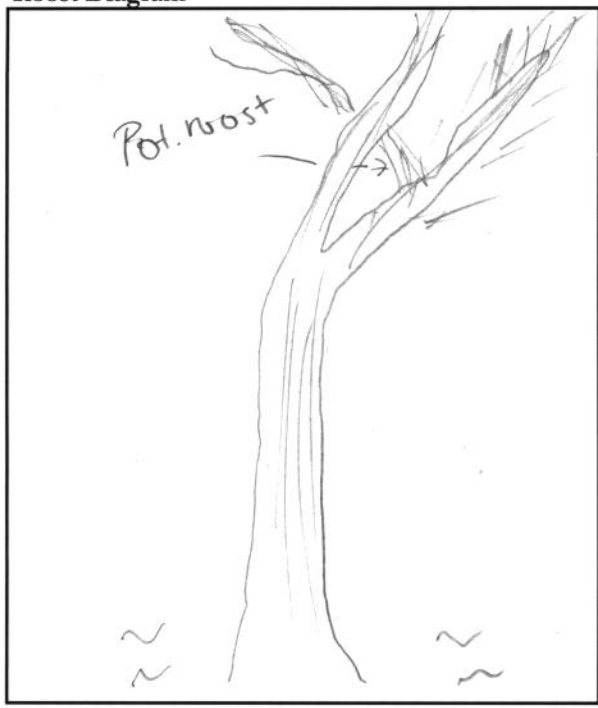
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

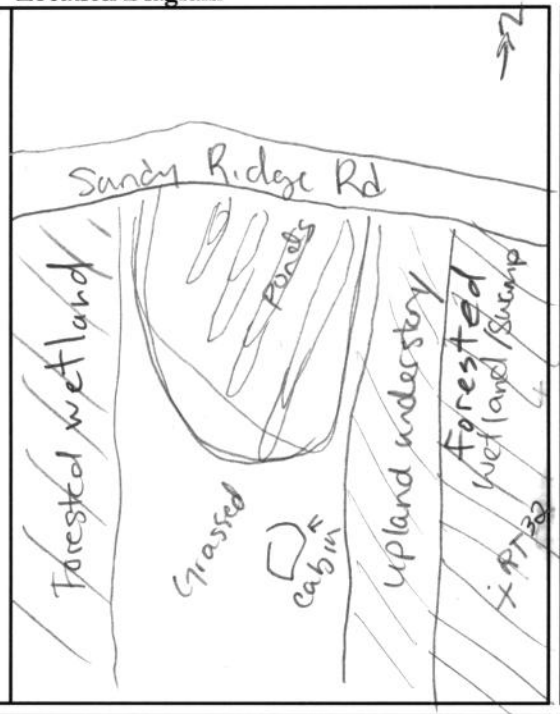
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 32 Bat Species/Sex/Frequency: MYSE/F/.603 Band # NCDOT1630

Roost Diagram



Location Diagram



Bat Days

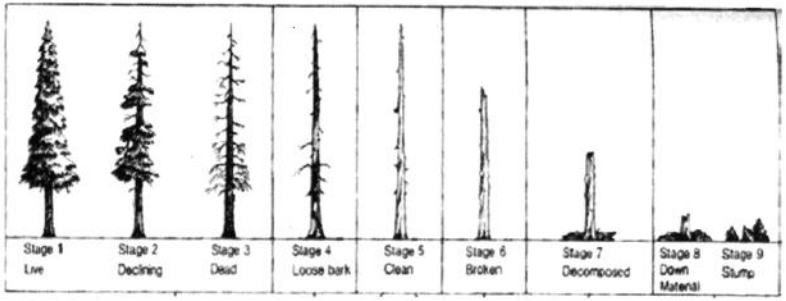
No.	Date 20___	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	17Nov17	603	NCDOT1630	F	—
2	18Nov17	603	NCDOT1630	F	—
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	17NOV17	45	clear	0	1653	—	—	—	0	SC
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1						
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 17 Nov 17 **Surveyor(s) Full Name:** Shelby Cotham
State: NC **County:** Dare **Project Name:** 1697 NCDOT MYSE
Site Name/#: ARNWR1 **Roost Name/#** 32 **Bat #:** NCDOT1630
Lat/Long or UTM of Roost: 35.82902, -75.90145
Description of Roost/Habitat Feature Surveyed: crook in branches ~14m off ground
Bat Species Known to be using this Roost/Feature (if not known, leave blank): Myotis septentrionalis
Other Suspected Bat Species (explain):
Weather Conditions during Survey (temperature, precipitation, wind speed): 45. clear, no wind
Survey Start Time: 1620 **Time of Sunset:** 1653 **Survey End Time:** 1800

NOTE: Emergence surveys should begin ½ hour before sunset and continue for a minimum of 1 hour or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
—	0	NO bat emerged. confirmed w/ telemetry

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE / Female / 172.603 **Band #** NCDOT 1630 Sheet 1 of 2

Roost No. 33 **Project.Phase#** 647.04 **Project Name** Eastern NC MYSE **Date First Found** 19-Nov-2017

Location In wooded swamp south of Sandy Ridge Rd. East of fresh water ponds **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Zack Baer, Ian Burns **Datum** NAD-83

Lat/Long or UTM (circle one): N/Easting 35.82909 W/Northing -75.90138 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	33	Nyssa aquatica	14.4	15	?	1	0	100	S-C	
2		Nyssa aquatica	19.0	17	—	1	0	100	C	
3		Nyssa aquatica	42.8	20	—	1	0	100	C	
4		Nyssa aquatica	20.1	18	—	1	0	100	C	
5		Nyssa aquatica	19.4	18	—	1	0	100	C	
6		Nyssa aquatica	11.5	13	—	1	0	100	S-C	
7		Nyssa aquatica	12.0	11	—	2	0	100	U	
8	32	Nyssa aquatica	23.4	18	—	1	0	100	C	
9		Nyssa aquatica	32.5	19	—	1	0	100	C	
10		Nyssa aquatica	29.9	17		1	0	100	C	
11		Nyssa aquatica	37.4	19	—	1	0	100	C	
12		Nyssa aquatica	52.0	20	—	1	0	100	C	
13		Nyssa aquatica	41.3	18	—	1	0	100	C	
14		Nyssa aquatica	17.1	15	—	1	0	100	SC	
15		Nyssa aquatica	22.6	16	—	1	0	100	S-C	
16		Nyssa aquatica	24.8	18	—	1	0	100	C	
17		Nyssa aquatica	11.6	12	—	1	0	100	U	
18		Nyssa aquatica	13.4	14	—	1	0	100	S-C	
19		Nyssa aquatica	38.9	16	—	2	0	100	S-C	
20		Pinus taeda	59.1	22	—	1	0	100	C	
21		Nyssa aquatica	39.4	19	—	1	0	100	C	
22		Nyssa aquatica	43.7	18	—	2	0	100	C	

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
29	0	290

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 100

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat:** Unknown

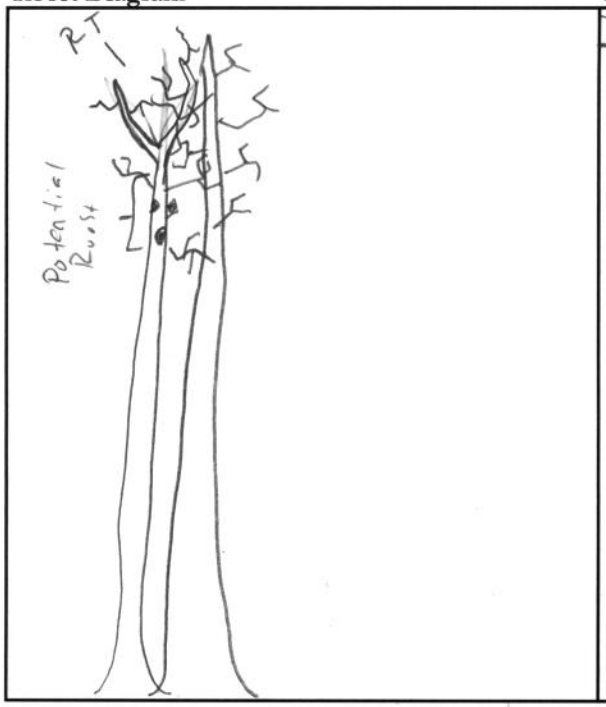
Notes Continued on RT Datasheet #2

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

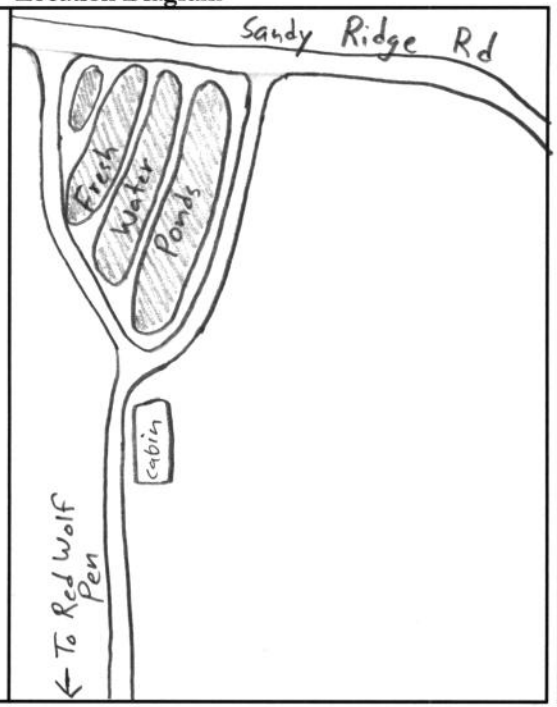
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 33 Bat Species/Sex/Frequency: MYSE / Female / 172.603 Band # NCDOT 1630

Roost Diagram



Location Diagram



Bat Days

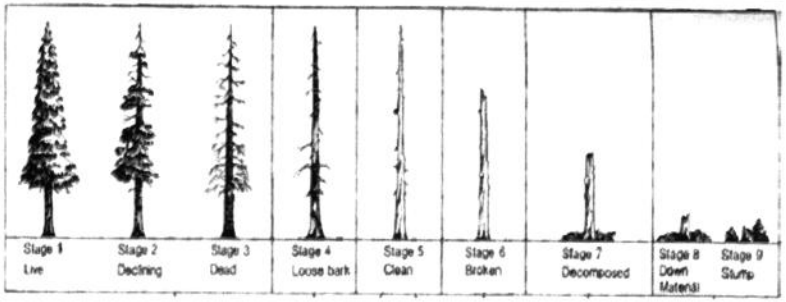
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	19-Nov	603	NCDOT 1630	F	no emergence count*
2	20-Nov	603	NCDOT 1630	F	
3	21-Nov	603	NCDOT 1630	F	
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	20-Nov	46	clear	0	1651	—	—	—	—	Ray Eaton
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Unk	Unk	Unk	Unk	Unk	
2						
3						
4						



Comments: *could not determine location of roost, multiple knot holes toward top of tree

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/Female / 172.603 **Band #** NCDOT 1630 Sheet 2 of 2

Roost No. 33 **Project.Phase#** 647.04 **Project Name** Eastern NC MYSE **Date First Found** 19-Nov-2017

Location In wooded swamp south of Sandy Ridge Rd. East of fresh water ponds **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Zack Baer, Ian Burns **Datum** NAD-83

Lat/Long or UTM (circle one): N/Easting 35.82909 **W/Northing** -75.90138 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1		Nyssa aquatica	19.5	16	—	1	0	100	S+C	
2		Nyssa aquatica	38.1	18	—	1	0	100	C	
3		Nyssa aquatica	39.6	20	—	1	0	100	C	
4		Nyssa aquatica	24.3	18	—	1	0	100	C	
5		Nyssa aquatica	21.3	18	—	1	0	100	C	
6		Nyssa aquatica	20.7	17	—	1	0	100	C	
7		Nyssa aquatica	27.0	19	—	1	0	100	C	
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure

Roost Type[4]

MicroHabitat[5] **Used by Bat**

Notes Continued From RT Datasheet #1

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 33 Bat Species/Sex/Frequency: MYSE / Female / 172,603 Band # NCDOT 1630

Roost Diagram **Location Diagram**

See Data Sheet #1

Bat Days

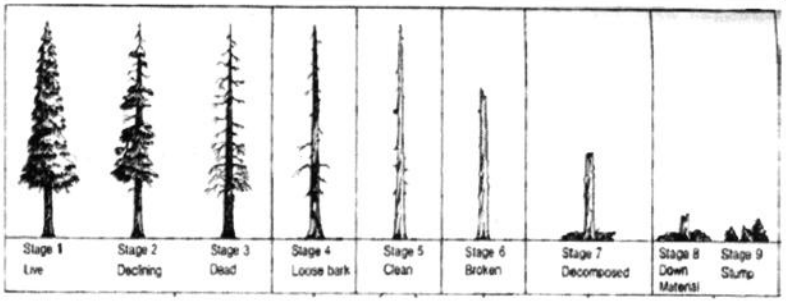
No.	Date 20___	Bat Freq.	Bat Band #	Sex of Bat	Observations
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1										
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 11/20/2017 **Surveyor(s) Full Name:** Ray Eaton
State: NC **County:** Dare **Project Name:** NCDOT Eastern NC MYSE
Site Name/#: _____ **Roost Name/#** 033 **Bat #:** NCDOT 1630
Lat/Long or UTM of Roost: 35.82909, -75.90138
Description of Roost/Habitat Feature Surveyed: Nyssa aquatica 15m tall 14.4cm DBH
Bat Species Known to be using this Roost/Feature (if not known, leave blank): MYSE @ 172.603
Other Suspected Bat Species (explain): —
Weather Conditions during Survey (temperature, precipitation, wind speed): 47 calm & clear
Survey Start Time: 1623 **Time of Sunset:** 1653 **Survey End Time:** 1753

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
no	emergence	seen

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE / F / .603 **Band #** NCDOT 1630 Sheet 1 of 1

Roost No. 438 **Project.Phase#** 647 **Project Name** 647 NCDOT MYSE **Date First Found** 22 NOV 17

Location South of Sandy Ridge Rd, East of ponds, South of RT 33 + 32 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Wetzel, K. Eshler **Datum** WGS84

Lat/Long or UTM (circle one): N/Easting 35.82840 **W/Northing** -75.90140 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	438	Nyssa biflora	37.3	18	15	2	10	95	C	
2		"	33.0	17.5		2	10	90	C	
3		Acer rubrum	9.8	6		1	0	100	SC	
4		Ilex opaca	11.4	6		1	0	100	SC	
5		Nyssa biflora	15.7	18		1	0	100	SC	
6		Ilex opaca	8.7	4		1	0	100	SC	
7		"	16.0	5.5		1	0	100	SC	
8		Nyssa biflora	32.4	18.5		1	5	95	C	
9		"	49.5	19		1	10	95	C	
10		"	16.6	16		1	5	100	SC	
11		Nyssa biflora	36.7	17		1	5	100	C	
12		Ilex opaca	13.2	8		1	0	100	SC	
13		Nyssa biflora	48.0	17		1	0	100	C	
14		"	47.9	18		1	5	100	C	
15		Acer rubrum	25.6	4.5		3	5	85	SC	
16		"	18.7	19		1	0	100	SC	
17		Nyssa biflora	38.3	19		1	0	100	C	
18		"	27.4	14		2	5	95	SC	
19		"	38.4	15		2	20	90	SC	
20		Pinus serotina	53.1	19		1	10	100	C	
21		Nyssa biflora	21.3	15		1	0	100	SC	
22		Nyssa biflora	40.2	16.5		1	0	100	C	
23		Nyssa biflora	37.9	16		1	0	100	C	
24		Nyssa sylvatica	28.7	15.5		1	0	100		

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
230	10	240

↓ Roost Only ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure: 35

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat:** Exfoliating bark

Notes

1 Ownership: Private; Federal; State; City; Other; Unknown

2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)

3 Tree Ranking: Canopy; Sub-Canopy; Understory

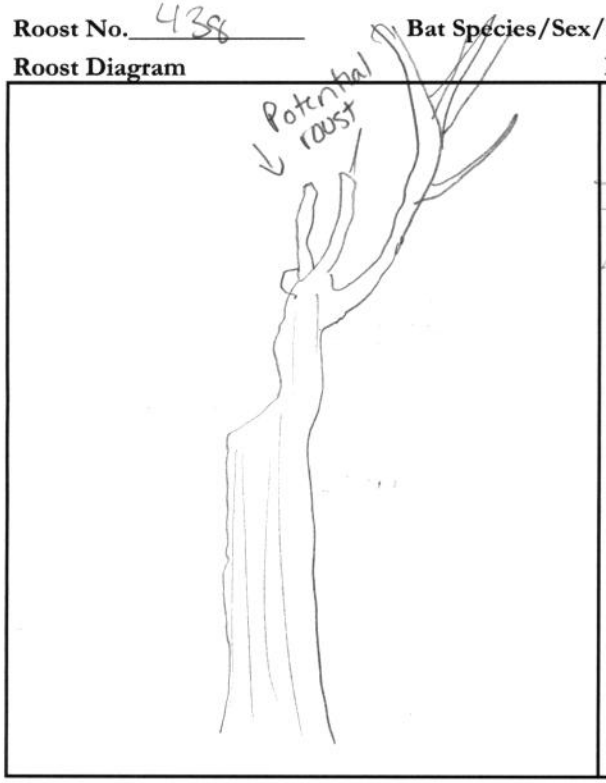
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown

5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

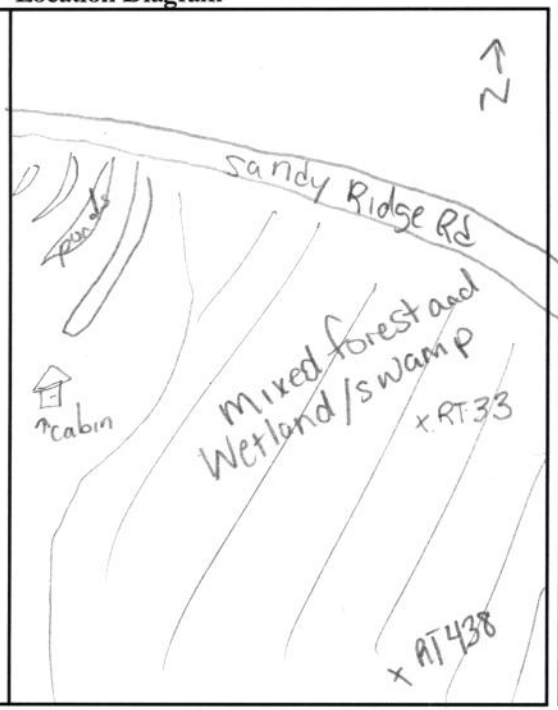
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 438 **Bat Species/Sex/Frequency:** MYSE/F/.603 **Band #** NCDOT1636

Roost Diagram



Location Diagram



Bat Days

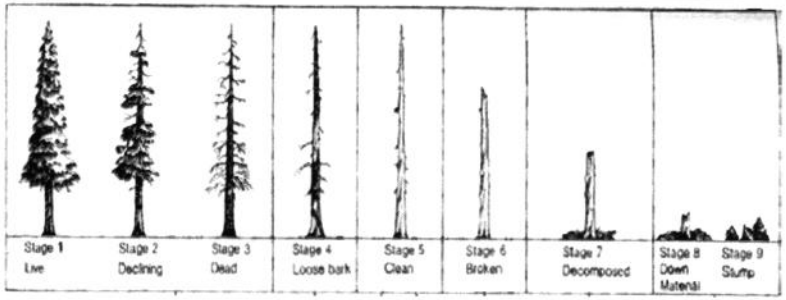
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	22 Nov 17	.603	NCDOT1630	F	
2	23 Nov	.603	NCDOT1630	F	
3	24 Nov	.603	NCDOT1630	F	
4	25 Nov	.603	NCDOT1630	F	
5	26 Nov	.603	NCDOT1630	F	
6	27 Nov	.603	NCDOT1630	F	
7	28 Nov	.603	NCDOT1630	F	
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	22 Nov 17	54	Cloudy	1	1653	1726	1726	1726	1	RE
2	28 Nov	60	Clear	0	1650	—	—	—	0	TW
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1						
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 11/22/2017 **Surveyor(s) Full Name:** Ray Eaton
State: NC **County:** Dare **Project Name:** NCDOT EasternNC MYSE
Site Name/#: _____ **Roost Name/#** 438 **Bat #:** NC DOT 1630
Lat/Long or UTM of Roost: 35.82840, -75.90140
Description of Roost/Habitat Feature Surveyed: Nyssa biflora 18m tall 37.3cm dbh
Bat Species Known to be using this Roost/Feature (if not known, leave blank): MYSE 172.603
Other Suspected Bat Species (explain): —
Weather Conditions during Survey (temperature, precipitation, wind speed): clear
Survey Start Time: 1622 **Time of Sunset:** 1652 **Survey End Time:** 1752

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1726	1	tagged bat

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 28 Nov 2017 **Surveyor(s) Full Name:** Theresa Wetel
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: ARNWR1 **Roost Name/#** 438 **Bat #:** NCDOT 1630
Lat/Long or UTM of Roost: 35.82840 / -75.90140
Description of Roost/Habitat Feature Surveyed: live / declining tree exfoliating bark
Bat Species Known to be using this Roost/Feature (if not known, leave blank): Myotis septentrionalis
Other Suspected Bat Species (explain): none
Weather Conditions during Survey (temperature, precipitation, wind speed): 60 degrees @ start, 54 @ end, partly cloudy
Survey Start Time: 1620 **Time of Sunset:** 1650 **Survey End Time:** 1745

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		no bats emerged

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/F/172.603 **Band #** NCDOT1630 Sheet 1 of 1

Roost No. 982 **Project.Phase#** 647 **Project Name** Eastern MYSE NC **Date First Found** 29-Nov-2017

Location Swamp near tree 438 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** P.Sewell; H. Price **Datum** WGS84

Lat/Long or UTM (circle one): N/Easting 35.82846 W/Northing -75.90149 **UTM Zone**

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	982	Nyssa sylvatica	34.5	23	—	1	0	98	C	
2		Ilex opaca	6.6	4		1	0	100	SC	
3		Acer rubrum	9.5	5		1	0	100	SC	
4		Acer rubrum	17.7	20		1	0	100	C	
5		Ilex opaca	13.8	10		1	0	100	SC	
6		Acer rubrum	40.5	20		1	0	100	C	*Damage
7		Liquidambar styraciflua	18.0	21		1	0	100	C	
8		Acer rubrum	34.8	22		1	15	85	C	*Damage
9		Nyssa sylvatica	33.5	22		1	0	100	C	
10		Nyssa biflora	46.3	21		1	0	100	C	
11		Ilex opaca	12.7	7		1	0	100	SC	
12		Acer rubrum	16.4	16		1	0	100	SC	
13	438	Nyssa biflora	37.0	23		1	0	100	C	
14		Nyssa biflora	32.5	20		1	0	100	C	
15		Pinus serotina	52.9	24		1	0	100	C	
16		Nyssa biflora	48.9	23		1	0	100	C	
17		Acer rubrum	32.1	21		1	0	100	C	
18		Nyssa biflora	31.2	23		1	0	100	C	
19		Ilex opaca	16.0	12		1	0	100	SC	
20		Nyssa biflora	46.0	22		1	0	100	C	
21		Nyssa sylvatica	32.0	22		1	0	100	C	*Damage
22		Nyssa aquatica	34.1	21		1	0	100	C	

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
230	0	230

↓ **Roost Only** ↓

Habitat (Circle One): Interior | Edge | Open

% Canopy Closure: 10

Roost Type[4]: Tree-Live

MicroHabitat[5] **Used by Bat:** Crevice/Crack

Notes

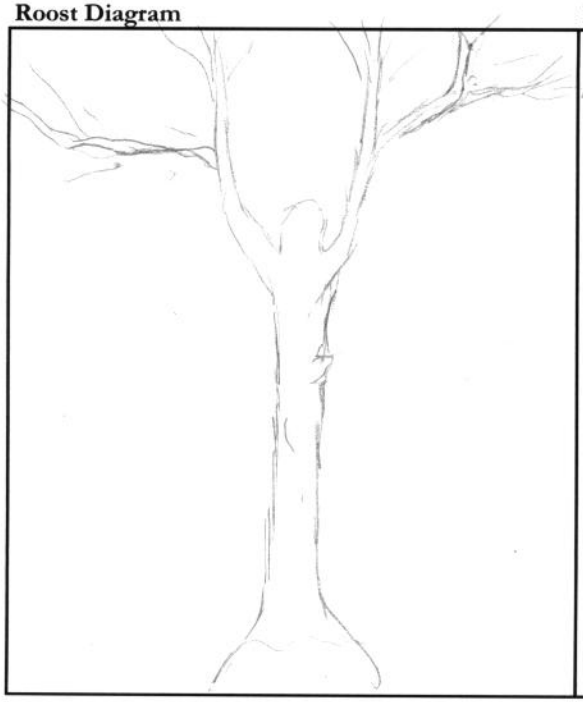
1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

23 Nyssa biflora | 30.3 | 21 | | 1 | 0 | 100 | C

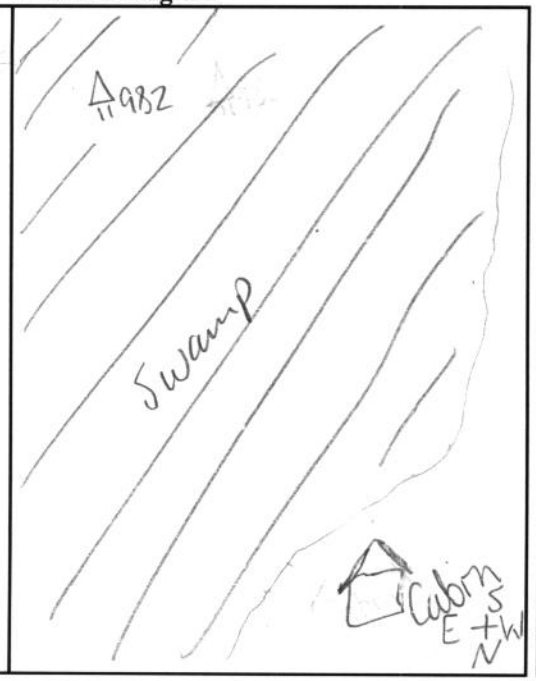
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 982 **Bat Species/Sex/Frequency:** MYSE, F, 172.063 **Band #** NCDOT1630

Roost Diagram



Location Diagram



Bat Days

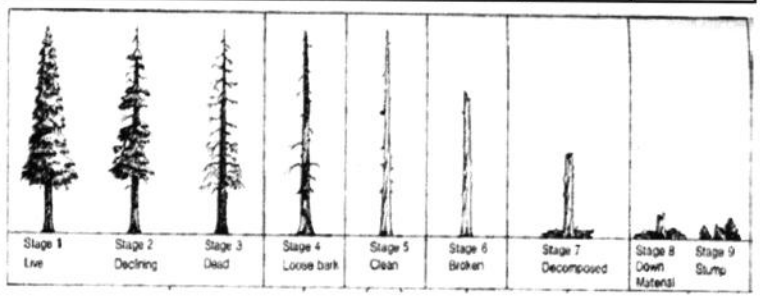
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	11-29	603	NCDOT1630	F	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	11-29	53	Clear	1	16:49	17:56	17:56	17:56	1	
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 11-29-2017 **Surveyor(s) Full Name:** Price Sewell, Haley Price

State: NC **County:** Dare **Project Name:** Eastern MYSE NC

Site Name/#: ARNWR1 **Roost Name/#** 932 **Bat #:** NCDOT16030

Lat/Long or UTM of Roost: 35.828416, -75.90149

Description of Roost/Habitat Feature Surveyed: A crack/crevice in a live Nyssa sylvatica located in coastal wetland.

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE

Other Suspected Bat Species (explain): /

Weather Conditions during Survey (temperature, precipitation, wind speed):
57° - 53° F, no precipitation, wind speed 0

Survey Start Time: 16:30 **Time of Sunset:** 16:49 **Survey End Time:** 18:00

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
17:56	1	Bat only known to emerge due to telemetry.

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR1 **Roost Name/#:** 982

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	1	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

Only one bat emerged, but it was too dark to see it leave the tree. It was known to leave due to telemetry.

Roost Data Form 2017 **Bat Species/Sex/Frequency:** Myse/F/172.603 **Band #** NCDOT 1630 Sheet 1 of 1

Roost No. 255 **Project.Phase#** 647 **Project Name** Eastern NC MYSE **Date First Found** NOV 30, 27

Location West of an over grown rd North of Sawyer Lake Rd **Ownership**[1] Federal

County Dare **State** Ky **Observer(s)** G. Janos M. Ricky **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.83206 **W/Northing** -75.89284 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	255	Chamaecyparis thyoides	18.5	10	2	1	0	100	C	Cavity
2		Magnolia virginiana	39.5	11	—	3	0	100	C	
3		M. Virginiana	19	12	—	1	0	100	C	
4		M. virginiana	10.4	7	—	1	6	100	SC	
5		Acer rubrum	21.6	8	-	3	0	100	SC	
6		M. Virginiana	21.9	12	—	1	0	100	C	
7		C. Thyoides	18.5	10	-	1	0	100	C	
8		C. Thyoides	15.2	10	-	1	6	100	C	
9		M. Virginiana	4.5	4	-	1	0	100	SC	
10		M. Virginiana	30.2	13	-	1	0	100	C	
11		M. Virginiana	26.9	12	-	1	0	100	C	
12		C. Thyoides	9.9	8	-	3	6	100	SC	
13		C. Thyoides	11.4	8	-	2	0	100	SC	
14		C. Thyoides	22.4	11	-	1	0	100	C	
15		M. Virginia	18.6	12	-	1	0	100	C	
16		C. Thyoides	17.9	12	-	1	6	100	C	
17		A. Rubrum	6.3	8	-	3	0	100	SC	
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
130	40	170

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure: 75%

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat**: Cavity

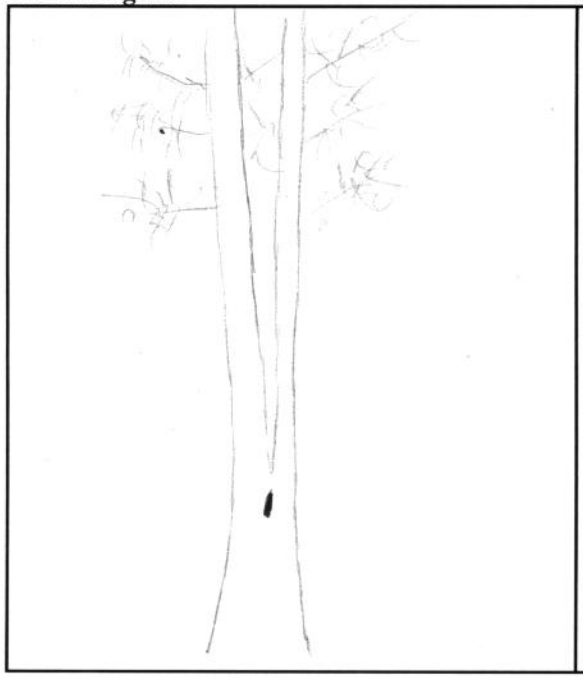
Notes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

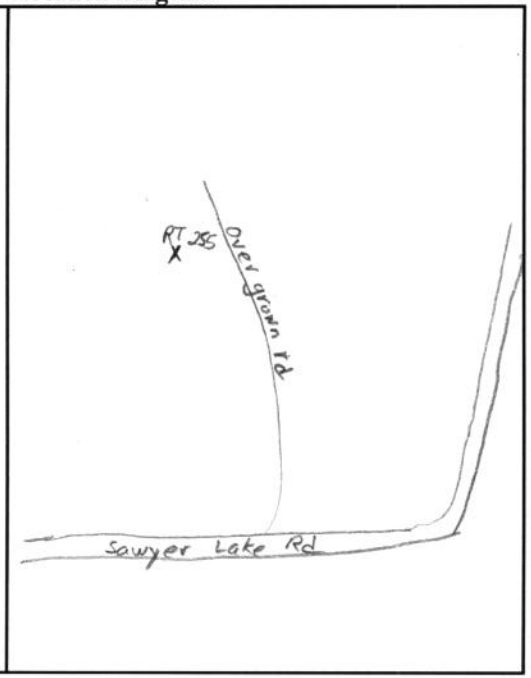
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 255 **Bat Species/Sex/Frequency:** MYSE/F/172.603 **Band #** NCDOT 1630

Roost Diagram



Location Diagram



Bat Days

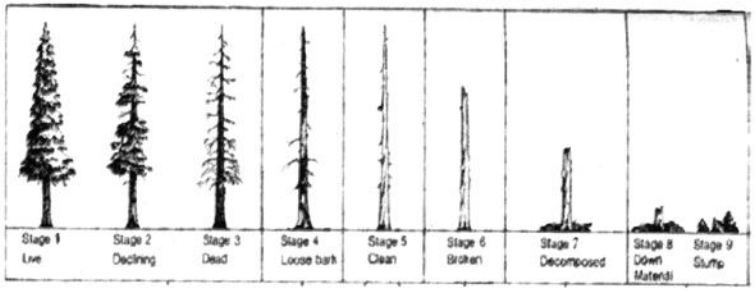
No.	Date 2019	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	11/30	603	NCDOT1630	F	can see bat
2	12/1	603	NCDOT1630	F	
3	12/2	603	NCDOT1630	F	
4	12/3	603	NCDOT1630	F	
5	12/4	603	NCDOT1630	F	
6	12/5	603	NCDOT1630	F	
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	11/30	55	Clear	0	1650	—	—	—	—	G. Jones, M. Raley
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Cavity	—	1.5	4	2	see bat
2						
3						
4						



Comments:

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: Nov 20, 2017 **Surveyor(s) Full Name:** Gregg Janos, Meghan Raley
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: _____ **Roost Name/#** 255 **Bat #:** NCDOT 1630
Lat/Long or UTM of Roost: 35.85206, -75.89288
Description of Roost/Habitat Feature Surveyed: Cavity in tree

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis
Other Suspected Bat Species (explain): _____
Weather Conditions during Survey (temperature, precipitation, wind speed):
55° F, clear
Survey Start Time: 1620 **Time of Sunset:** 1650 **Survey End Time:** 1750

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		No bats emerged

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/F/172.603 **Band #** NCDOT 1630 Sheet 1 of 1

Roost No. 259 **Project.Phase#** 6417.04 **Project Name** Eastern NC MYSE **Date First Found** 6 Dec 2017

Location South of Sandy Ridge Rd, East of ponds, south of RT 33 & 32 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** G. Janos, P. Sewell **Datum** Nad 83

Lat/Long or UTM (circle one): N/Easting 35.82840 **W/Northing** -75.90154 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	259	Liquidambar styraciflua	18.2	17	6	1	1	99	C	cavity
2	982	Nyssa biflora	36.4	17		1	0	100	C	
3		Nyssa biflora	16.2	11		1	0	100	SC	
4		Persea palustris	11.2	8		1	0	100	SC	
5		P. palustris	7.3	3		2	0	100	SC	
6		Acer rubrum	10.6	8		1	0	100	SC	
7		A. rubrum	32.3	15		1	0	100	C	
8		A. rubrum	21.5	15		1	0	100	C	
9		L. styraciflua	29.0	16		1	0	100	C	
10		N. biflora	47.9	13		1	0	100	C	
11		N. biflora	44.2	10		1	0	100	C	
12		N. biflora	31.8	15		1	0	100	C	
13		N. biflora	45.6	15		1	0	100	C	
14		Magnolia virginiana	24.0	10		1	0	100	SC	
15		A. rubrum	18.0	9		1	0	100	SC	
16		A. rubrum	34.3	14		2	1	95	C	
17		A. rubrum	43.0	11		1	0	100	C	
18		N. biflora	41.8	11		1	0	100	C	
19		Ilex opaca	13.7	8		1	0	100	SC	
20		I. opaca	12.9	6		1	0	100	SC	
21	438	N. biflora	49.0	15		1	0	100	C	
22		N. biflora	32.7	15		1	0	100	C	

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
240	0	240

↓ **Roost Only** ↓

Habitat (Circle One): (Interior) Edge Open

% Canopy Closure: 80

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat:**

Notes

1 Ownership: Private; Federal; State; City; Other; Unknown

2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)

3 Tree Ranking: Canopy; Sub-Canopy; Understory

4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown

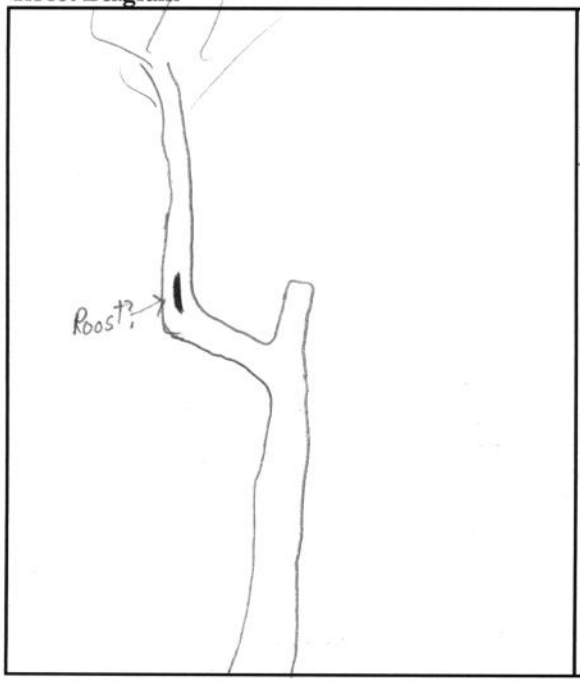
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

Pinus serotina	52.8	16	—	1	0	100	C	
I. opaca	5.2	5	—	1	0	100	SC	

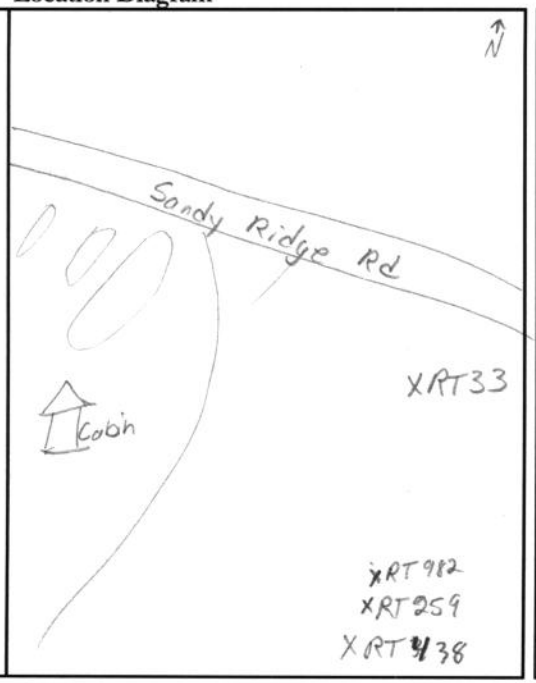
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 259 **Bat Species/Sex/Frequency:** MYSE/F/172.603 **Band #** NCDOT 1630

Roost Diagram



Location Diagram



Bat Days

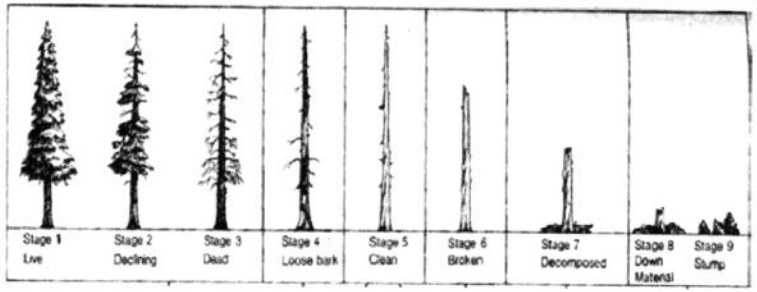
No.	Date 20LZ	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	6 Dec	603	NCDOT1630	F	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1										
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1	Cavity	1/8	3	5	6	
2						
3						
4						



Comments:

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/Female/172.124 **Band #** CC1453 Sheet 1 of 1

Roost No. 405 **Project.Phase#** 647.04 **Project Name** Eastern NC MYSE **Date First Found** 19-Nov-2017

Location In wooded swamp south of Sandy Ridge Rd, West of fresh water ponds **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Zack Baer, Ian Burns **Datum** NAD-83

Lat/Long or UTM (circle one): N/Easting 35.83033 **W/Northing** -75.90427 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	405	Cyrilla racemiflora	8.0	6	1.5	1	0	100	Understory	old knot hole
2		Magnolia virginiana	10.4	8	—	1	0	100	S-C	
3		Nyssa aquatica	18.2	10	—	2	0	100	S-C	
4		Nyssa aquatica	29.3	12	—	2	0	100	S-C	
5		Chamaecyparis thyoides	15.0	10	—	1	0	100	S-C	
6		Cyrilla racemiflora	9.9	4	—	2	0	100	U	
7		Nyssa aquatica	9.6	10	—	1	0	100	S-C	
8		Nyssa aquatica	13.0	11	—	1	0	100	S-C	
9		Nyssa aquatica	29.2	12	—	2	0	100	S-C	
10		Nyssa aquatica	8.3	9	—	1	0	100	S-C	
11		Nyssa aquatica	13.7	14	—	1	0	100	S-C	
12		Nyssa aquatica	20.0	14	—	2	0	100	S-C	
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
12	0	120

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure
90

Roost Type[4]
Tree - live

MicroHabitat[5] **Used by Bat**
Cavity

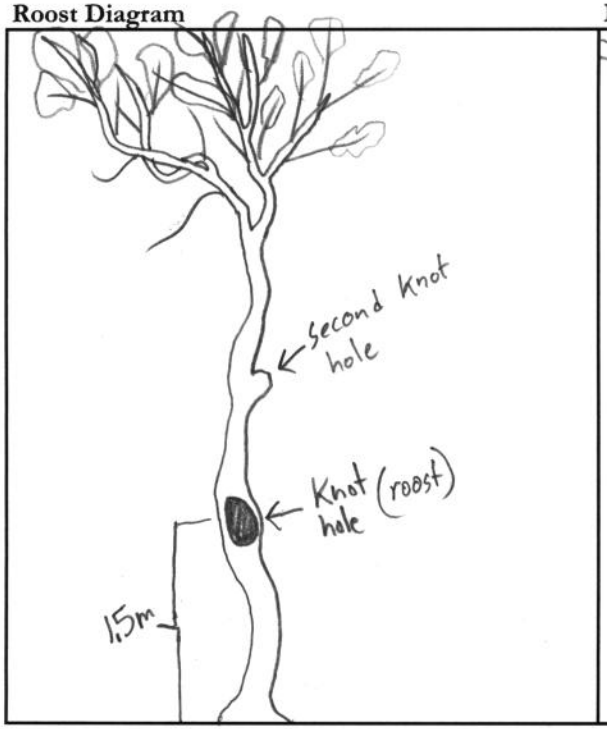
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

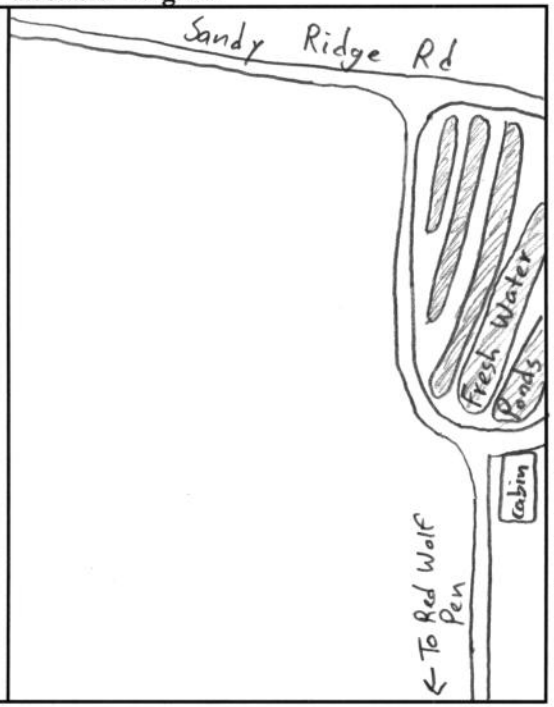
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 405 Bat Species/Sex/Frequency: MYSE/Female/172.124 Band # CC1453

Roost Diagram



Location Diagram



Bat Days

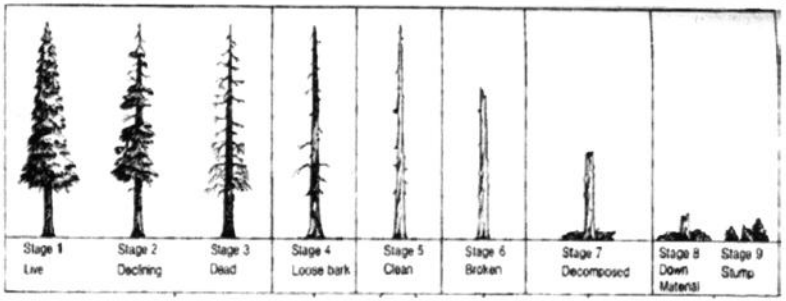
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	19-Nov	124	CC1453	F	saw transmitter at exit count
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	19-Nov	55	clear	0	1653	N/A	N/A	N/A	N/A	*
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Cavity	164°	3	6	1.5	old knot
2						
3						
4						



Comments: * Bat seen moving in knot hole at emergence but did not emerge.

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 19 Nov 17 **Surveyor(s) Full Name:** Kelsie Eshler

State: NC **County:** Dare **Project Name:** 6047 NCDOT Myse

Site Name/#: ARNWR 1 **Roost Name/#** 405 **Bat #:** CC1453

Lat/Long or UTM of Roost: 35.83033, -75.90427

Description of Roost/Habitat Feature Surveyed: Live Cyrillaceae racemiflora with cavity (roost) 1.5 m high

Bat Species Known to be using this Roost/Feature (if not known, leave blank): Myotis Septentrionalis

Other Suspected Bat Species (explain): _____

Weather Conditions during Survey (temperature, precipitation, wind speed): 55° F, Clear, No Wind

Survey Start Time: _____ **Time of Sunset:** 1653 **Survey End Time:** 1753

NOTE: Emergence surveys should begin ½ hour before sunset and continue for a minimum of 1 hour or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1753	0	Bat did not emerge after an hour past sunset, Transmitter still usable in tree

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR01 **Roost Name/#:** 405

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	0	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSC/F/17.124 **Band #** CC1453 Sheet 1 of 1

Roost No. 23 **Project.Phase#** 647.04 **Project Name** Eastern NC MYSC **Date First Found** 20-NOV-17

Location In wooded Swamp South west of Freshwater Ponds **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Zack Baer Ian Burns **Datum** NAD 83

Lat/Long or UTM (circle one): N/Easting 35.82884 **W/Northing** -75.90401 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	23	Liq. Ambar Styraciflua	24.6	20	19	2	0	100	C	
2		Nyssa biflora	7.0	13	—	1	0	100	S-C	
3		Liquidambar Styraciflua	18.0	20	—	1	0	100	C	
4		Nyssa biflora	28.8	21	—	1	0	100	C	
5		Nyssa biflora	16.4	19	—	1	0	100	S-C	
6		Nyssa biflora	45.5	24	—	1	0	100	C	
7		Nyssa biflora	36.5	23	—	1	0	100	C	
8		Nyssa biflora	13.7	15	—	1	0	100	S-C	
9		Nyssa biflora	14.0	13	—	1	0	100	S-C	
10		Nyssa biflora	55.4	25	—	1	0	100	C	
11		Nyssa biflora	25.4	20	—	1	0	100	C	
12		Nyssa biflora	23.0	18	—	1	0	100	S-C	
13		Nyssa biflora	25.2	23	—	1	0	100	SC	
14		Nyssa biflora	22.8	18	—	1	0	100	C	
15		Nyssa biflora	11.0	14	—	1	0	100	S-C	
16		Nyssa biflora	13.4	13	—	1	0	100	SC	
17		Nyssa biflora	17.8	14	—	1	0	100	S-C	
18		Nyssa biflora	23.0	16	—	1	0	100	S-C	
19		Nyssa biflora	11.5	15	—	1	0	100	S-C	
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
190	0	190

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 100

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat**: Cavity

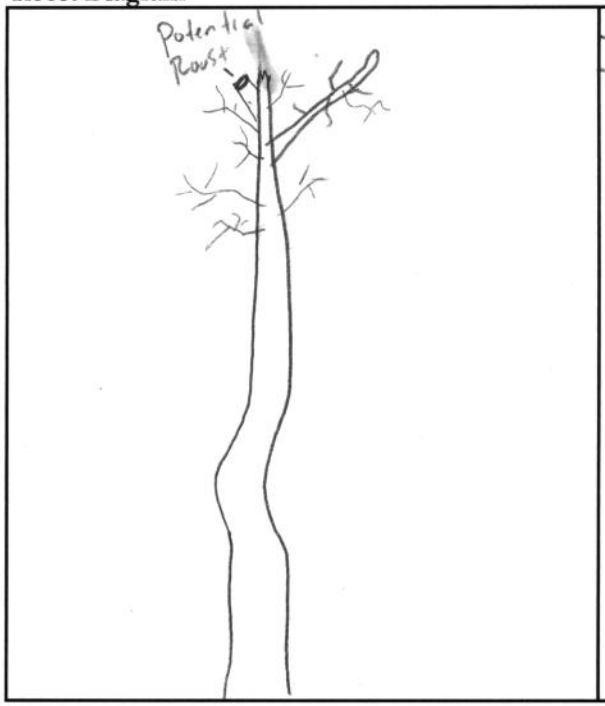
Notes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

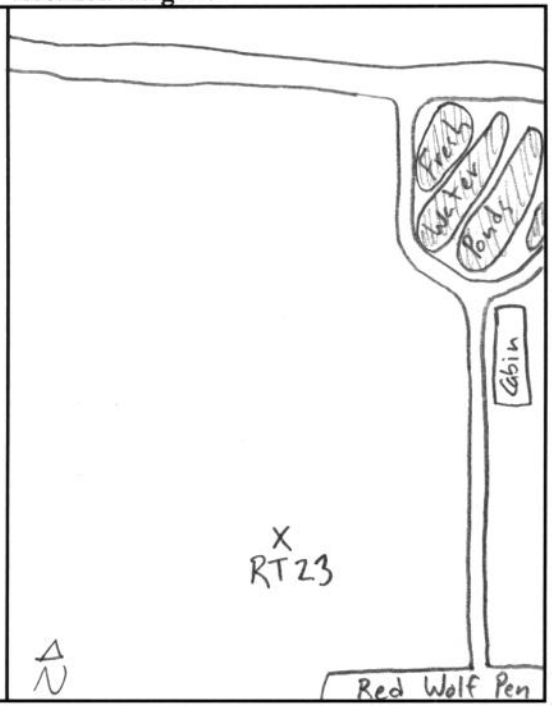
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 23 Bat Species/Sex/Frequency: MYSCI F1.124 Band # CC1453

Roost Diagram



Location Diagram



Bat Days

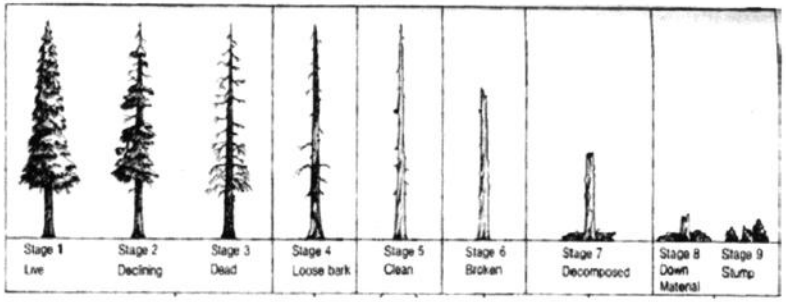
No.	Date 20 17	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	20-Nov	.124	CC1453	F	
2	21-Nov	.124	CC1453	F	
3	22-Nov	.124	CC1453	F	
4	23-Nov	.124	CC1453	F	
5	24-Nov	.124	CC1453	F	
6	25 Nov	124	CC1453	F	
7	26 Nov	124	CC1453	F	
8	27 Nov	124	CC1453	F	
9	28 Nov	124	CC1453	F	
10	29 Nov	124	CC1453	F	
11	30 Nov	124	CC1453	F	
12	1 Dec	124	CC1453	F	
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	20-Nov	46	clear	0	1652	N/A	N/A	N/A	N/A	Ian Burns*
2	28-Nov	61	PT Cloudy	0	16:50	N/A	N/A	N/A	N/A	Meghan Ridey
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Cavity	224	UNK	UNK	19	
2						
3						
4						



Comments: * No bats emerged.

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 20-Nov-17 **Surveyor(s) Full Name:** Ian Burns

State: NC **County:** Dare **Project Name:** Eastern MYSE Research

Site Name/#: ARNWR1 **Roost Name/#** 23 **Bat #:** cc1453

Lat/Long or UTM of Roost: 35.82884

Description of Roost/Habitat Feature Surveyed: Possibly in a cavity at the top of Sweet Gum tree.

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis Septentrionalis

Other Suspected Bat Species (explain):

Weather Conditions during Survey (temperature, precipitation, wind speed):
47°, clear, no wind

Survey Start Time: 1622 **Time of Sunset:** 1652 **Survey End Time:** 1752

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
	0	No bats emerged

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR 1 **Roost Name/#:** 23

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	N/A	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

Bat did not emerge.

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: Nov 28, 2017 **Surveyor(s) Full Name:** Haley Price, Meghan Raley
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: ARNWR1 **Roost Name/#** 23 **Bat #:** CC1453
Lat/Long or UTM of Roost: 35.62884/-75.90401
Description of Roost/Habitat Feature Surveyed: Cavity in live Tree

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis Septentriolis
Other Suspected Bat Species (explain):
Weather Conditions during Survey (temperature, precipitation, wind speed):
61° Pt Cloudy Calm
Survey Start Time: 16:30 **Time of Sunset:** 16:50 **Survey End Time:** 17:50

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		No Bats emerged

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR1 **Roost Name/#:** 23

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:		

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

No Bats emerged

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/F/1,124 **Band #** CC1453 Sheet 1 of 1

Roost No. 984 **Project.Phase#** 647 **Project Name** Eastern NC MYSE **Date First Found** 2-12-17 DEC

Location Wooded Swamp Southwest of freshwater pond, near RT23 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** P. Sewell, D. Batie **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.82859 **W/Northing** -75.90394 **UTM Zone**

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	984	Nyssa biflora	9.2	6.5	3.0	2	0	100	SC	damaged-live
2		N. biflora	6.5	9.0		1	0	100	SC	
3		N. biflora	13.0	9.0		1	0	98	C	
4		N. biflora	22.9	14.0		1	0	100	C	
5		N. biflora	11.1	9.0		1	0	100	SC	
6		N. biflora	13.5	9.5		1	0	98	C	
7		Liquidambar styraciflua	18.0	11.0		1	0	98	C	
8		N. biflora	22.9	11.0		1	0	100	C	
9		N. biflora	15.6	11.0		1	0	100	C	
10		N. biflora	25.8	13.0		1	0	100	C	
11		N. biflora	12.0	9.0		1	0	100	SC	
12		N. biflora	23.1	11.0		1	0	100	C	
13	23	L. styraciflua	24.6	13.0		2	0	95	C	
14		N. biflora	14.0	9.0		1	0	100	C	
15		N. biflora	44.5	14.5		1	0	98	C	
16		N. biflora	37.2	16.0		1	0	100	C	
17		N. biflora	56.3	16.5		1	0	98	C	
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
170	0	170

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 60

Roost Type[4]: Tree-live

MicroHabitat[5] **Used by Bat**: Cavity

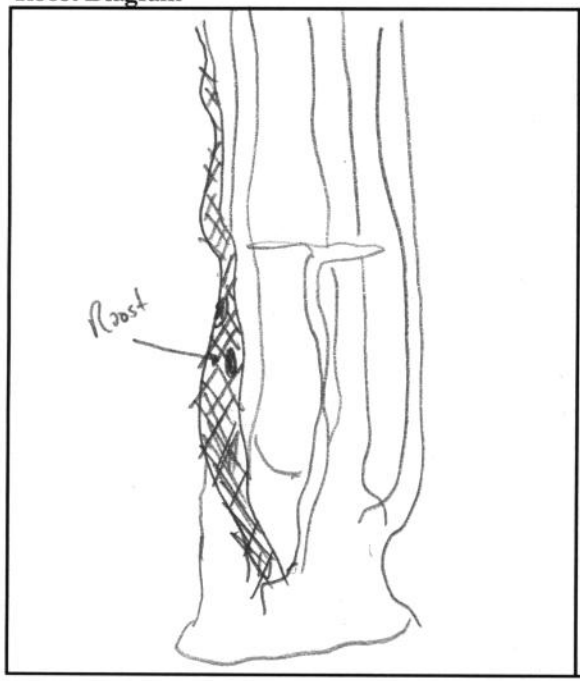
Notes RT is part of split-trunk tree

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

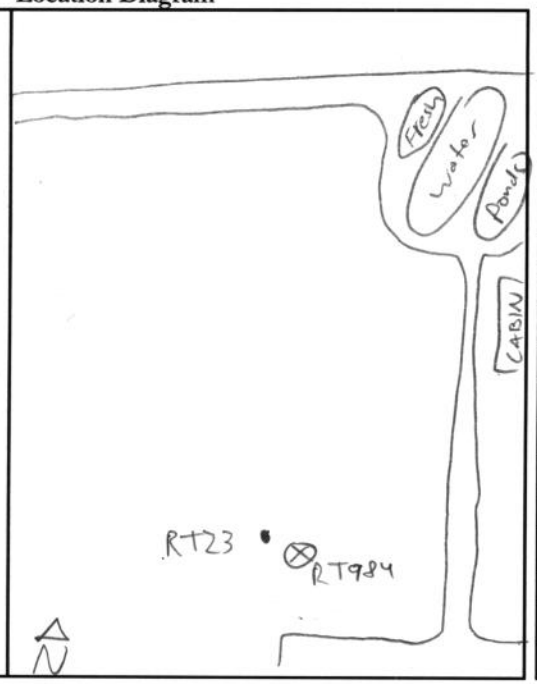
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 984 Bat Species/Sex/Frequency: MYSE/F/.124 Band # CC1453

Roost Diagram



Location Diagram



Bat Days

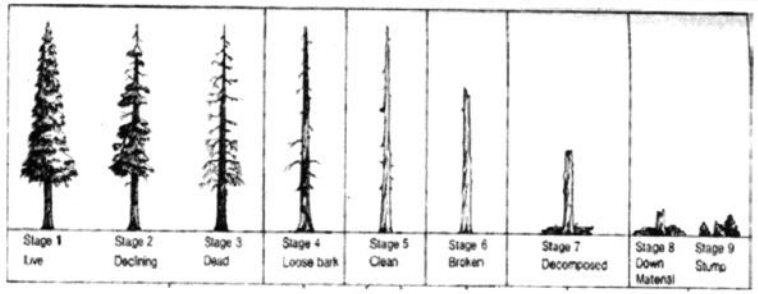
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	12-12	.124	CC1453	F	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	12/2	54	off and on light rain	0	1650	—	—	—	—	GJ, MR
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Tree	147	3.5	11	3	
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 2 Dec 2017 **Surveyor(s) Full Name:** Gregg Janos, Meagan Rayley
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: ARNWR1 **Roost Name/#** 984 **Bat #:** CC1453
Lat/Long or UTM of Roost: 35.82859, -75.90394
Description of Roost/Habitat Feature Surveyed: Cavity of live tree

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE
Other Suspected Bat Species (explain): None
Weather Conditions during Survey (temperature, precipitation, wind speed):
54°F, off & on light rain, no wind
Survey Start Time: 1630 **Time of Sunset:** 1650 **Survey End Time:** 1750

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		No bats emerged

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR **Roost Name/#:** 984

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	0	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

Uneventful, no bats emerged.

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MySe/F/.124 **Band #** CC 1453 Sheet 1 of 1

Roost No. 440 **Project.Phase#** 647 **Project Name** Eastern NC MYSE **Date First Found** Dec. 3, 2017

Location Wooded Swamp Southwest of freshwater ponds **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** D. Batie M. Raley **Datum** NAT 83

Lat/Long or UTM (circle one): N/Easting 35.82973 **W/Northing** -75.90432 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	446	Nyssa biflora	30.3	13	8	1	0	100	C	
2		N. Aquatica	18.3	13.5	–	1	0	100	C	
3		N. biflora	21.5	13	–	1	0	100	C	
4		N. Aquatica	26.3	15	–	1	0	100	C	
5		N. Aquatica	20.2	13	–	1	0	100	C	
6		N. biflora	19.	10	–	2	0	100	SC	
7		N. Biflora	32.9	14	–	1	0	100	C	
8		N. biflora	30.	15	–	1	0	100	C	
9		N. biflora	16.6	11	–	1	0	100	SC	
10		Ilex opaca	4.7	4	–	2	0	100	U	
11		Persea Palustris	6.9	4	–	1	0	100	U	
12		P. palustris	6.1	4	–	1	0	100	U	
13		P. palustris	7.7	4	–	1	0	100	U	
14		N. biflora	19.1	15	–	1	0	100	C	
15		N. biflora	23.8	14	–	1	0	100	C	
16		N. aquatica	23.1	15	–	1	0	100	C	
17		N. aquatica	19.5	7	–	2	0	100	SC	
18		N. aquat.ca	17.6	13.5	–	1	0	100	C	
19		N. biflora	22	14	–	1	0	100	C	
20		N. aquatica	26.5	14	–	1	0	100	C	
21		N. aquatica	24.8	12	–	2	0	100	C	
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
210	0	210

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 85

Roost Type[4]: Live Tree

MicroHabitat[5] **Used by Bat**: Cavity

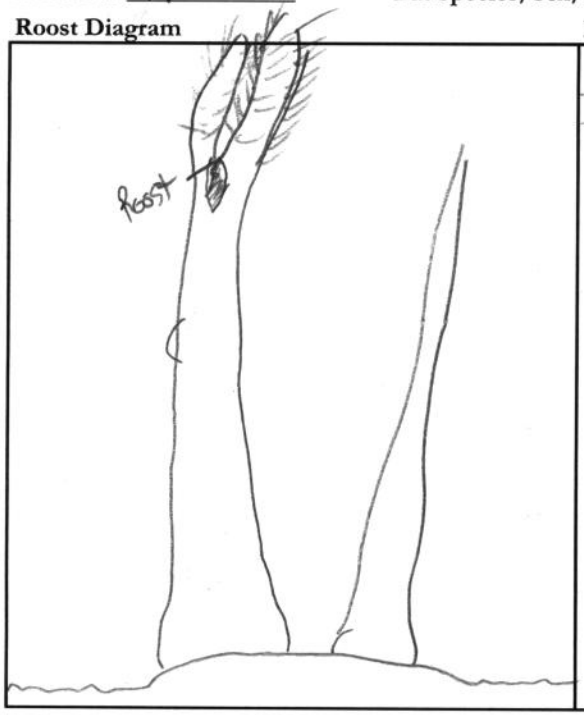
Notes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

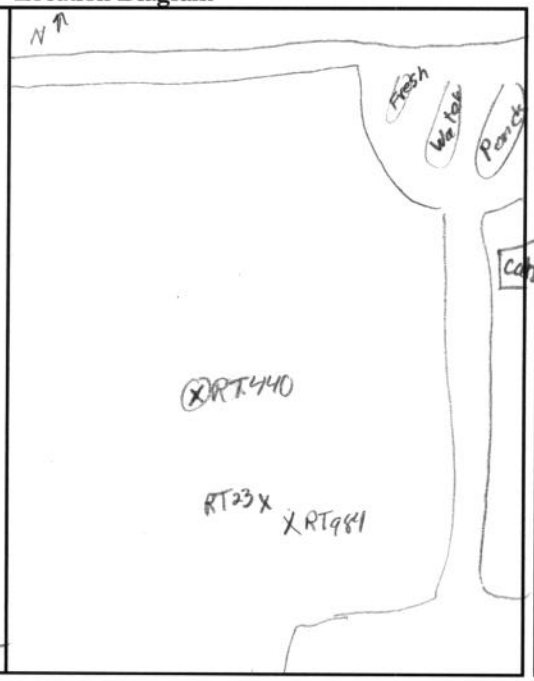
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 440 Bat Species/Sex/Frequency: MYSE/F/.124 Band # CC1453

Roost Diagram



Location Diagram



Bat Days

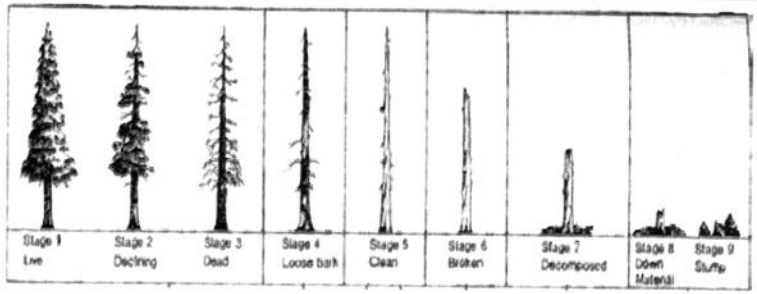
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	12-3	.124	CC1453	F	
2	12/4	124	CC1453	F	
3	12/5	124	CC1453	F	
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	12/3	54	Clear	0	1649	—	—	—	—	GT, PS
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Cavity	247	18	36	8	Open to Ground
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 3 Dec 2017 **Surveyor(s) Full Name:** Gregg Janos, Price Scwell
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: ARNWR1 **Roost Name/#** 440 **Bat #:** CC1453
Lat/Long or UTM of Roost: 35.82973/-75.90432
Description of Roost/Habitat Feature Surveyed: Live tree with a cavity

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE
Other Suspected Bat Species (explain): None
Weather Conditions during Survey (temperature, precipitation, wind speed):
54°/Clear
Survey Start Time: 1630 **Time of Sunset:** 1649 **Survey End Time:** 1749

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		No bats emerged

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR 1 **Roost Name/#:** _____

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	0	None

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

_____

_____

_____

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/F/.124 **Band #** CC1453 Sheet 1 of 1

Roost No. 991 **Project.Phase#** 647.04 **Project Name** Eastern NC MYSE **Date First Found** 12-6-17

Location In wooded swamp southwest of Freshwater Pond, most previously marked RTs **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** O. Batic M. Baley **Datum** NAT84

Lat/Long or UTM (circle one): N/Easting 35.83078 **W/Northing** -75.90424 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1		Persea borbonia	6.7	6.5	1.5	1	0	100	SC	
2		[illegible]	14.2	9	–	1	0	100	SC	
3		Nyssa b. flora	00						SC	
4		Persia Pulustrus	8.9	11	–	1	0	100	SC	
5		N. B. flora	3.4	6.5	–	1	0	100	SC	
6		Unknown	26	5	–	7	0	0	SC	
7		P. borbonia	4.1	3	–	1	0	100	SC	
8		N. B. flora	10	9	–	1	0	100	SC	
9		P. pulustrus	10.4	4	–	5	0	40	SC	
10		P. pulustrus	6.6	11	–	1	0	100	SC	
11		P. pulustrus	6.4	10	–	2	0	100	SC	
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
80	20	100

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 55

Roost Type[4]: Live Tree

MicroHabitat[5] **Used by Bat**: Cavity

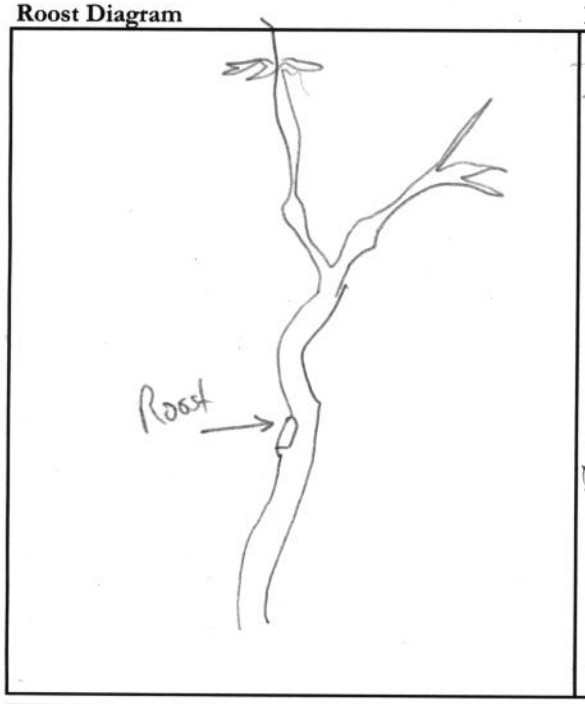
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

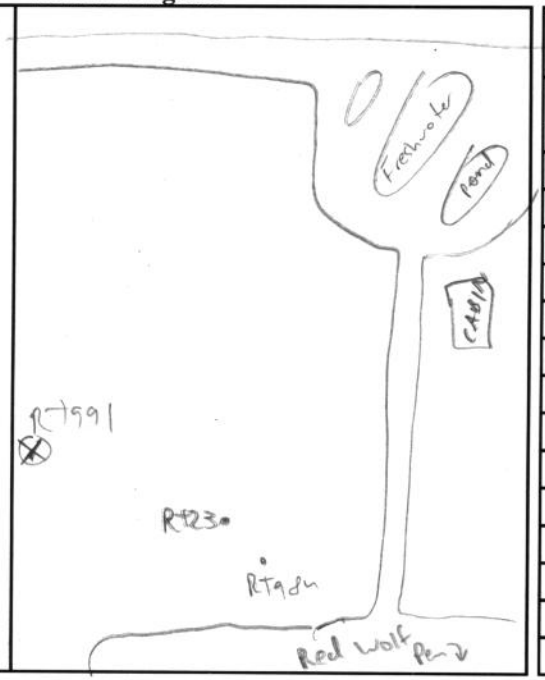
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 991 **Bat Species/Sex/Frequency:** MYSE/F/.124 **Band #** CC1453

Roost Diagram



Location Diagram



Bat Days

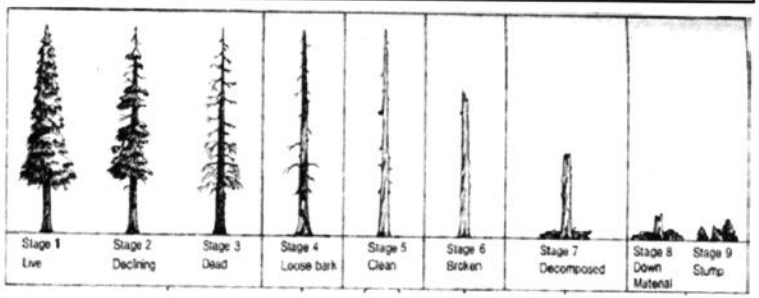
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	12-6	.124	CC1453	F	
2	Dec				
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time			Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End / Tagged Bat		
1	Dec 12	49°	P. Cloudy	0	1649	–	– / –	–	T, Blevins
2									
3									
4									
5									
6									

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1	Cavity	4	1.5	3.5	1.5	
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 2 Dec 2017 **Surveyor(s) Full Name:** Tyler Blevins
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: ARNWR 1 **Roost Name/#** 991 **Bat #:** CC1453
Lat/Long or UTM of Roost: 35.63078 -75.90424
Description of Roost/Habitat Feature Surveyed: Persea borbonia in swamp

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE

Other Suspected Bat Species (explain):

Weather Conditions during Survey (temperature, precipitation, wind speed):
Partly Cloudy, 49°F

Survey Start Time: 1615 **Time of Sunset:** 1649 **Survey End Time:** 1749

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		no bats emerged

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/F/172.124 **Band #** CC1453 Sheet 1 of 1

Roost No. 260 **Project.Phase#** 647.04 **Project Name** Eastern NC MYSE **Date First Found** Dec 7, 2017

Location Wooded swamp southwest of freshwater ponds **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** G. Janos M. Raley **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.82977 **W/Northing** -75.90422 **UTM Zone** ——

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	260	Nyssa aquatica	21.1	6	4	2	0	100	SC	
2		Persea borbonia	8.5	3	—	1	0	100	U	
3		Nyssa biflora	33.2	18	-	1	0	100	C	
4		N. aquatica	19.6	11	—	1	0	100	C	
5		N. biflora	22.7	15	—	1	0	100	C	
6		N. biflora	26.4	15	-	1	0	100	C	
7		N. biflora	33.2	15	-	1	0	100	C	
8		N. biflora	13.5	10	-	1	0	100	SC	
9		N. biflora	15	10	-	1	0	100	SC	
10		P. borbonia	8.8	6	-	1	0	100	SC	
11		N. aquatica	20.5	10	-	2	0	100	C	
12		N. biflora	24	13	-	1	0	100	C	
13		N. biflora	19.2	11	-	1	0	100	C	
14		N. aquatica	26.8	13	-	1	0	100	C	
15		N. aquatica	40.5	15	-	1	0	100	C	
16		N. biflora	28.9	14	-	1	0	100	C	
17		N. biflora	28.	13	-	1	0	100	C	
18		N. biflora	22.4	14	-	1	0	100	C	
19		N. aquatica	25.5	15	-	1	0	100	C	
20		N. biflora	25.1	14	-	1	0	100	C	
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
200	0	200

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 10

Roost Type[4]: live Tree

MicroHabitat[5] **Used by Bat**: Cavity

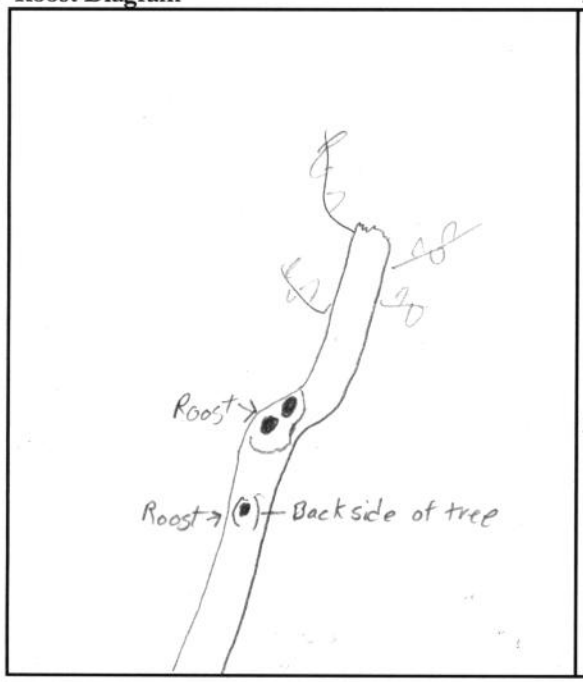
Notes Multiple Cavities

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

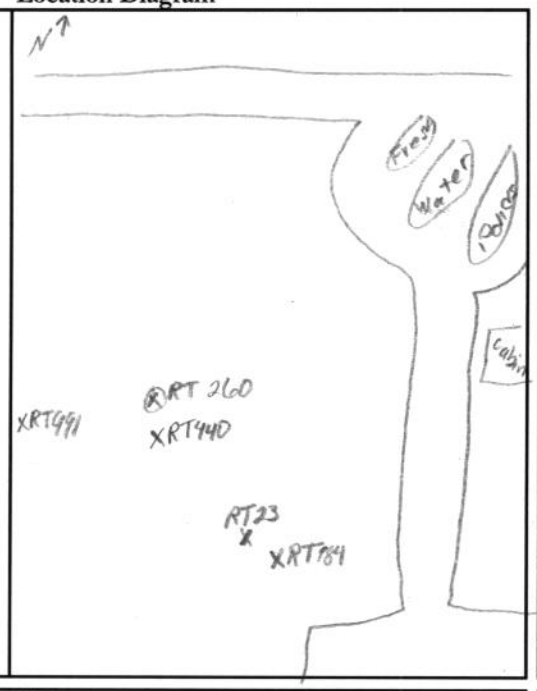
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 260 **Bat Species/Sex/Frequency:** MYSE/F/172.124 **Band #** CC1453

Roost Diagram



Location Diagram



Bat Days

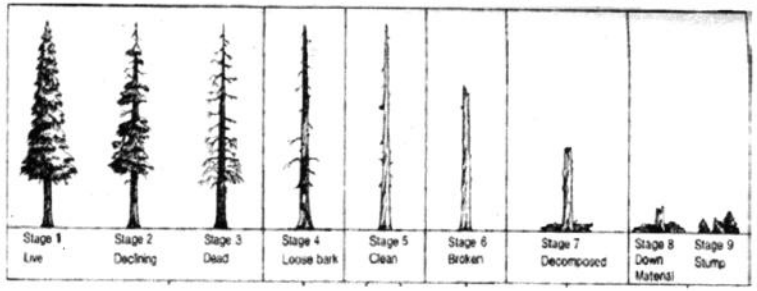
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	Dec 7	124	CC1453	F	
2	Dec 8	124	CC1453	F	
3	Dec 9	124	CC1453	F	
4	Dec 10	124	CC1453	F	
5	Dec 11	124	CC1453	F	
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	Dec 12	49	Partly cloudy	0	1649	—	—	—	—	ADP
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Cavity	280	4	3	4	
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 12 Dec 2017 **Surveyor(s) Full Name:** Alexi Dart-Paddoves

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: ARNWR1 **Roost Name/#** 260 **Bat #:** CC1453

Lat/Long or UTM of Roost: 35.82977 -75.90422

Description of Roost/Habitat Feature Surveyed: Nyssa aquatica in a swamp

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
49°F, MYSE

Other Suspected Bat Species (explain):

Weather Conditions during Survey (temperature, precipitation, wind speed):
Partly Cloudy

Survey Start Time: 1610 **Time of Sunset:** 1649 **Survey End Time:** 1749

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		no bats emerged.

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE / M / 783 **Band #** CC1691 Sheet 1 of 1

Roost No. 436 **Project.Phase#** 647 **Project Name** 647 NCDOT MYSE **Date First Found** 22 Nov 17

Location South of Sandy Ridge Rd, West of SW corner of Wolf Pens **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Wethel, K. Eshler **Datum** NAD83

Lat/Long or UTM (circle one): (N)/Easting 35.82653 (W)/Northing 75.90708 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	436	Nyssa biflora	25.3	18	16	1	5	95	C	
2		"	17.1	15		2	5	100	SC	
3		Morella cerifera	9.8	5.5		1	5	100	SC	
4		Chamaecyparis thyoides	11.1	10		1	0	100	SC	
5		Nyssa biflora	19.2	16		1	5	100	C	
6		C. thyoides	12.7	12		1	0	100	SC	
7		"	21.1	17		1	0	100	C	
8		Nyssa biflora	20.1	15		1	0	100	C	
9		"	12.5	15		2	0	95	C	
10		"	23.2	18		1	0	100	C	
11		C. thyoides	14.9	17.5		1	0	100	C	
12		"	17.0	18		1	0	100	C	
13		Nyssa biflora	14.0	16		1	5	95	SC	
14		"	9.2	2		1	0	100	SC	
15		"	13.2	2.5		1	5	95	SC	
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
150	0	150

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 70

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat**: Exfoliating bark

Notes

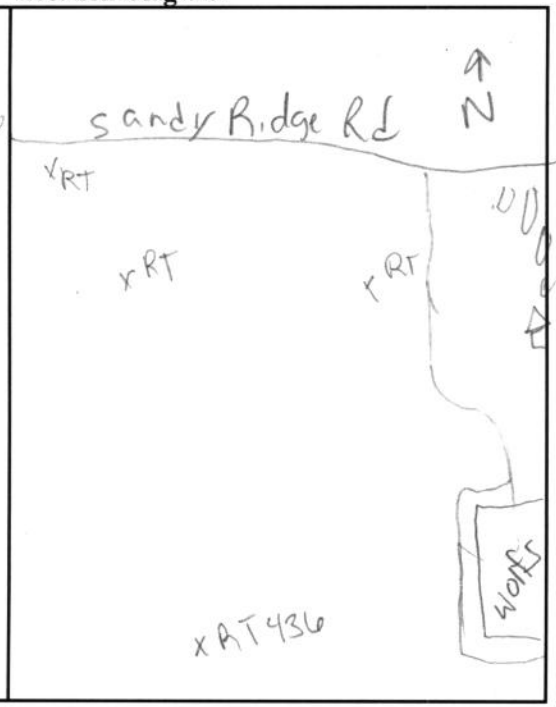
1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 436 **Bat Species/Sex/Frequency:** MYSE/M/.783 **Band #** CC1691

Roost Diagram

Location Diagram



Bat Days

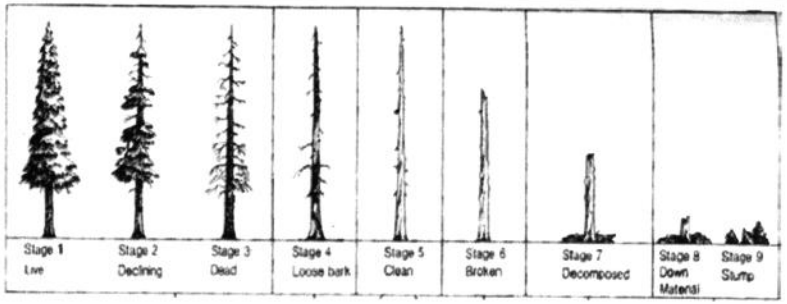
No.	Date 20 17	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	22 NOV17	783	CC1691	M	
2	23 NOV	783	CC1691	M	
3	24 NOV	783	CC1691	M	
4	25 NOV	783	CC1691	M	
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	22Nov17	54	Cloudy	0	1653	—	—	—	0	TWKE
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 22NOV17 **Surveyor(s) Full Name:** Theresa Wetzel, Kelsie Eschler

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: _____ **Roost Name/#** 436 **Bat #:** CC1691

Lat/Long or UTM of Roost: 35.82653, -75.90708

Description of Roost/Habitat Feature Surveyed: Live tree with exfoliating bark

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis

Other Suspected Bat Species (explain): _____

Weather Conditions during Survey (temperature, precipitation, wind speed):
54° F, Cloudy

Survey Start Time: 1623 **Time of Sunset:** 1653 **Survey End Time:** 1753

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		no bats emerged

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/.783 **Band #** CC1691 Sheet 1 of 1

Roost No. 22 **Project.Phase#** 647 **Project Name** NCDOT MYSE **Date First Found** 26 NOV 17

Location South of Sandy Ridge Rd, West of Wolf Pens, East of RT 136 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** L. Burns, K. Eshler **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.82672 **W/Northing** 75.90592 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	22	Nyssa biflora	21.4	18	12	1	0	100	C	
2		"	22.1	19		1	0	100	C	
3		"	36.5	21		1	0	100	C	
4		"	9.6	7		3	5	95	SC	
5		"	12.6	12		1	5	95	SC	
6		"	16.0	19		1	0	100	C	
7		"	24.4	20		1	0	100	C	
8		"	21.3	18		1	0	100	C	
9		"	30.7	17		1	0	100	C	
10		"	30.6	22		1	0	100	C	
11		Persea palustris	26.7	14		2	5	90	SC	
12		Nyssa biflora	30.0	19		1	5	95	C	
13		Pinus serotina	24.8	13		3	5	85	SC	
14		Nyssa biflora	26.5	17		1	0	100	C	
15		"	21.3	16		1	0	100	SC	
16		Pinus serotina	40.5	24		1	10	95	C	
17		Nyssa biflora	36.6	18		1	0	100	C	
18		Acer rubrum	17.5	14		2	5	95	SC	
19		Nyssa biflora	21.0	18		1	0	100	C	
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
170	20	190

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 65

Roost Type[4]: Tree-Live

MicroHabitat[5] **Used by Bat**: Crevice/Crack

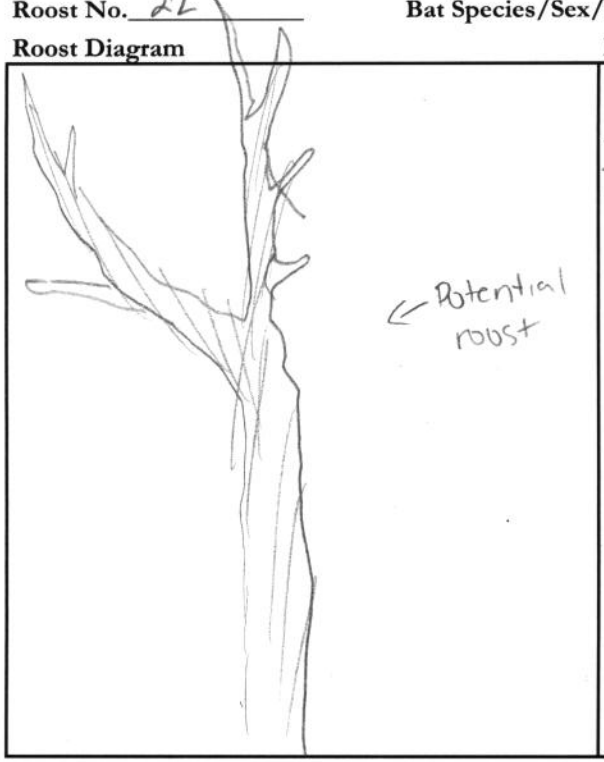
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

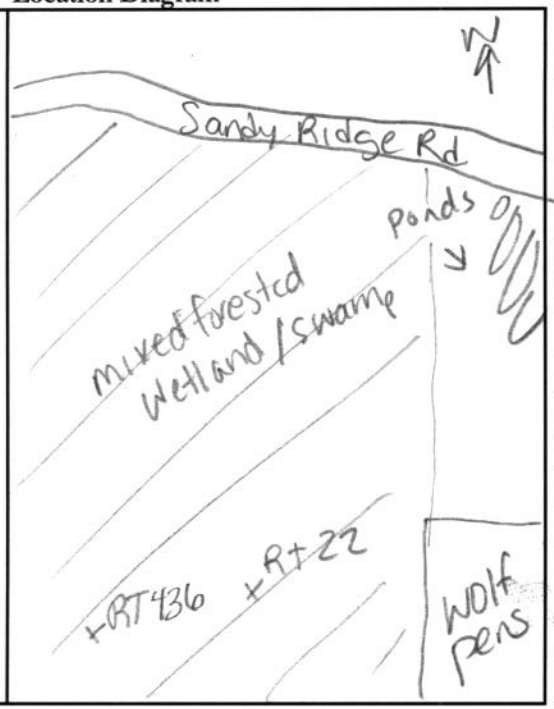
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 22 **Bat Species/Sex/Frequency:** myse/M/.783 **Band #** CC1691

Roost Diagram



Location Diagram



Bat Days

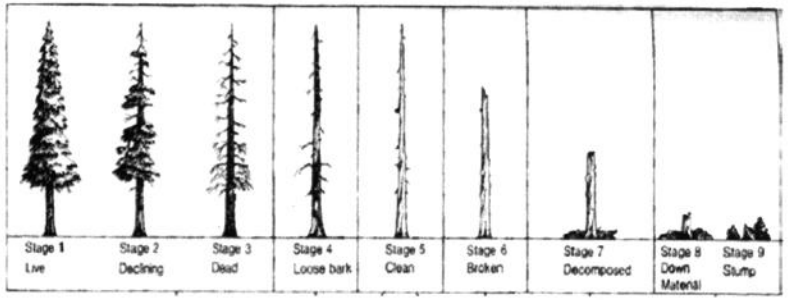
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	26 Nov 17	783	CC1691	M	
2	27 Nov 1	783	CC1691	M	
3	28 Nov	783	CC1691	M	
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	26 Nov 17	48	P. Cloudy	0	1651	—	—	—	0	JB/ICE
2	28 Nov 17	61	P. Cloudy	1	1650	1721	1721	1721	1	PS
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 26 Nov 17 **Surveyor(s) Full Name:** Kelsie Eshler, Ian Burns
State: NC **County:** Dare **Project Name:** 647 NCDOT MYSE
Site Name/#: ARNWR 1 **Roost Name/#** 22 **Bat #:** CC1691
Lat/Long or UTM of Roost: 35.82670, -75.90592
Description of Roost/Habitat Feature Surveyed: Live Nyssa biflora with some crevices/roost features near top of tree
Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis
Other Suspected Bat Species (explain):
Weather Conditions during Survey (temperature, precipitation, wind speed):
48°F, Partly Cloudy, NO wind
Survey Start Time: 1621 **Time of Sunset:** 1651 **Survey End Time:** 1751

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1751	0	No emergence, confirmed w/ radio transmitter

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 28 Nov 2017 **Surveyor(s) Full Name:** Price Sewell

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: ARNWR1 **Roost Name/#** 22 **Bat #:** cc 1691

Lat/Long or UTM of Roost: 35.82672 -75.90592

Description of Roost/Habitat Feature Surveyed: Live Nyssa biflora

Bat Species Known to be using this Roost/Feature (if not known, leave blank): MYSE

Other Suspected Bat Species (explain): None

Weather Conditions during Survey (temperature, precipitation, wind speed): 61°F Partly Cloudy

Survey Start Time: 1645 **Time of Sunset:** 1650 **Survey End Time:** 1750

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1721	1	Radio tagged bat

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR 1 **Roost Name/#:** 22

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:		

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

One bat (Radio-tagged) emerged & left the area immediately

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/172.783 **Band #** CC1691 Sheet 1 of 1

Roost No. 433 **Project.Phase#** 147 **Project Name** Eastern NC MYSE **Date First Found** 29 Nov 17

Location South of Sandy Ridge Rd, southwest of RT22 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Wetel, M. Raley **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.82608 W/Northing 75.90624 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	433	Nyssa sylvatica	12.4	7.5	5	2	0	100	Sub	
2		C. thyoides	12.3	9	—	2	0	100	Can	
3		N. sylvatica	9.9	4	—	1	0	100	Sub	
4		N. sylvatica	18.5	12	—	1	0	100	Can	
5		N. sylvatica	10.1	9	—	1	0	100	Sub	
6		N. sylvatica	13.3	11.5	—	1	0	100	Can	
7		N. sylvatica	15.5	11.5	—	1	0	100	Can	
8		N. biflora	17.4	11.5	—	1	0	100	Can	
9		"	20.9	14	—	1	0	100	Can	
10		C. thyoides	21.0	13	—	2	0	100	Can	
11		N. biflora	29.2	14	—	1	0	100	Can	
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
110	0	110

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure: 25%

Roost Type[4]: Tree-Live

MicroHabitat[5] **Used by Bat**: Cavity

Notes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

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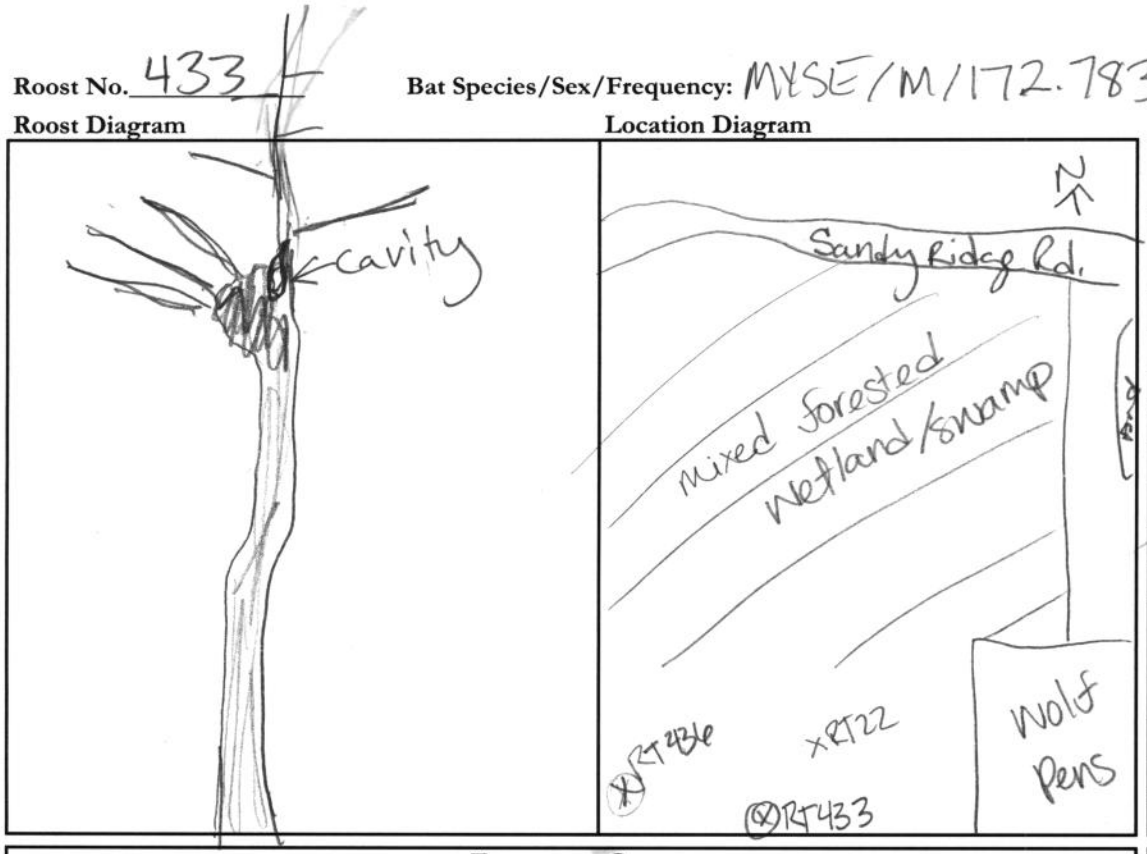
Roost No. 433 | Bat Species/Sex/Frequency: MYSE/M/172.783 | Band # CC1691

Roost Diagram



Location Diagram

Bat Days

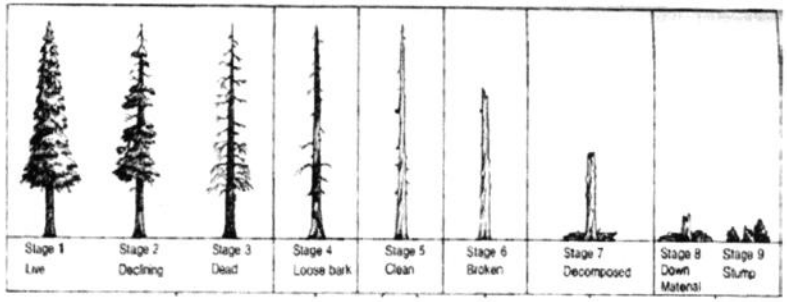
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	29Nov	783	CC1691	M	
2	30Nov	783	CC1691	M	
3	1 Dec	783	CC1691	M	
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	29Nov	53	clear	—	1650	—	—	1725	—	T. Wetzel
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments: * 29Nov - did not see bat emerge, emergence time confirmed with telemetry antenna

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 11-29-2017 **Surveyor(s) Full Name:** Theresa Wetzel, Meghan Raley

State: NC **County:** Dare **Project Name:** Eastern NC, MYSE

Site Name/#: ARNWR-1 **Roost Name/#** 433 **Bat #:** CC1691

Lat/Long or UTM of Roost: 35.826085/-75.90624

Description of Roost/Habitat Feature Surveyed: live tree, cavity

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis

Other Suspected Bat Species (explain): none

Weather Conditions during Survey (temperature, precipitation, wind speed):
53, clear, calm

Survey Start Time: 1630 **Time of Sunset:** 1650 **Survey End Time:** 1750

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1725	1	did not see bat emerge, confirmed
		emergence w/ telemtry equip.
		tagged bat 172.783

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR1 **Roost Name/#:** 433

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	1	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

Did not see bat emerge, emergence confirmed w/ telemetry equipment

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/1.783 **Band #** CC1691 Sheet 1 of 1

Roost No. 985 **Project.Phase#** 647 **Project Name** Eastern NC MYSC **Date First Found** 7-12-17

Location South of Sandy Ridge Rd. Southwest of RT22 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Price Sewell, Daniel Batie **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.82605 **W/Northing** -75.90625 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	985	Nyssa biflora	11.8	8.0	3.0	2	0	95	C	
2		N. biflora	11.2	10.0		1	0	100	C	
3		N. biflora	14.8	8.5		1	5	100	C	
4		Persea palustris	7.1	2.5		1	0	100	SU	
5		N. biflora	10.3	9.0		1	0	100	C	
6		N. biflora	14.8	11.0		1	0	100	C	
7		N. biflora	14.9	12.0		1	0	100	C	
8		N. biflora	16.1	9.0		1	0	98	C	
9		P. palustris	8.5	7.0		1	0	100	U	
10		N. biflora	13.1	10		1	0	100	C	
11		N. biflora	12.8	9.5		1	0	100	C	
12		N. biflora	16.2	11		1	0	100	C	
13		N. biflora	16.7	10		1	0	100	C	
14		P. palustris	13.5	8		1	0	100	SC	
15		N. biflora	20.2	12		1	0	100	C	
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
150	0	150

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure: 75

Roost Type[4]: Tree—live

MicroHabitat[5] **Used by Bat**: Cavity

Notes Cavities around tree open to open to common chamber within tree.

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

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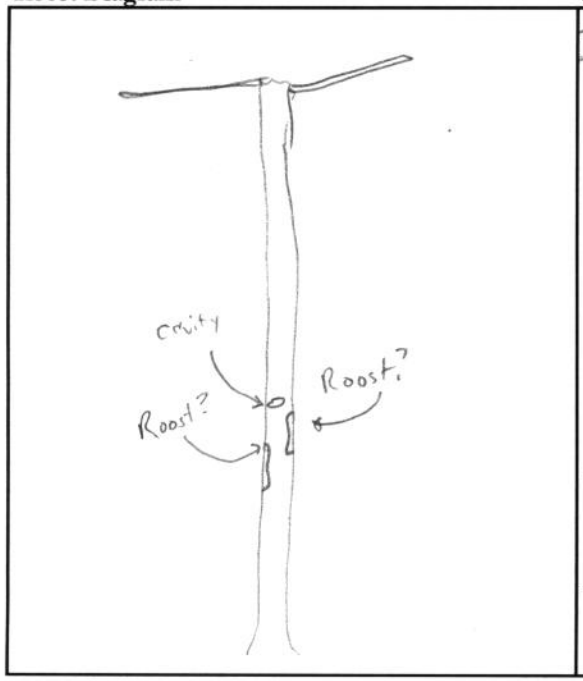
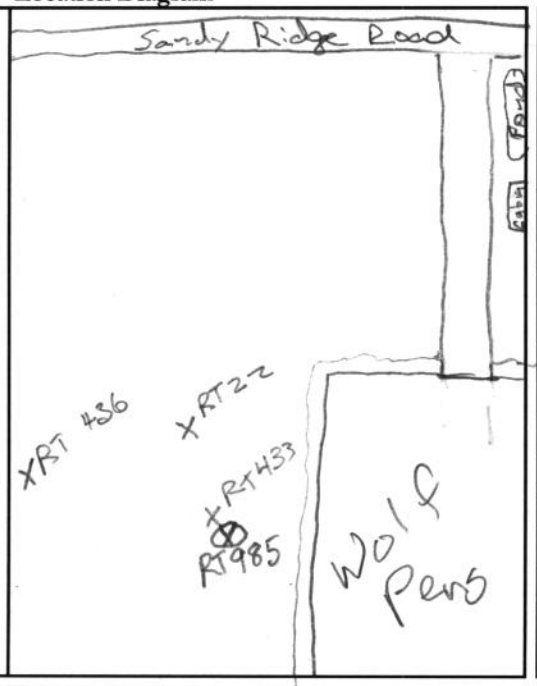
Roost No. 985 **Bat Species/Sex/Frequency:** MYSE/M/783 **Band #** CC1691

Roost Diagram



Location Diagram



Bat Days

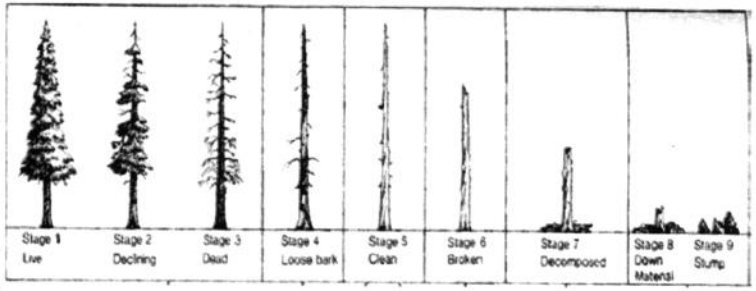
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2 Dec	783	CC1691	M	—
2	3 Dec	783	CC1691	M	
3	4 Dec	783	CC1691	M	
4	12/5	783	CC1691	M	
5	6 Dec	783	CC1691	M	
6	19 Dec	783	CC1691	M	
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	2 Dec	56	drizzle	0	4:50	—	—	—	—	—
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1		N/A				
2						
3						
4						



Comments:

Roost Tree Data Form (2014) Bat Species/Sex/Frequency: MYSE/M/172.783 Band # CC 1691 Page 1 of 1

Roost Tree # 261 Project No./Project Name 64704 / Eastern NC MYSE Date First Found Dec 7, 2017

Location South of Sandy Ridge Rd West of RT22 Ownership: Federal

County Dare State NC Quad

Lat-Long/UTM: N/E 35.82683 W/N -75.980630 Zone — Datum: NAD83 Observers: G. Janos M. Farley

#	Tree Tag #	Species	DBH (cm)	Height ft or m		Decay ~~Condition*~~	% Bark Cover**		Tree Ranking***	Available Roost/ Observation
				Tree	Roost	Stage	Usable	Total		
1	261	Nyssa Biflora	15.4	12	5	1	0	100	C	
2		Nyssa aquatica	23.8	12	-	1	0	100	C	
3		Nyssa biflora	25	14	-	1	0	100	C	
4		Chamae cyparis thyoides	9.1	6	-	1	0	100	SC	
5		Acer rubrum	5.5	7	-	1	0	100	SC	
6		C. thyoides	17.7	8	-	1	0	100	SC	
7		N. biflora	35.4	18	-	1	0	100	C	
8		Pinus serotina	55.3	21	-	1	0	100	C	
9		N. biflora	34.3	21	-	1	0	100	C	
10		N. biflora	31.2	12	-	1	0	100	C	
11		C. thyoides	12.4	6.5	-	1	0	100	SC	
12		N. biflora	20.1	5	-	7	5	75	SC	
13		N. biflora	24.5	15	-	1	0	100	C	
14		A. rubrum	25.3	6	-	7	0	50	SC	had 1 live low branch
15		A. rubrum	22	10	-	2	0	100	SC	
16		Taxodium distichum	34.1	20	-	1	0	100	C	
17		T. distichum	60.5	21	-	1	0	100	C	
18		P. Serotina	26.7	11	-	6	0	1	C	
19		C. thyoides	16.8	6	-	3	0	100	SC	
20		N. biflora	16.6	10	-	1	0	100	C	
21		N. biflora	21.5	10	-	1	6	100	C	
22		N. aquatica	32.8	20	-	1	0	100	C	

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree.

Habitat		
(Interior)	Edge	Open

Canopy Cover at Roost		
Open	Intermediate	(Closed) 80%

Basal Area		
Live Trees	Snags	All Trees
180	40	220

Roost Location		
Bark	(Cavity)	Crevice

↓QUICK REFERENCE / ↑ CIRCLE

Tree type *Condition		
Snag	(Live)	Live-Damaged

**% Bark Cover		
High = ≥ 25%	Moderate = ≥ 10-<25%	Low = < 10%

***Tree Ranking		
Canopy	Sub-Canopy	Understory

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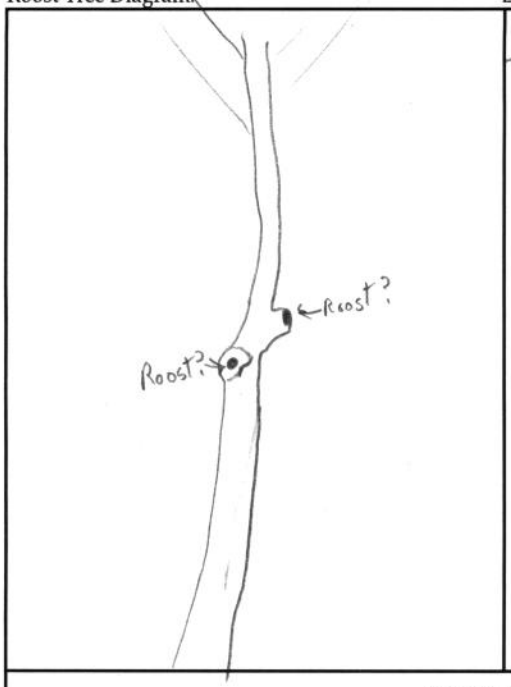
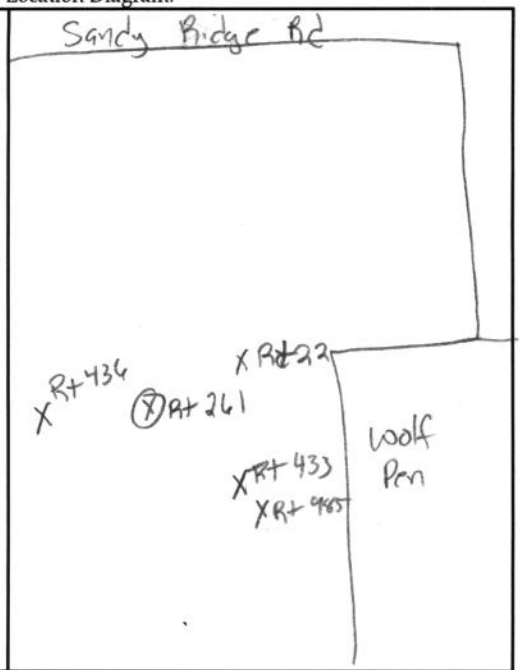
Copperhead Environmental Consulting Inc.
P.O. Box 73, 11641 Richmond Rd.
Paint Lick, KY 40461 (859) 925-9012

Roost Tree # 261 Bat Species/Sex/Frequency: MYSE/M/.783 Band # CC 1691

Roost Tree Diagram:



Location Diagram:



Bat Days

No.	Date	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	Dec 7	.783	CC1691	M	
2	Dec 8	.783	CC1691	M	
3	Dec 9	.783	CC1691	M	
4	Dec 10	.783	CC1691	M	
5	Dec 11	.783	CC1691	M	
6	Dec 12	.783	CC1691	M	
7	Dec 13	.783	CC1691	M	
8	Dec 14	.783	CC1691	M	
9	Dec 15	.783	CC1691	M	
10	Dec 16	.783	CC1691	M	
11	Dec 17	.783	CC1691	M	
12	Dec 18	.783	CC1691	M	
13					
14					

Emergence Count

No.	Date	Temp °F	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Focal Bat exit #	Personnel/ Comments
1	12-12	49	Partly cloudy	0	1649	—	—	—	—	
2										
3										
4										

Cavity or Crevice Characteristics

No.	Nature	Aspect	Opening Measurements: Width	Height	Ground	H_2O Level
1	Cavity	146	2	2	5	
2						
3						

Comments:

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

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 2-December-2017 **Surveyor(s) Full Name:** Price Sewell Daniel Batie

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: AR NWR1 **Roost Name/#** 985 **Bat #:** CC1691

Lat/Long or UTM of Roost: 35.82605, -75.90625

Description of Roost/Habitat Feature Surveyed: Live tree with crevice

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE

Other Suspected Bat Species (explain): -

Weather Conditions during Survey (temperature, precipitation, wind speed):
56°F light rain Calm

Survey Start Time: 4:44 PM **Time of Sunset:** 4:50PM **Survey End Time:** 5:50 PM

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		None

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR **Roost Name/#:** 985

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	0	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

No bats emerged

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 12-Dec-2017 **Surveyor(s) Full Name:** Robert Stinson Taylor culbertson
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: ARNWR1 **Roost Name/#** 261 **Bat #:** CC1691
Lat/Long or UTM of Roost: 35.82683 -75.980630
Description of Roost/Habitat Feature Surveyed: Nyssa biflora, Roost in Swamp

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE
Other Suspected Bat Species (explain):
Weather Conditions during Survey (temperature, precipitation, wind speed):
49°F, Partly Cloudy
Survey Start Time: 1610 **Time of Sunset:** 1649 **Survey End Time:** 1749

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		no bats emerged

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/172.722 **Band #** CC2103 Sheet 1 of 1

Roost No. 439 **Project.Phase#** 647 **Project Name** Eastern NC MYSE **Date First Found** 11/19/2017

Location North of Milltail Rd at site ARNWR5 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Wetzel, S. Cotham **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.808168 **W/Northing** 75.88013 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	439	Nyssa aquatica	30.5	15	12	1	0	100	Can	cavity
2		Chamaecyparis thyoides	25.3	17		1	5%	100	Can	
3		Nyssa aquatica	16.1	12		1	0	100	Sub	
4		Nyssa aquatica	14	6		4	10%	80	Sub	
5		Nyssa aquatica	25.1	15		1	0	100	Can	
6		Cathyoides	33.5	19		1	0	100	Can	
7		Nyssa biflora	22.7	15		1	0	100	Can	
8		Taxodium ascendens	24.8	4		6	10	100	Und	
9		Persea palustris	7.5	6		1	0	100	Sub	
10		T. ascendens	31.0	18		1	5	100	Can	
11		Nyssa biflora	21.3	15		1	0	100	Can	
12		T. ascendens	37.6	17		1	0	100	Can	
13		N. biflora	20	16		1	0	100	Can	
14		Nyssa aquatica	23.1	16		1	0	100	Can	
15		Acer rubrum	21.5	15		1	0	100	Can	
16		N. biflora	13.5	13		1	0	100	Can	
17		N. biflora	25.9	17		1	0	100	Can	
18		N. biflora	22	17		1	0	100	Can	
19		N. aquatica	29.3	16		1	0	100	Can	
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
170	20	190

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure

45%

Roost Type[4]

Tree-Live

MicroHabitat[5] **Used by Bat**

Cavity

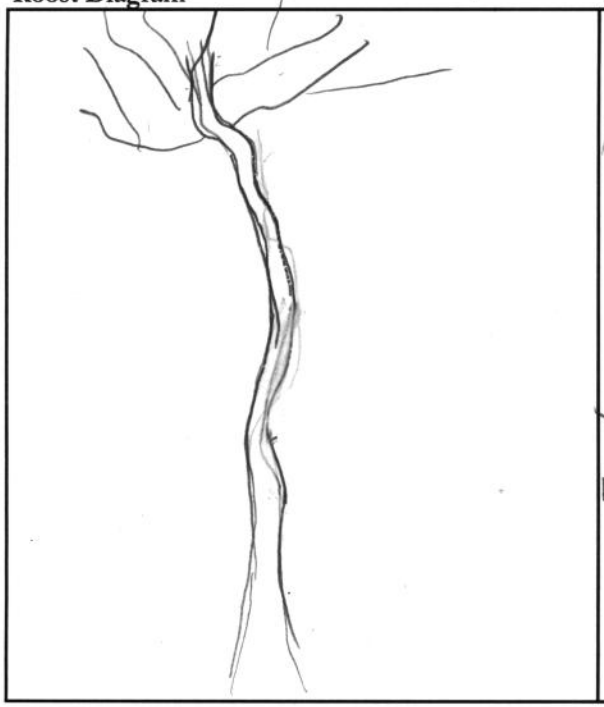
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

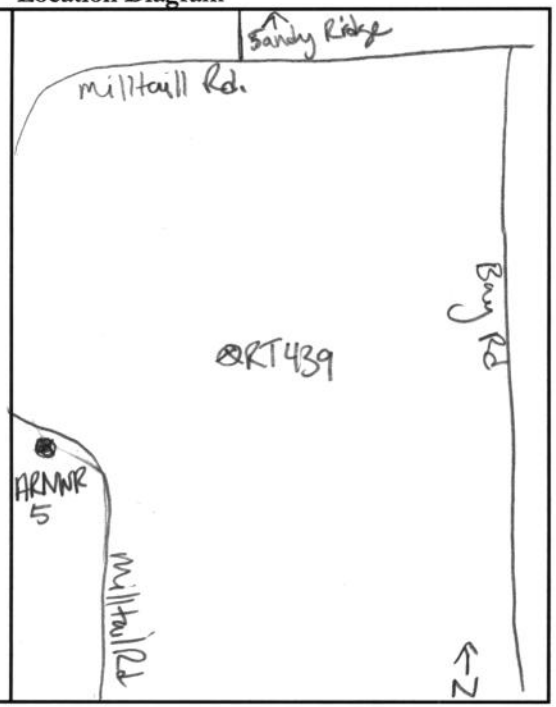
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 439 Bat Species/Sex/Frequency: MYSE/M/172.722 Band # CC2103

Roost Diagram



Location Diagram



Bat Days

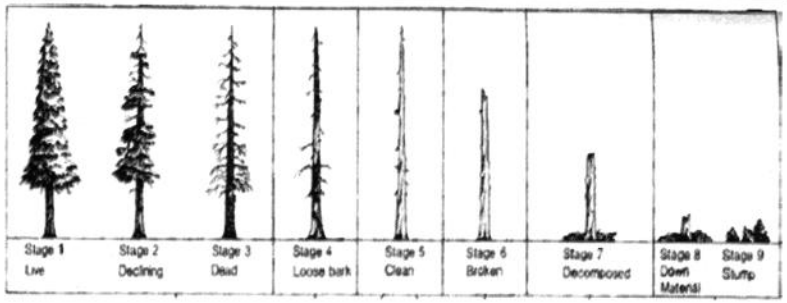
No.	Date 20_17	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	11/19	722	CC2103	M	
2	11/20	722	CC2103	M	
3	11/21	722	CC2103	M	
4	11/22	722	CC2103	M	
5	11/23	722	CC2103	M	
6	11/24	722	CC2103	M	
7	11/25	722	CC2103	M	
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20_17	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	11/28	60	partly cloudy	0	1650	—	—	NA	NA	G. Janos
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 28 Nov 2018 **Surveyor(s) Full Name:** Gregg Janos
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: ARNWRS **Roost Name/#** RT 439 **Bat #:** CC2103
Lat/Long or UTM of Roost: 35.80868, -75.88013
Description of Roost/Habitat Feature Surveyed: Cavity in live tree

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE
Other Suspected Bat Species (explain):
Weather Conditions during Survey (temperature, precipitation, wind speed):
Partly Cloudy, 60°F, calm wind
Survey Start Time: 1640 **Time of Sunset:** 1650 **Survey End Time:** 1645

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		No bats, got too dark

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR5 **Roost Name/#:** RT 439

Time	Number of Bats Leaving Roost*	Comments / Notes
		No bats emerged, got too dark to see
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:		

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

Tagged bat was not in the tree during survey. No bats emerged

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/172.722 **Band #** CC2103 Sheet 1 of 1

Roost No. 432 **Project.Phase#** 647.04 **Project Name** Eastern NC MYSE **Date First Found** 11/26/2017

Location Northeast of ARNWR5 and milltail Rd, South of RT 439 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Wetel, R. Eaton **Datum** WGS-84

Lat/Long or UTM (circle one): (N)/Easting 35.80732 (W)/Northing 75.87968 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	432	Nyssa biflora	14.1	13	3.5	1	0	100	Sub	cavities
2		A. rubrum	20.0	15.5	—	1	0	100	Can	
3		C. thyoides	28.6	17	—	1	0	100	Can	
4		C. thyoides	19.4	16.5	—	1	0	100	Can	
5		C. thyoides	12.5	7.5	—	2	0	100	Sub	
6		Nyssa sylvatica	9.5	8	—	2	0	100	Sub	
7		N. biflora	21.4	15	—	1	0	100	Can	
8		N. biflora	17.0	15	—	1	0	100	Can	
9		N. sylvatica	11.5	12.5	—	1	0	100	Sub	
10		N. biflora	14.1	14	—	1	0	100	Sub	
11		A. rubrum	28.1	17	—	2	0	85	Can	
12		Taxodium ascendens	26.1	17.5	—	1	0	100	Can	
13		Taxodium distichum	22.2	16	—	2	0	100	Can	
14		A. rubrum	27.5	18	—	1	0	100	Can	
15		Taxodium distichum	32.6	18	—	1	0	100	Can	
16		N. sylvatica	10.5	14	—	1	0	100	Sub	
17		N. sylvatica	11.2	15	—	1	0	100	Sub	
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
130	40	170

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 45

Roost Type[4]: Tree-Live

MicroHabitat[5] **Used by Bat**: Cavity

Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

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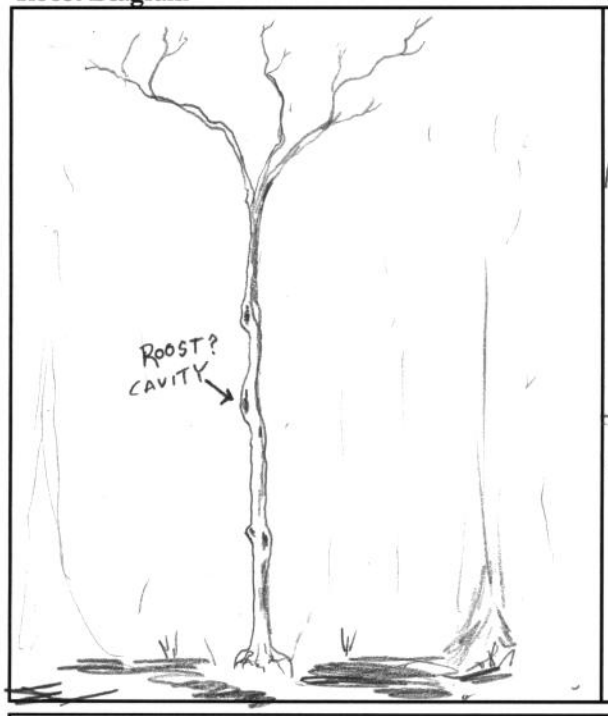
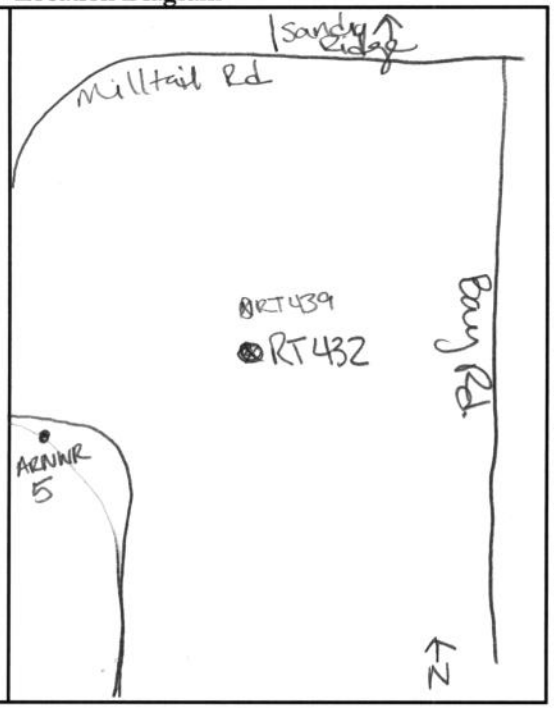
Roost No. 432 Bat Species/Sex/Frequency: MYSE/M/172.722 Band # CC2103

Roost Diagram



Location Diagram



Bat Days

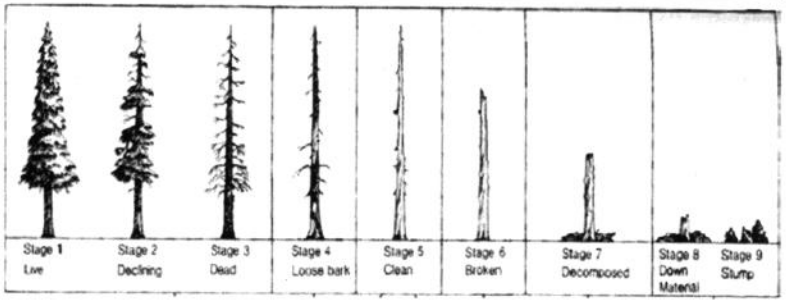
No.	Date 20 17	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	11/26	722	CC2103	M	
2	11/27	722	CC2103	M	
3	11/28	722	CC2103	M	
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20 17	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	28-11	60	Partly Cloudy	1	1650	1733	1733	1733	722	P.B.
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 28-11-17 **Surveyor(s) Full Name:** Daniel Paul Batie
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: ARNWR5 **Roost Name/#** 432 **Bat #:** CC2103 RE
Lat/Long or UTM of Roost: 35.80732 N, 75.87968 W
Description of Roost/Habitat Feature Surveyed: Cavity in live tree

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis
Other Suspected Bat Species (explain): N/A
Weather Conditions during Survey (temperature, precipitation, wind speed):
Partly Cloudy, 60°F, calm
Survey Start Time: 1633 **Time of Sunset:** 1650 **Survey End Time:** 1746

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1733	1	.722

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: AR NWR 5 **Roost Name/#:** 432

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	1	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

Radio-tagged bat (.722) emerged at 1733, and left the area around the 432 immediately. No other bats were sighted.

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/172.722 **Band #** CC2103 Sheet 1 of 1

Roost No. 254 **Project.Phase#** 647. **Project Name** Eastern NC MYSE **Date First Found** 11/29/2017

Location NE of ARNWRS and milltail road, south of RT432 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** G. Junos, D. Batie **Datum** Nad 83

Lat/Long or UTM (circle one): N/Easting 35.80732 **W/Northing** -75.87929 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	254	Persea palustris	10.8	5.0	2.5	2	0	95	SubCanop	Cavity Roost
2		Nyssa biflora	19.2	15.0		1	100	0	Canopy	
3		Nyssa biflora	17.6	15.0		1	100	0	Canopy	
4		Nyssa biflora	12.4	12.0		1	100	0	Canopy	
5		Unknown sapling	1.8	1.5		1	100	0	Understy	
6		Nyssa biflora	8.0	9.0		1	100	0	SubCanopy	
7		P. palustris	8.7	5.0		1	100	0	SubCanopy	
8		Acer rubrum	18.6	15.0		2	80	0	Canopy	
9		N. biflora	16.8	12.0		1	100	0	Canopy	
10		N. biflora	10.3	8.0		1	100	0	SubCanopy	
11		P. palustris	9.4	6.0		1	100	0	SubCanopy	
12		N. biflora	14.2	12.0		1	100	0	Canopy	
13		N. biflora	11.6	9.0		1	100	0	SubCanopy	
14		P. palustris	6.5	6.0		1	100	0	SubCanop	
15		N. biflora	11.1	12.0		1	100	0	Canopy	
16		P. palustris	6.7	5.5		2	100	0	SubCanop	
17		N. biflora	9.4	12.0		1	100	0	Canopy	
18		N. biflora	13.9	15.0		1	100	0	Canopy	
19		N. biflora	15.8	15.0		1	100	0	Canopy	
20		N. biflora	6.8	8.0		1	100	0	SubCanopy	
21		Acer rubrum	23.4	15.0		1	98	1	Canopy	damaged
22		Taxodium distichum	32.2	18.0		1	100	0	Canopy	

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
25	0	25

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure: 60

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat**: Cavity

Notes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

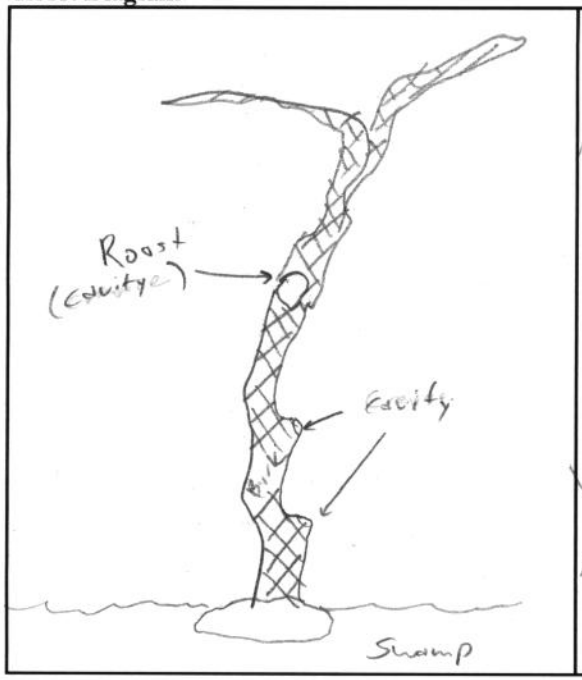
23 P. palustris 8.9, 6.0 / , 100 , 0 , SubCanopy
24 N. biflora 10.8 9.0, / 100 SubCanopy
25 N. biflora 11.7 9.0, / , 100 , 0 , SubCanopy

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

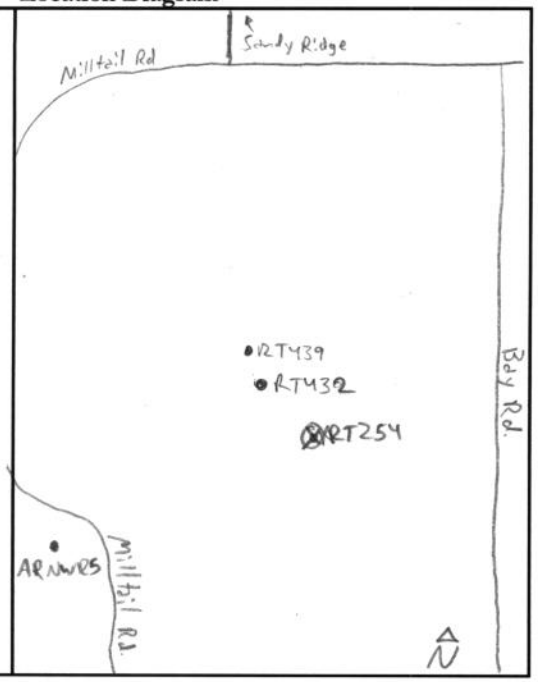
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 254 **Bat Species/Sex/Frequency:** MYSE/M/.722 **Band #** CC2103

Roost Diagram



Location Diagram



Bat Days

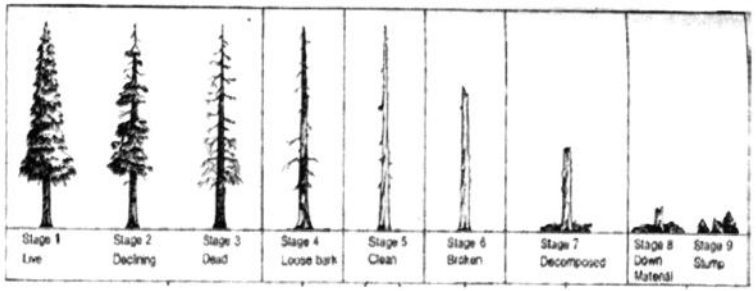
No.	Date 2019	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	29 Nov	.722	CC2103	M	
2	30 Nov	.722	CC2103	M	
3	1 Dec	.722	CC2103	M	
4	2 Dec	722	CC2103	M	
5	3 Dec	722	CC2103	M	
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	29.11	60	clear, calm	0	1650	1657	1707	–	–	
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1	Cavity	248	6.0	10.0	2.5	
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 29 Nov 2018 **Surveyor(s) Full Name:** Gregg Janos + Daniel Batie

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: ARNWR5 **Roost Name/#** 254 **Bat #:** CC2103

Lat/Long or UTM of Roost: 35.80732, -75.87929

Description of Roost/Habitat Feature Surveyed: Cavity

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE

Other Suspected Bat Species (explain): NA

Weather Conditions during Survey (temperature, precipitation, wind speed):
60°, Clear skys, Calm wind

Survey Start Time: 1635 **Time of Sunset:** 1650 **Survey End Time:** 1750

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
		No bats emerged

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR5 **Roost Name/#:** 254

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	0	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

No bats emerged, during emergence count, frequency of transmitter sounds remained constant, indicating a steady bat temperature.

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/m/.722 **Band #** CC2103 Sheet 1 of 1

Roost No. 986 **Project.Phase#** 647.0 **Project Name** Eastern NC MYSE **Date First Found** 4-12-17

Location NE of ARNWR and milltail road, Northeast of RT439 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Price Sewell, Daniel Botie **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.80766 **W/Northing** -75.88069 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	986	Nyssa biflora	16.8	12	9	2	0	98	SC	
2		Taxodium distichum	50.0	18		1	0	100	C	
3		Nyssa aquatica	25.9	15		1	0	100	C	
4		N. aquatica	16.0	12		1	0	100	SC	
5		Persea pulustris	12.7	7		1	0	100	U	
6		T. distichum	37.6	18		1	0	100	C	
7		T. distichum	45.0	5		7	0	0	U	
8		Acer rubrum	18.8	12		1	0	100	SC	
9		N. aquatica	19.9	13		1	0	98	SC	
10		Pinus serotina	47.6	21		1	5	90	C	
11		T. distichum	53.2	18		1	0	90	C	
12		N. biflora	31.1	15		1	0	100	C	
13		A. rubrum	30.0	6		7	0	20	U	
14		N. ~~aq~~ biflora	28.5	15		1	0	100	C	
15		N. biflora	14.0	~~12~~		1	0	100	SC	
16		P. pulustris	14.7	10		2	0	100	U	
17		N. biflora	18.9	14.5		1	0	100	C	
18		T. distichum	53.0	4		6	0	98	U	
19		N. biflora	21.7	13		1	0	100	C	
20		Magnolia virginiana	35.9	13		1	0	100	C	
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
180	20	200

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 65

Roost Type[4]: Tree-live

MicroHabitat[5] **Used by Bat**: Cavity

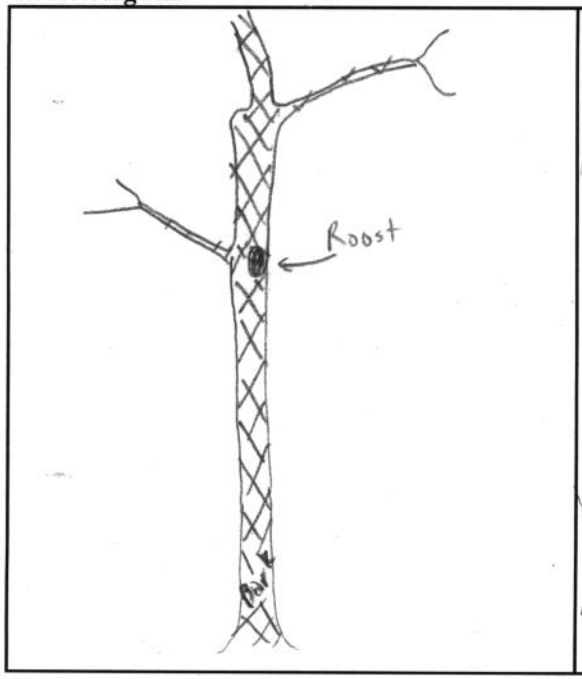
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

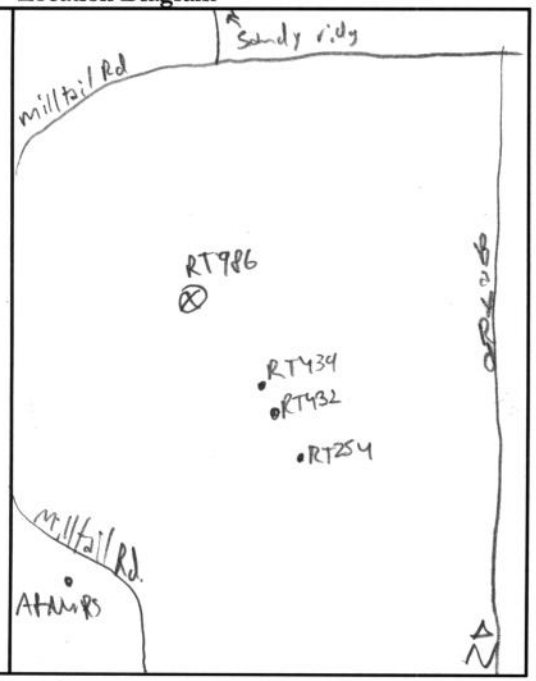
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 986 **Bat Species/Sex/Frequency:** MYSE/M/.722 **Band #** CC2103

Roost Diagram



Location Diagram



Bat Days

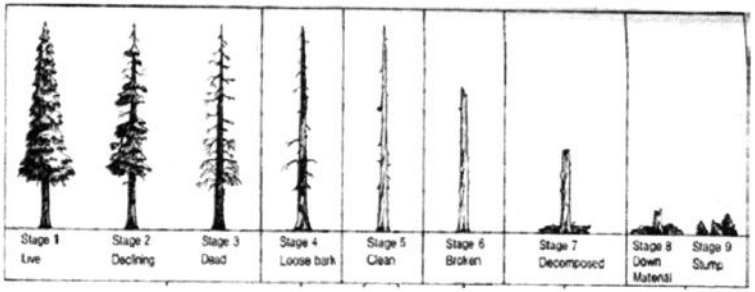
No.	Date 2017	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	4.12	.722	CC2103	M	
2	5.12	.722	CC2103	M	
3	6.12	.722	CC2103	M	
4	7.12	.722	CC2103	M	
5	8-12	.722	CC2103	M	
6	9-12	.722	CC2103	M	
7	10-12	.722	CC2103	M	
8	11-12	.722	CC2103	M	
9	12-12	.722	CC2103	M	
10	13-12	.722	CC2103	M	
11	14-12	.722	CC2103	M	
12	15-12	.722	CC2103	M	
13	16-12	.722	CC2103	M	
14	17-12	.722	CC2103	M	

Emergence Count

No.	Date 2017	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	4.12	57	clear	0	1649	~~1649~~	~~1649~~	–	–	
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Cavity	245	40	80	9	
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 4 DEC 2017 4.12.17 **Surveyor(s) Full Name:** Price Sewell, Daniel Batie

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: ARNWRS **Roost Name/#** 986 **Bat #:** CC2103

Lat/Long or UTM of Roost: 35.80766, -75.88069

Description of Roost/Habitat Feature Surveyed: Nyssa biflora roost in swamp

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE

Other Suspected Bat Species (explain): N/A

Weather Conditions during Survey (temperature, precipitation, wind speed):
57°, clear, calm

Survey Start Time: 1649 **Time of Sunset:** 1649 **Survey End Time:** 1749

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
	0	no bats emerged

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWRS **Roost Name/#:** 986

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	0	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

No bats emerged

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/172.905 **Band #** CC 0100 Sheet 1 of 1

Roost No. 745 **Project.Phase#** 647.05.04 **Project Name** Eastern NC MYSE **Date First Found** 8 Feb 2018

Location ~110m east of Sawyer lake, ~500m north of Sandy Ridge Rd/Gut int **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Ray Eaton, Tyler Blevins **Datum** WGS 84

Lat/Long or UTM (circle one): **N/Easting** 35.83596 **W/Northing** -75.90999 **UTM Zone** –

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	745	Taxodium distichum (TADI)	63.5	22	12	2	0	100	Canopy	(C)
2	–	Acer rubrum (ACRU)	17.5	9	–	2	5	100	Sub-Canopy	(SC)
3	–	TADI	78.5	15	–	2	10	100	C	
4	–	Nyssa sylvatica (NYSY)	31.0	11	–	2	10	95	SC	
5	–	Persea borbonia (PEBO)	23.5	7	–	3	10	90	SC	
6	–	NYSY	18.5	9	–	1	5	100	SC	
7	–	PEBO	18.0	8	–	2	0	100	SC	
8	–	Nyssa biflora (NYBI)	25.5	6	–	8	30	60	SC	
9	–	Pinus serotina (PISE)	43.5	18	–	1	5	100	C	
10	–	TADI	64.0	19	–	2	5	95	C	
11	–	NYSY	22.5	14	–	1	5	95	SC	
12	–	PISE	41.0	17	–	1	40	100	C	
13	–	PEBO	14.0	6	–	2	5	90	SC	
14	–	NYSY	17.5	11	–	2	15	90	SC	
15	–	NYBI	21.5	12	–	2	5	95	SC	
16	–	NYSY	20.5	8	–	2	10	90	SC	
17	–	NYBI	19.0	9	–	1	5	100	SC	
18	–	NYSY	30.0	14	–	1	5	100	SC	
19	–	PISE	51.5	19	–	1	40	100	C	
20	–	PISE	55.5	18	–	2	40	100	C	
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
180	20	200

↓ Roost Only ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure
90

Roost Type[4]
Tree - Live

MicroHabitat[5] Used by Bat
cavity

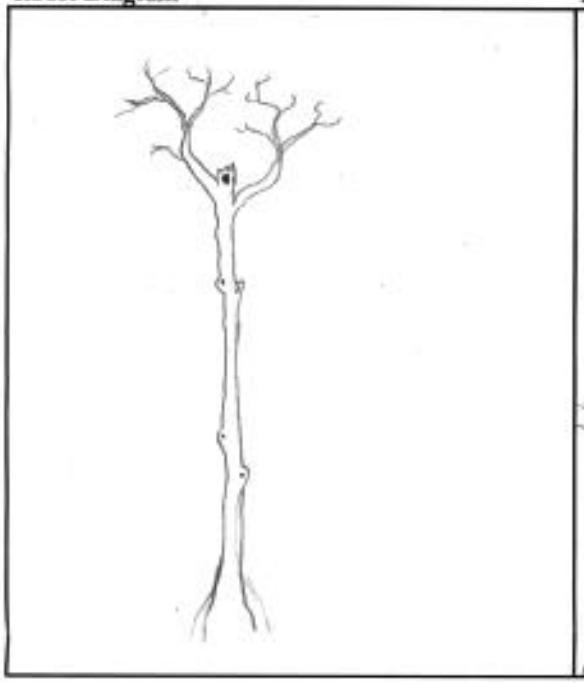
Notes: Button GH deployed on Northern point of Roost Tree trunk

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

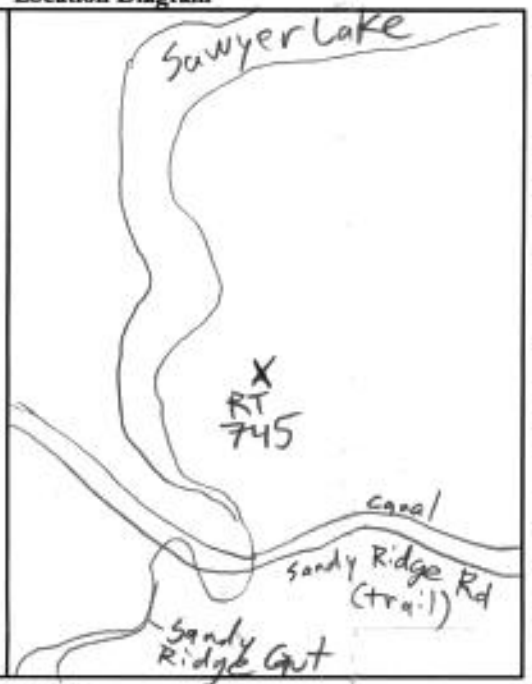
COPPERHEAD

Roost No. 745 **Bat Species/Sex/Frequency:** MYSE/M/172.905 **Band #** CC 0100

Roost Diagram



Location Diagram



Bat Days

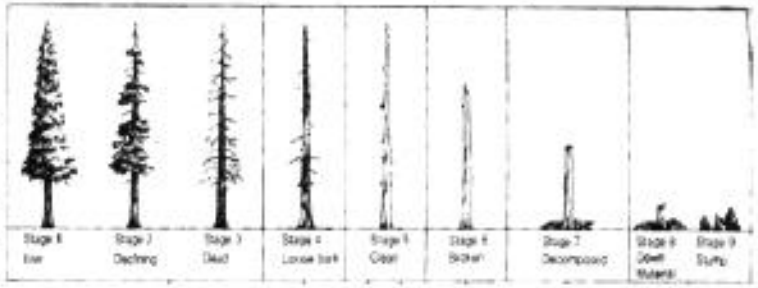
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	8 Feb	.905	CC 0100	M	in cavity
2	9 Feb	.905	CC0100	M	
3	10 Feb	.905	CC0100	M	
4	11 Feb	.905	CC0100	M	
5	13 Feb	.905	CC0100	M	
6	14 Feb	.905	CC0100	M	
7	15 Feb	.905	CC0100	M	
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	9 Feb	48	overcast	0	17:40	–	–	–	–	R.E
2	15 Feb	47	clear	1	1744	1824	1824	1824	1	another bat exited roost
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 9 Feb 2018 **Surveyor(s) Full Name:** Ray Eaton, Tyler Blevins
State: NC **County:** Dare **Project Name:** NC DOT Eastern NC MYSE
Site Name/#: ARNWR01 night 7 **Roost Name/#** RT 745 **Bat #:** CC 0100
Lat/Long or UTM of Roost: 35.83596, -75.90999 (WGS 84)
Description of Roost/Habitat Feature Surveyed: cavity of mature Taxodium distichum in forest interior in relatively dry area of swamp
Bat Species Known to be using this Roost/Feature (if not known, leave blank): Myotis septentrionalis
Other Suspected Bat Species (explain): chatter heard, too dark to see anything
Weather Conditions during Survey (temperature, precipitation, wind speed): 47°F, clear, no
Survey Start Time: 17:10 **Time of Sunset:** 17:40 **Survey End Time:** 18:40

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
no	emerging	bats seen

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

Site Name/#: ARNWR01 **Roost Name/#:** 745

Time	Number of Bats Leaving Roost*	Comments / Notes
Total Number of Bats Observed Emerging from the Roost/Feature During the Survey:	Ø	

* If any bats return to the roost during the survey, then they should be subtracted from the tally.

Describe Emergence: Did bats emerge simultaneously, fly off in the same direction, loiter, circle, disperse, etc. If a radio-tagged bat was roosting in the tree, at what time did it emerge?

radio-tagged bat did not emerge during survey.

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 7/15/2018 **Surveyor(s) Full Name:** Heidi Braunreiter
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: _____ **Roost Name/#** 745 **Bat #:** CC 0100
Lat/Long or UTM of Roost: 35.83596, -75.90999
Description of Roost/Habitat Feature Surveyed: Taxodium distichum
22m tall, 63.5 cm. dbh
Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE 172.905
Other Suspected Bat Species (explain): —
Weather Conditions during Survey (temperature, precipitation, wind speed):
67°F,
Survey Start Time: 1714 **Time of Sunset:** 1744 **Survey End Time:** 1844

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1824	1	one bat was circling roost

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/MY 172.905 **Band #** CC0100 Sheet 1 of 1

Roost No. 444 **Project.Phase#** 647.0 **Project Name** NCDOT MYSE Tracking **Date First Found** 2/12/18

Location North of Sandy Ridge Rd + East of Sawyer Lake **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** G. Jones / H. Broaddus **Datum** WGS84

Lat/Long or UTM (circle one): N/Easting 35.83576 **W/Northing** -75.90903 **UTM Zone** ——

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	444	Nyssa biflora	46.8	8.5	NA	1	0	100	S	
2		N. biflora	24.1	12	—	1	0	100	C	
3		N. biflora	29.8	11	—	1	0	100	C	
4		N. biflora	23.6	12	—	1	0	100	C	
5		Persea palustris	11.7	2.5	—	1	0	100	U	
6	444	N. aquatica	15.6	10	—	1	0	100	S	
7		Taxodium distichum	22.5	13	—	1	0	100	C	
8		T. distichum	17.5	7	—	3	1	99	S	
9		N. aquatica	31.8	12	—	1	0	100	C	
10		N. biflora	32.4	11	—	1	0	100	C	
11		N. biflora	16.1	9	—	1	0	100	S	
12		N. biflora	34.4	13	—	1	0	100	C	
13		N. biflora	15.3	7	—	1	0	100	S	
14		T. distichum	16.5	9	—	1	0	100	S	
15		Acer rubrum	34.3	13	—	4	5	80	C	
16		Chamaecyparis thyoides	25.9	7	—	1	0	100	S	
17		Acer rubrum	7.4	6	—	1	0	100	U	top broken off
18		P. palustris	4.0	2	—	1	0	100	U	
19		N. aquatica	14.0	8	—	1	0	100	S	
20		N. aquatica	24.6	12	—	1	0	100	C	
21		N. aquatica	27.6	12	—	1	0	100	C	
22		N. biflora	26.8	13	—	1	0	100	C	

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
200	20	220

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 80

Roost Type[4]: Tree-Live

MicroHabitat[5] **Used by Bat:** Knob in tree

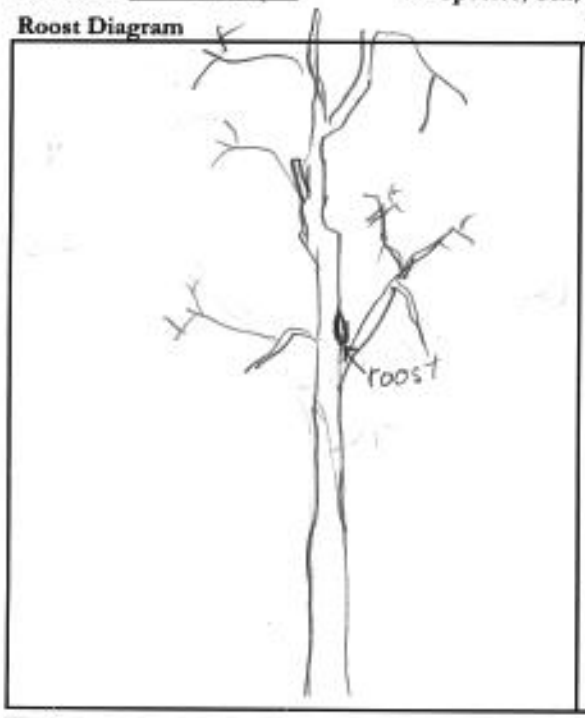
Notes ——

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

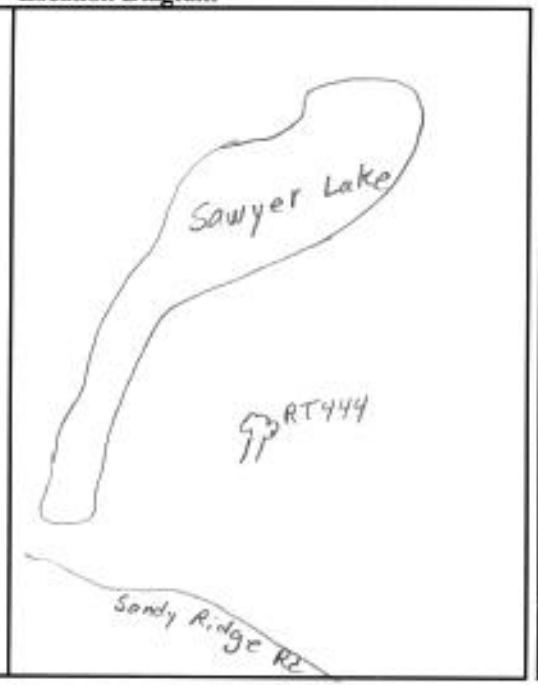
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 444 **Bat Species/Sex/Frequency:** MYSE / M / 172.905 **Band #** CC0100

Roost Diagram



Location Diagram



Bat Days

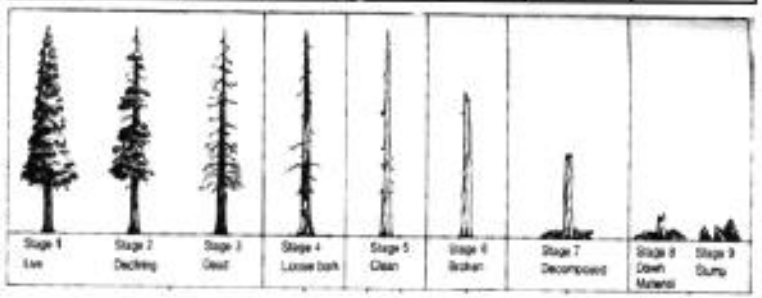
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2/12	.905	CC0100	M	
2	2/16	905	CC0100	M	
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	2/14	53	Cloudy	0	1743	—	—	—	—	H. Brownrigg
2	2/16	68	Cloudy	1	1745	1800	1800	1800	1	G. Janos
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1						
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 2/14/2018 **Surveyor(s) Full Name:** Heidi Braureiter
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: _____ **Roost Name/#** 444 **Bat #:** CC 0100
Lat/Long or UTM of Roost: 35.835576, -75.90903
Description of Roost/Habitat Feature Surveyed: Nyssa biflora 8.5m tall, 18.8cm dbh

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE 172.905
Other Suspected Bat Species (explain): —
Weather Conditions during Survey (temperature, precipitation, wind speed):
53°F, cloudy
Survey Start Time: 1713 **Time of Sunset:** 1743 **Survey End Time:** 1813

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
NO	EMERGENCE	SEEN (or heard)

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 16 Feb 19 **Surveyor(s) Full Name:** Gregg Jones

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: [redacted] **Roost Name/#** 444 **Bat #:** CC0168

Lat/Long or UTM of Roost: 35.83576 - 75.70703

Description of Roost/Habitat Feature Surveyed: Knot in tree in mixed forested wetland

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis Septentrionalis

Other Suspected Bat Species (explain): _____

Weather Conditions during Survey (temperature, precipitation, wind speed):
68°, cloudy, no precip

Survey Start Time: 1715 **Time of Sunset:** 1745 **Survey End Time:** 1830

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1800	1	tagged bat

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/172.905 **Band #** CC0100 Sheet____ of ____

Roost No. 265 **Project.Phase#** 647 **Project Name** NCDOT MYSE Tracking **Date First Found** 17 Feb 2018
Location North of Sandy Ridge Rd, East of Sawyer Lake **Ownership**[1] Federal
County Dare **State** NC **Observer(s)** T. Culbertson, T. Burns **Datum** NAD 83
Lat/Long or UTM (circle one): (N)/Easting 35.83503 (W)/Northing 75.90903 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m) Tree	Height (m) Roost	Decay State[2] (1-9)	Bark Cover Usable (%)	Bark Cover Total (%)	Tree Ranking[3]	Observation
1	265	Pinus taeda	33.6	16	7	5	0	0	C	
2		Acer rubrum	18.5	10		1	0	100	SC	
3		Taxodium distichum	17.5	8		3	0	100	SC	
4		Nyssa biflora	27.5	16		1	0	100	C	
5		Nyssa biflora	20.7	13		1	0	100	C	
6		Nyssa biflora	24.3	13		1	0	100	C	
7		Taxodium distichum	16.9	10		3	0	100	SC	
8		Pinus taeda	36.3	15		5	0	5	C	
9		Pinus taeda	28.5	2.5		7	0	0	U	
10		Nyssa biflora	25.8	14		1	0	100	C	
11		Taxodium distichum	64.3	17		3	0	100	C	
12		Nyssa biflora	21.7	14		1	0	100	SC	
13		Nyssa biflora	10.9	4		4	0	70	U	
14		Nyssa biflora	51.5	15		1	0	100	C	
15		Taxodium distichum	42.3	14		4	5	45	C	
16		Pinus taeda	41.0	16		1	0	100	C	
17		Pinus taeda	20.6	5		6	0	0	U	
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
70	100	170

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure
40 (leaves off)

Roost Type[4]
Tree - Dead

MicroHabitat[5] **Used by Bat**
Cavity

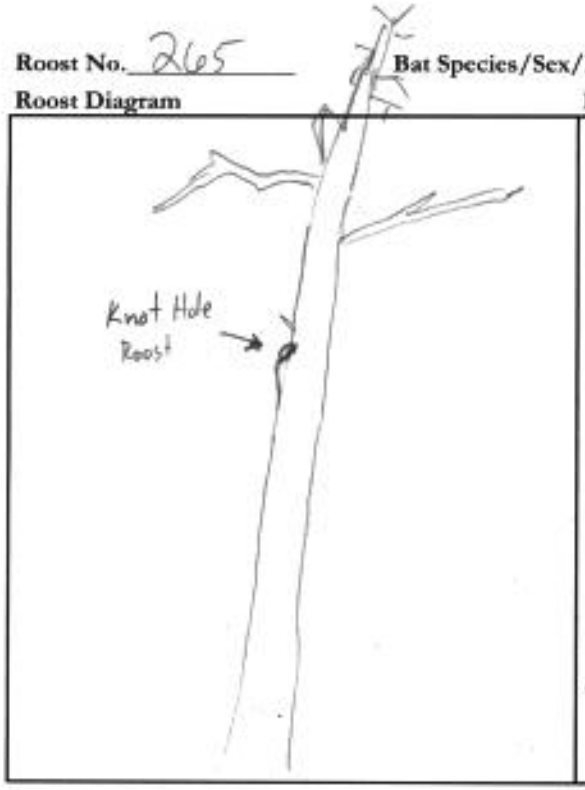
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

COPPERHEAD

Roost No. 265 Bat Species/Sex/Frequency: MYSE/M/172.905 Band # CC0100

Roost Diagram



Location Diagram

Bat Days

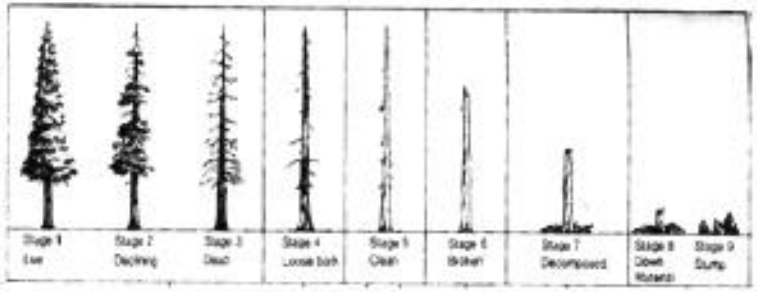
No.	Date 20___	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2/17	.905	CC0100	M	
2	2/18	.905	CC0100	M	
3	2/19	.905	CC0100	M	
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	17 Feb	48	Overcast	-	1746	-	-	-	-	1B/NB emerg.
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Cavity	unk	unk	unk	7	-
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 17 Feb 2018 **Surveyor(s) Full Name:** Ian Burns

State: NC **County:** Dare **Project Name:** NCDOT MYSE Tracking

Site Name/#: ARNWR01 night 7 **Roost Name/#** RT 265 **Bat #:** CC0100

Lat/Long or UTM of Roost: 35.83503 -75.90903

Description of Roost/Habitat Feature Surveyed: Dead tree, cavity

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis

Other Suspected Bat Species (explain): None

Weather Conditions during Survey (temperature, precipitation, wind speed):
Overcast, 48°F

Survey Start Time: 1710 **Time of Sunset:** 1746 **Survey End Time:** 1850

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
—	—	No bats seen emerging

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYOSEP/M/172.905 **Band #** CC0100 Sheet____ of ____

Roost No. 443 **Project.Phase#** 647. **Project Name** Eastern NC MYSE **Date First Found** 2-20-18

Location Swamp off of trail near wolf Pen area **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** S. Lotham, I. Burns, R Stinson **Datum** NAD-83

Lat/Long or UTM (circle one): N/Easting 35.83583 **W/Northing** -75.90934 **UTM Zone**____

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	443	Nyssa biflora	20.5	10	9	1	5	100	C	Crack up high!
2		Nyssa biflora	16.3	11	–	1	0	100	SC	
3		Acer rubrum	6.8	5	–	1	0	100	U	
4		Nyssa biflora	18.3	11	–	1	0	100	C	
* 5		~~Nyssa biflora~~	15	9	–	1	0	100	U	
6		Acer	31.7	11	–	1	0	100	C	
7		P. taeda	58	11.5	–	1	0	100	C	
8		C. thyoides	68.8	11.7	–	1	0	100	C	
9		Nyssa biflora	16.3	7	–	2	0	100	SC	
10		Nyssa biflora	6.5	4	–	3	5	100	U	
11		Nyssa biflora	16.3	10	–	1	0	100	C	
12		Snag	25.4	4	–	7	0	0	SC	
13		Nyssa biflora	4.5	6	–	1	0	100	SC	
14		Taxodium distichum	11.5	5	–	3	15	90	U	
15		T. distichum	23.8	10.5	–	2	0	100	C	Crack
16		T. distichum	33.6	11	–	1	0	100	C	
17		I. opaca	21.4	9	–	1	0	100	SC	
18		Nyssa biflora	27.9	11	–	1	0	100	C	
19		Snag	41.2	4	–	6	0	0	SC	
20										
21										
22										

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
140	40	180

↓ Roost Only ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure
90

Roost Type[4]
Tree Live

MicroHabitat[5] Used by Bat
Crack

Notes _____

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

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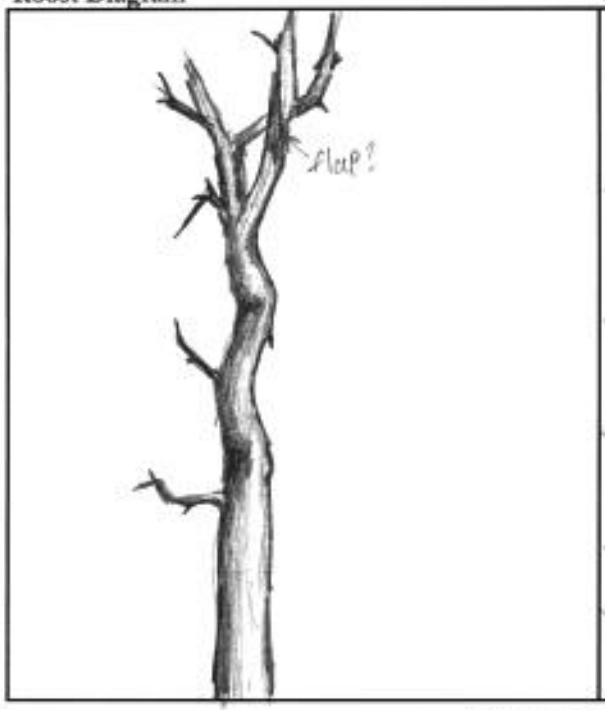
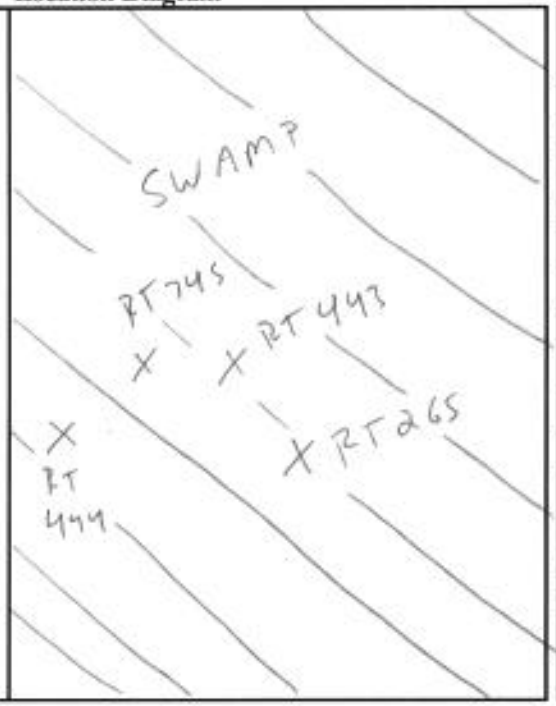
* Swamp Bay Persea Palustris

Roost No. 443 Bat Species/Sex/Frequency: MYOSEP/M/172.905 Band # CC 0100

Roost Diagram



Location Diagram



Bat Days

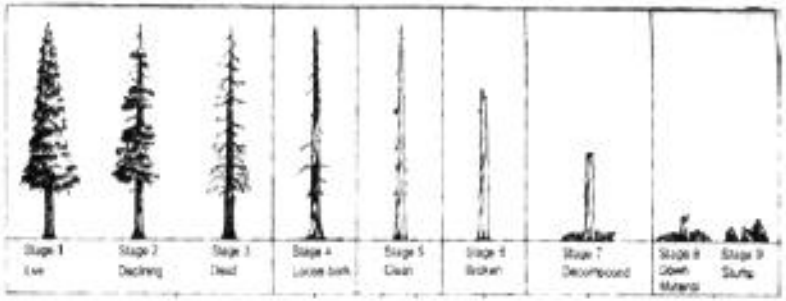
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2-20	.905	CC 0100	M	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	20 Feb	70	Clear	1	1756	1806	1806	1806	1	SC/MR
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1	Crack	119				
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 20 Feb 2019 **Surveyor(s) Full Name:** Shelby Cothen Meghan Raley

State: NC **County:** Dare **Project Name:** Eastern NC Mysc

Site Name/#: ARMeR01 Night 2 **Roost Name/#** 443 **Bat #:** CC0108

Lat/Long or UTM of Roost: 35.93583 , -75.90934

Description of Roost/Habitat Feature Surveyed: Crack in tree in mixed forest wetland.

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis

Other Suspected Bat Species (explain):

Weather Conditions during Survey (temperature, precipitation, wind speed):
Clear sky, no precip, no wind 71° F

Survey Start Time: 1726 **Time of Sunset:** 1756 **Survey End Time:** 1836

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1806	1	tagged bat

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/172.302 **Band #** CC 0711 Sheet 1 of 1

Roost No. 445 **Project.Phase#** 647.04 **Project Name** Eastern NC MYSE **Date First Found** 20 Feb 2018

Location ARNWR East of Military Rd. **Ownership**[1] Federal

County DARE **State** NC **Observer(s)** P. Reby, K. Eshler, H Braunreiter **Datum** NAD 83

Lat/Long or UTM (circle one): (N)/Easting 35.79812 (W)/Northing 75.87817 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m) Tree	Height (m) Roost	Decay State[2] (1-9)	Bark Cover Usable (%)	Bark Cover Total (%)	Tree Ranking[3]	Observation
1	445	Nyssa biflora	14.3	7	7	2	0	95	+SC	
2		Acer rubrum	7	4		2	0	100	U	
3		A. rubrum	28.7	13		1	0	100	C	
4		A. rubrum	26.5	13		1	0	100	C	
5		N. biflora	26.1	13.5		1	0	100	C	
6		A. rubrum	21.8	9		1	0	100	S	
7		N. biflora	36.7	13.5		1	0	100	C	
8		N. biflora	21.5	11		1	0	100	S	
9		N. biflora	12.5	32.9		1	0	100	C	
10		N. biflora	21.1	10		1	0	100	S	
11		T. distichum	101.3	13.5		1	0	100	C	
12		N. biflora	29.2	13		1	0	100	C	
13		T. distichum	52.1	14		1	0	100	C	
14		N. biflora	34.0	18		4	1	95	U	
15		A. rubrum	30.2	11		1	0	100	S	
16		N. biflora	48.6	14		1	0	100	C	
17		N. biflora	41.1	12.5		1	0	100	C	
18		Chamaecyparis thyoides	52.1	12.5		1	0	100	C	
19		N. biflora	27.6	11.5		1	0	100	C	
20		N. biflora	15.9	11		1	0	100	S	
21		N. biflora	30.5	12		1	0	100	C	
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
200	10	210

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 75%

Roost Type[4]: Tree-Live

MicroHabitat[5] **Used by Bat:** Cavity

Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

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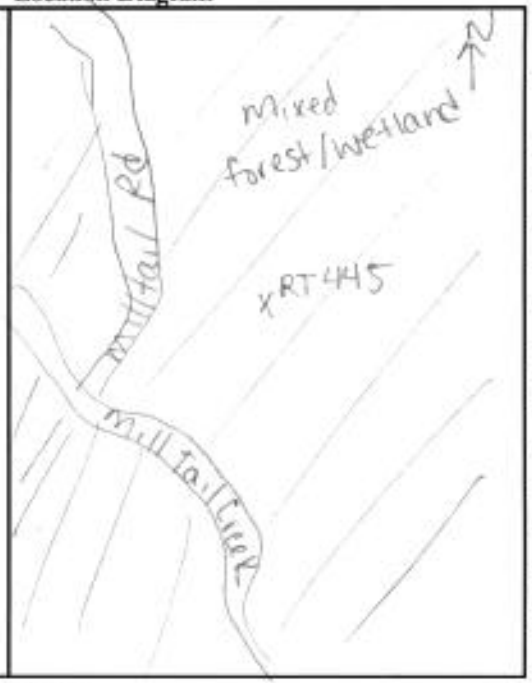
Roost No. 445 Bat Species/Sex/Frequency: MYSE/M/172.302 Band # CC 0711

Roost Diagram

Location Diagram



Bat Days

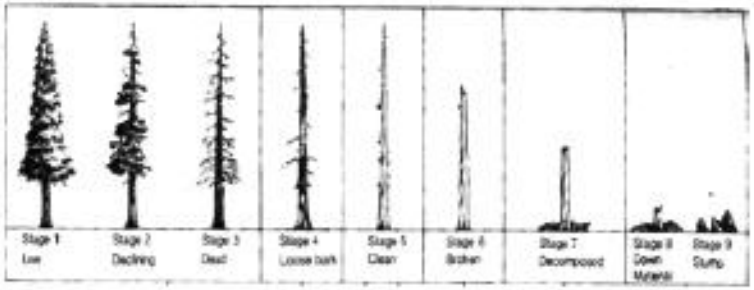
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	20 Feb	.302	CC0711	M	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	20 Feb	60	Pleasant	1	1749	1804	1804	1804	1	only heard squeaks
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments: 20 Feb: set ATS box + Button @ 19:00

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 20 Feb 2018 **Surveyor(s) Full Name:** Piper Roby

State: NC **County:** DARE **Project Name:** Eastern NC MYSE

Site Name/#: [illegible] **Roost Name/#** 445 **Bat #:** 1

Lat/Long or UTM of Roost: 35.79812 75.87817

Description of Roost/Habitat Feature Surveyed: Nyssa biflora, declining

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis Septentrionalis

Other Suspected Bat Species (explain):

Weather Conditions during Survey (temperature, precipitation, wind speed):
Clear, 60°F, no rain

Survey Start Time: 1730 **Time of Sunset:** 1749 **Survey End Time:** 1830

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1804	1	Freq 172, 302

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/172.502 **Band #** CC0711 Sheet 1 of 1

Roost No. 266 **Project.Phase#** 47.09 **Project Name** Eastern NC MYSE **Date First Found** 2/21/18

Location ARNWR East of Mattamuskeet Rd **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Culbertson, M. Raley **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.79848 **W/Northing** -76.67881 **UTM Zone** ——

#	Roost No.	Tree Species	DBH (cm)	Height (m) Tree	Height (m) Roost	Decay State[2] (1-9)	Bark Cover Usable (%)	Bark Cover Total (%)	Tree Ranking[3]	Observation
1	266	Nyssa biflora	15.8	11	7	1	0	100	SC	
2		Taxodium distichum	71.1	14	—	1	0	100	C	
3		T. distichum	9.5	7	—	4	0	100	U	
4		Chamaecy paris Thyoides	7.8	8	—	6	15	50	U	
5		Acer rubrum	52.4	16	—	1	0	100	C	
6		C. thyoides	48.5	17	—	1	6	100	C	
7		N. biflora	19	15	—	1	0	100	C	
8		N. biflora	21.7	15	—	1	0	100	C	
9		Persea palustris	9.5	4	—	1	0	100	SC	
10		A. rubra	43	15	—	1	0	100	SC	
11		N. biflora	33.7	17	—	1	0	100	C	
12		T. distichum	39.2	11	—	6	0	100	SC	
13		P. palustris	6.5	4	—	1	0	100	U	
14		C. thyoids	45.5	17	—	1	0	100	C	
15		C. Thyoids	45.2	17	—	1	0	100	C	
16		C. Thyoides	31.2	2	—	7	0	0	U	
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
120	40	160

↓ Roost Only ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure: 75

Roost Type[4]: Live

MicroHabitat[5] **Used by Bat**: Cavity

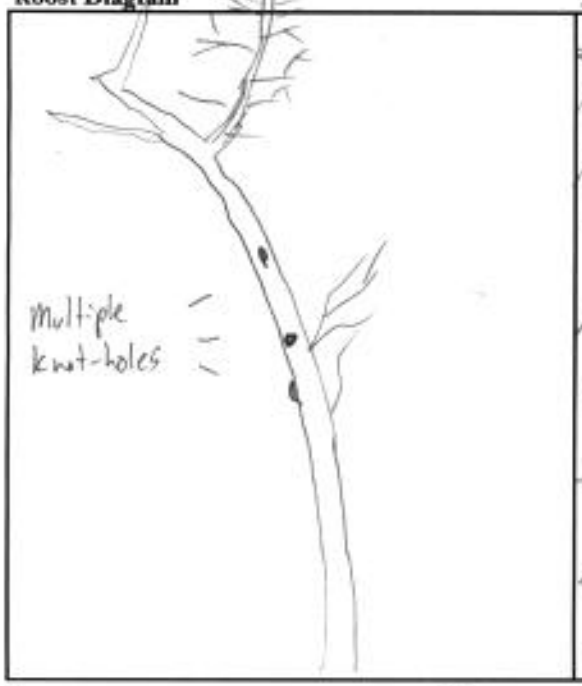
Notes ——

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

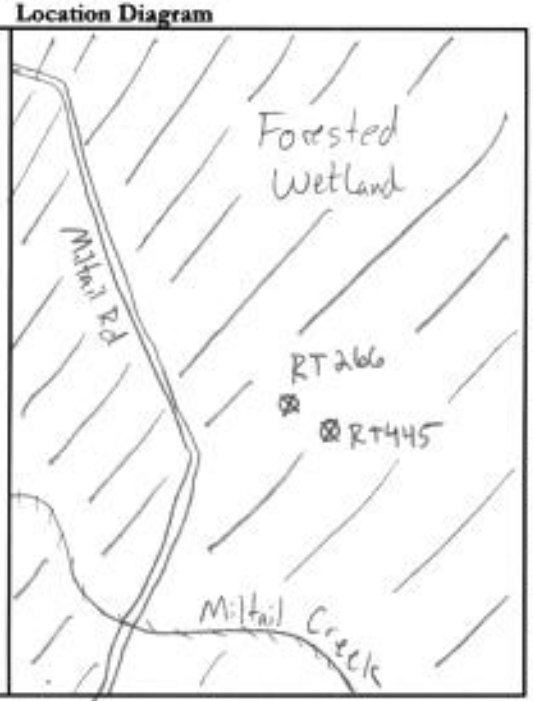
COPPERHEAD

Roost No. 266 K Bat Species/Sex/Frequency: MYSE/M/172.302 Band # CC 6711

Roost Diagram



Location Diagram



Bat Days

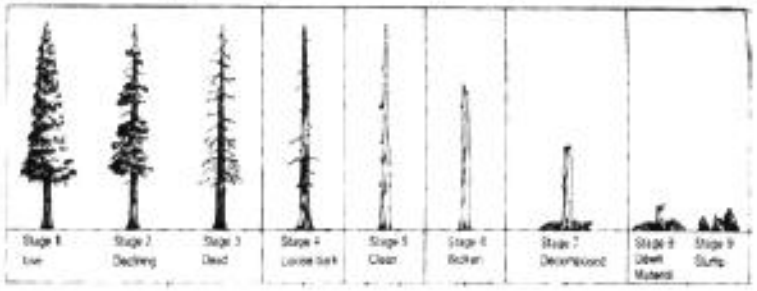
No.	Date 20 18	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2-21	302	CC0711	M	
2	2-22	302	CC0711	M	
3	2-23	302	CC0711	M	
4	2-28	302	CC0711	M	
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20 18	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	21 Feb	68	clear	1	1751	1806	1806	1806	1	I. Burns
2	22 Feb	69	clear	1	1752	1809	1809	1809	1	D. Roby
3*	23 Feb	55	clear	1	1751	1815	1815	1815	1	P. Roby
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Live Tree					
2						
3						
4						



Comments: *Bat started torpor @ 1803

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 21 Feb. 2018 **Surveyor(s) Full Name:** Ian Burns, Shelby Cotham

State: NC **County:** DARE **Project Name:** Eastern NC MYSE

Site Name/#: _____ **Roost Name/#** 266 **Bat #:** 302

Lat/Long or UTM of Roost: 35.79048 -75.87881

Description of Roost/Habitat Feature Surveyed: Nyssa biflora, Live

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis.

Other Suspected Bat Species (explain): _____

Weather Conditions during Survey (temperature, precipitation, wind speed):
Clear, 68°, No rain

Survey Start Time: 1730 **Time of Sunset:** 1751 **Survey End Time:** 1830

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1806	1	Freq 172, 302

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 2/22/2018 **Surveyor(s) Full Name:** Piper Roby
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: _____ **Roost Name/#** 266 **Bat #:** CC071
Lat/Long or UTM of Roost: 35.79848, -75.87881
Description of Roost/Habitat Feature Surveyed: Nyssa biflora - live cavity
Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE 172.
Other Suspected Bat Species (explain): —
Weather Conditions during Survey (temperature, precipitation, wind speed):
69°F, calm, clear
Survey Start Time: 1722 **Time of Sunset:** 1752 **Survey End Time:** 18:52

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1809	1	tagged bat

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 2/23/2018 **Surveyor(s) Full Name:** Piper Roby
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: _____ **Roost Name/#** 266 **Bat #:** CC 0711
Lat/Long or UTM of Roost: 35.79848, -75.87881
Description of Roost/Habitat Feature Surveyed: Nyssa biflora cavity

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE 172.302
Other Suspected Bat Species (explain): —
Weather Conditions during Survey (temperature, precipitation, wind speed):
55°F, clear, calm
Survey Start Time: 1721 **Time of Sunset:** 1751 **Survey End Time:** 1851

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1815	1	tagged bat
		started breaking
		torpor at 1803

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYOSEP/M/1?2 741 **Band #** CC 2110 Sheet 1 of 1

Roost No. 441 **Project.Phase#** 647 **Project Name** Eastern NC MYSC **Date First Found** 2-20-18

Location In Swamp off Alligator Rd, west of Capture Site **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** R Stinson, J Burns, S. Gillam **Datum** NAD-83

Lat/Long or UTM (circle one): N/Easting 35.80597 W/Northing -75.89193 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	441	Persea palustris	11.7	5	4	2	20	75	SC	Crack area
2		F. distichum	50.2	13		2	0	100	C	C.
3		P. taeda	38.7	7		1	5	100	C	
4		T. distichum	36.1	7		6	15	20	SC	
5		Nyssa biflora	27.6	12		1	0	100	C	
6		Acer rubrum	17.8	7		3	0	100	SC	
7		T. distichum	34.9	10		8	10	20	SC	
8		Nyssa sylvatica	28.7	11		1	0	100	C	
9		Persea palustris	18	7		2	10	40	SC	
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
60	30	90

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure: 50

Roost Type[4]: tree live

MicroHabitat[5] **Used by Bat:** crack

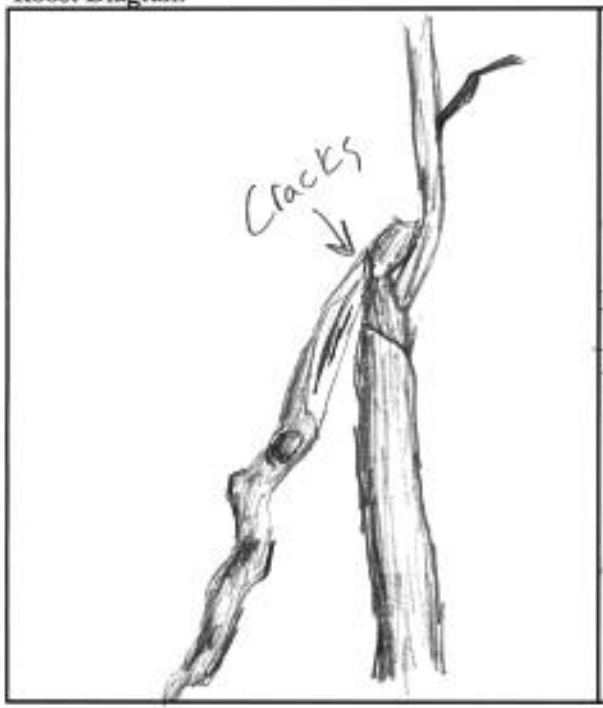
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

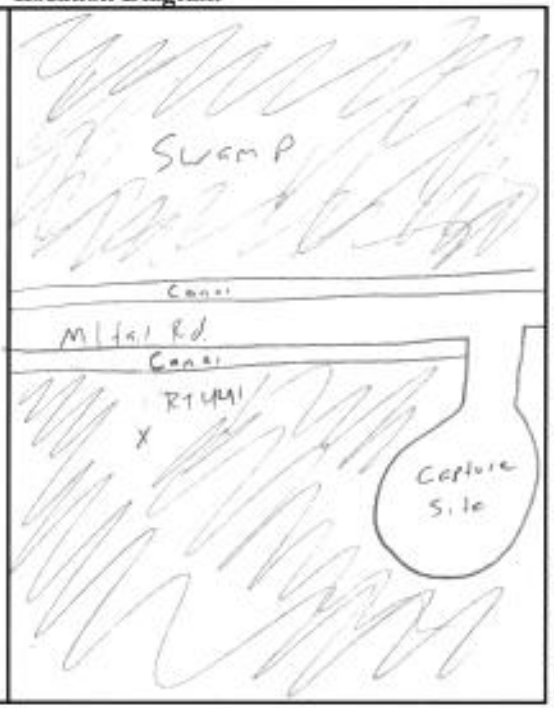
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 441 Bat Species/Sex/Frequency: MYOSCP/M/RD.741 Band # CC2110

Roost Diagram



Location Diagram



Bat Days

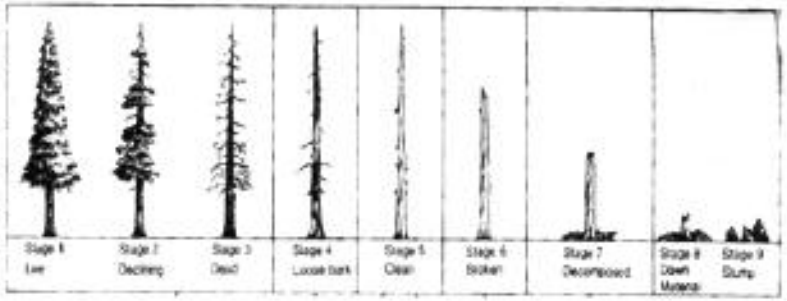
No.	Date 2015	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	26 Feb	.741	CC2110	M	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2015	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	26 Feb	70	Clear	1	1751	1812	1812	1812	1	JB
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 2/20/2018 **Surveyor(s) Full Name:** Robert Stinson, Ian Burns, Shelby Cotham
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: _____ **Roost Name/#** 441 **Bat #:** CC 2110
Lat/Long or UTM of Roost: 35.80597, -75.89193
Description of Roost/Habitat Feature Surveyed: Live tree, crack

Bat Species Known to be using this Roost/Feature (if not known, leave blank): MYSE
Other Suspected Bat Species (explain): N/A
Weather Conditions during Survey (temperature, precipitation, wind speed): 70°F, Clear
Survey Start Time: 1721 **Time of Sunset:** 1751 **Survey End Time:** 1851 of Sunset

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1812	1	Tagged Bat exits

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/172.741 **Band #** CC2110 Sheet 1 of 1

Roost No. 679 **Project.Phase#** 147.04 **Project Name** Eastern NC MYSE **Date First Found** 21 Feb 18

Location South of Milltail Rd **Ownership**[1] Federal

County Duce **State** NC **Observer(s)** Ray Eaton, Daniel Pattie **Datum** WGS-84

Lat/Long or UTM (circle one): N/Easting 35.80420 **W/Northing** -75.89126 **UTM Zone** –

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		~~Usable~~ (%)	~~Total~~ (%)		
1	679	Persea palustris	11.1	7	2	2	90	0	SC	
2		Nyssa sylvatica	10.7	10		1	100	0	C	
3		Chamaecyparis thyoides	33.1	8		3	90	0	SC	
4		C. thyoides	22.5	10		2	98	0	SC	
5		C. thyoides	27.9	13		1	100	0	C	
6		C. thyoides	10.8	10		1	100	0	SC	
7		C. thyoides	22.6	9		1	100	0	SC	
8		N. sylvatica	6.0	5		2	100	0	SC	
9		N. sylvatica	7.4	7		1	100	0	SC	
10		N. sylvatica	6.3	7		1	100	0	SC	
11		C. thyoides	34.5	6		2	95	0	SC	
12		Acer rubrum	10.8	5		2	100	0	SC	
13		C. thyoides	33.9	16		1	100	0	C	
14		C. thyoides	30.3	15		1	100	0	C	
15		C. thyoides	32.6	16		1	100	0	C	
16		C. thyoides	25.6	15		2	100	0	C	
17										
18										
19										
20										
21										
22										

Basal Area (#trees × 10)

Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
150	10	160

↓ **Roost Only** ↓

Habitat (Circle One)

Interior	Edge	Open

% Canopy Closure

90

Roost Type[4]

Tree-live

MicroHabitat[5] **Used by Bat**

Cavity

Notes _____

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 679 Bat Species/Sex/Frequency: MYSE/M/172.741 Band # CC2110

Roost Diagram

Location Diagram

Bat Days

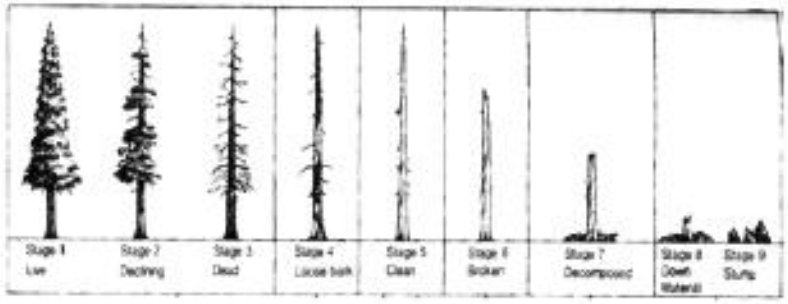
No.	Date 20 19	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2/21	741	CC2110	M	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20 19	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	7 Mar	51	Clear	0	1803	—	—	—	—	App
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1	Cavity	NNO	2	3.5	2	
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 7 March 2018 **Surveyor(s) Full Name:** Alexi Dart-Padover

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: _____ **Roost Name/#** 679 **Bat #:** CC2110

Lat/Long or UTM of Roost: 35.80420 -75.89126

Description of Roost/Habitat Feature Surveyed: Tree - live, Cavity

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis

Other Suspected Bat Species (explain): None

Weather Conditions during Survey (temperature, precipitation, wind speed):
Clear, 0 wind, 61°

Survey Start Time: 1733 **Time of Sunset:** 1803 **Survey End Time:** 1903

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
—	—	No bats seen emerging from roost

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/172.741 **Band #** CC2110 Sheet 1 of 1

Roost No. 681 **Project.Phase#** 647 **Project Name** NCDOT MYSE 2018 **Date First Found** 22-Feb-2018

Location Alligator NWR off of Milltail Road **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** P. Sewell; T. Blevins **Datum** NAD 83

Lat/Long or UTM (circle one): N/Easting 35.80658 **W/Northing** -75.89281 **UTM Zone** -

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	681	Nyssa aquatica	232	14	7	1	0	100	C	Prop. knot hole
2		Persea borbonia	20.7	13	-	1	0	100	C	
3		Cham. thyoides	13.7	7	-	4	0	90	U	
4		C. thyoides	37.1	16	-	4	0	50	C	
5		P. borbonia	14.0	9	-	1	0	100	SC	
6		Pinus sp.	11.7	3.5	-	6	0	30	U	
7		Pinus serotina	44.5	14	-	1	0	100	C	
8		N. aquatica	13.2	8	-	2	0	100	U	Nice knot hole
9		Juniperus virginia	22.8	14	-	1	0	100	C	
10		N. aquatica	22.1	15	-	2	0	100	C	
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
70	30	100

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 50

Roost Type[4]: Tree-Live

MicroHabitat[5] **Used by Bat**: Cavity

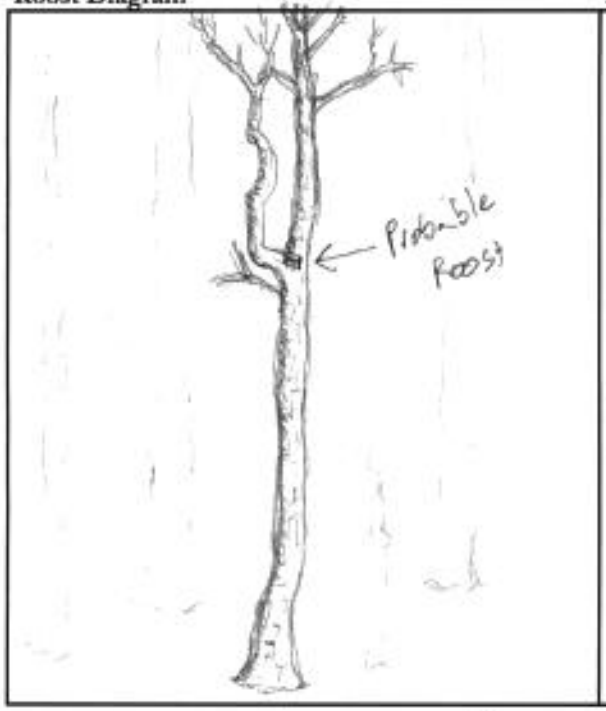
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

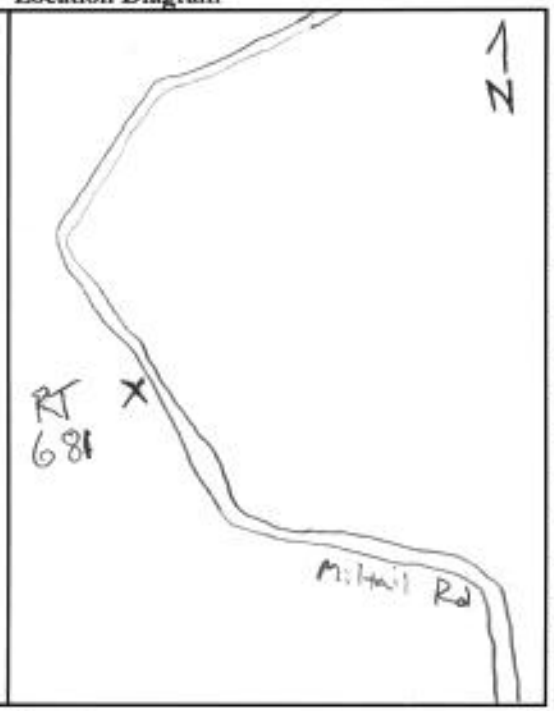
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 681 Bat Species/Sex/Frequency: MYSE/M/172.741 Band # CC211D

Roost Diagram



Location Diagram



Bat Days

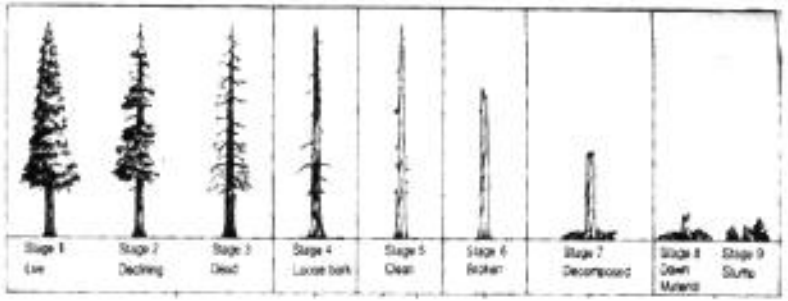
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	22-Feb	.741	CC211D	M	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	22-Feb	63°	clear/warm	1	1750	1815	1915	1815	1	
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1	Cavity	UP	Unknown	Unk	7	
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 2/22/2018 **Surveyor(s) Full Name:** Ian Burns, Shelby Cotham
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: _____ **Roost Name/#** 681 **Bat #:** CC 2110
Lat/Long or UTM of Roost: 35.80658, -75.89281
Description of Roost/Habitat Feature Surveyed: Nyssa aquatica, 14m tall, 73.2cm dbh

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE 172.741
Other Suspected Bat Species (explain): —
Weather Conditions during Survey (temperature, precipitation, wind speed):
63°F, Clear, Calm
Survey Start Time: 1720 **Time of Sunset:** 1750 **Survey End Time:** 1850

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1815	1	tagged bat

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/Male/172.741 **Band #** CC2110 Sheet 1 of 1

Roost No. 682 **Project.Phase#** 647 **Project Name** Eastern NC MYSE **Date First Found** 23-2-2018

Location 500meters NE of Milltail Rd. In swamp **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Ray Eaton, Daniel Butie **Datum** WGS-84

Lat/Long or UTM (circle one): N/Easting 35.80876 **W/Northing** -75.88693 **UTM Zone** -

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	682	Persea palustris	14.2	6	5	X 1	0	0	SC	part of 682
2	1082	[illegible]	24.1	17	12	X 3	100	0	C	
3		[illegible]	26.1	17		2	90	0	C	
4		[illegible]	25.1	7		3	60	0	SC	
5		Nyssa sylvatica	23.5	17		1	100	0	C	
6		P. palustris	24.1	16		1	100	0	C	
7		[illegible]	17.1	12		2	90	0	C	
8		Nyssa biflora	31.6	25		1	100	0	C	
9		N. biflora	31.9	26		1	100	0	C	
10		Taxodium distichum	29.1	23		1	100	0	C	
11		N. sylvatica	11.8	12		1	100	0	SC	
12		N. sylvatica	17.5	17		1	100	0	C	
13		N. sylvatica	13.4	13		1	100	0	SC	
14		Persea palustris	14.2	13		1	100	0	C	
15		Persea palustris	26.2	7		3	10	0	SC	
16		T. distichum	34.8	25		1	95	0	C	
17		N. sylvatica	32.7	23		1	100	0	C	
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
140	30	170

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 80

Roost Type[4]: Tree - Dead

MicroHabitat[5] **Used by Bat**: Cavity

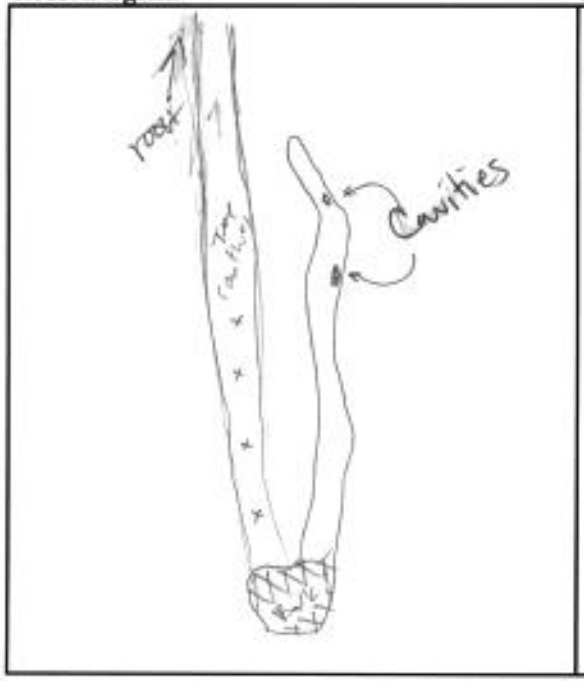
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

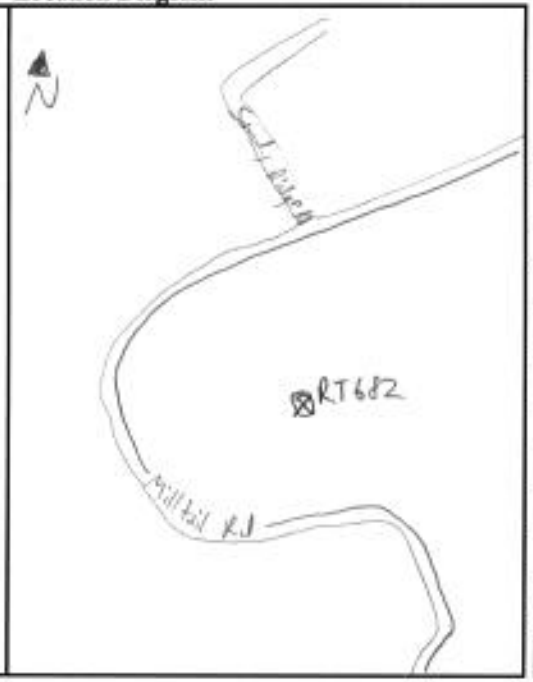
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 682 Bat Species/Sex/Frequency: MYSE/M-10/172.741 Band # CC2110

Roost Diagram



Location Diagram



Bat Days

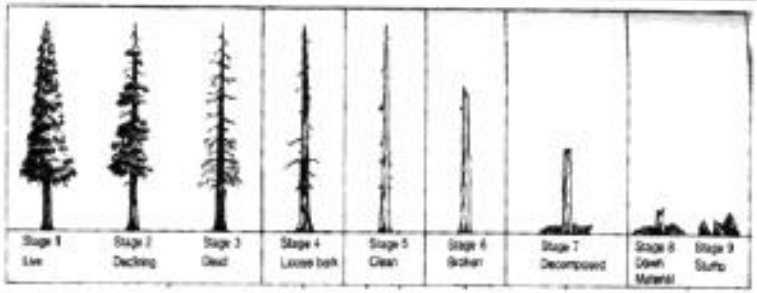
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2/23	.741	CC2110	M	
2	2/24	.741	CC2110	M	
3	2/27	.741	CC2110	M	
4	3/1	.741	CC2110	M	
5	3/2	.741	CC2110	M	
6	3/3	.741	CC2110	M	
7	3/4	.741	CC2110	M	
8	3/5	.741	CC2110	M	
9	3/6	.741	CC2110	M	
10	3/7	.741	CC2110	M	
11	3/8	.741	CC2110	M	*
12	3/9	.741	CC2110	M	*
13	3/10	.741	CC2110	M	*
14	3/11	741	CC2110	M	*

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	2/24	71	clear	1	1754	1813	1813	1	1	TW, IB
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1	Cavity	250°	3	3	5	
2						
3						
4						



Comments: * = transmitter beeping very and changing pitch

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 24 Feb 2018 **Surveyor(s) Full Name:** Theresa Wetzel Ian Burns
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: ARNWR **Roost Name/#** RT682 **Bat #:** CC2110
Lat/Long or UTM of Roost: 35.80876 -75.88693
Description of Roost/Habitat Feature Surveyed: Tree Dead, Cavity

Bat Species Known to be using this Roost/Feature (if not known, leave blank): Myotis septentrionalis
Other Suspected Bat Species (explain): None
Weather Conditions during Survey (temperature, precipitation, wind speed): Clear
Survey Start Time: 1724 **Time of Sunset:** 1754 **Survey End Time:** 1854.

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1813	1	only tagged bat using tree

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/Male/172,741 **Band #** CC 2110 Sheet 1 of 1

Roost No. 435 **Project.Phase#** 497 **Project Name** Eastern NC MYSE **Date First Found** 25-2-'18

Location Directly South alongside Milltail Rd Bridge before bridge, across canal **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** S Cotham, D. Batie **Datum** NAD 83

Lat/Long or UTM (circle one): N/Easting ~~35.80569~~ 35.80470 **W/Northing** ~~-75.69130~~ -75.69054 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	435	NYSSA Spp	13.5	9	3.5	6	80	100	U	
2		NYSSA aquatica	20	19		1	0	100	C	
3		Taxodium distichum	29.2	16		1	25	50	C	
4		Nyssa aquatica	14.6	12		1	0	100	SC	
5		Chamaecyparis thyoides	25.8	16		1	20	100	C	
6		Pinus Palustris	8.6	3.5		7	90	90	U	
7		NYSSA aquatica	13.1	13		1	0	100	C	
8		NYSSA aquatica	19.2	12.5		1	0	100	SC	
9		Acer rubrum	23.7	14		1	0	100	C	
10		Quercus rubra	24.7	14		1	0	100	C	
11		Taxodium distichum	25.3	14		2	0	100	C	
12		Taxodium distichum	31.9	14		2	0	100	C	
13		NYSSA aquatica	19.9	12		1	0	100	C	
14		NYSSA aquatica	11.5	10		1	0	100	SC	
15		NYSSA aquatica	11	9		1	0	100	SC	
16		Taxodium distichum	35.8	13		2	0	100	C	
17		Chamaecyparis thyoides	23	11		1	0	98	C	
18		NYSSA aquatica	24.9	15		1	0	100	C	
19		T. distichum	15	9		2	25	100	SC	
20		N. aquatica	16	9		2	0	100	SC	
21		N. aquatica	17.9	8		1	0	100	SC	
22		T. distichum	41.5	16		3	30	100	C	

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
190	40	220

↓ Roost Only ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure

70%

Roost Type[4]

Tree dead

MicroHabitat[5] **Used by Bat**

Exfoliating bark

Notes

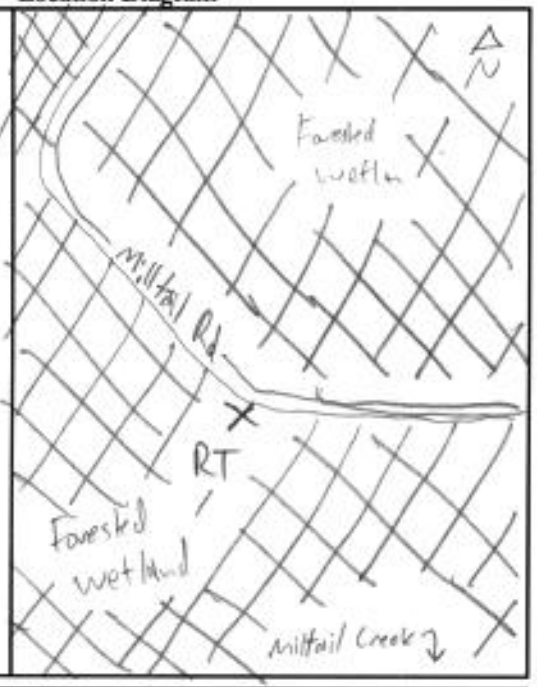
1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 435 Bat Species/Sex/Frequency: MYSE/M06/172.741 Band # CC2110

Roost Diagram

Location Diagram



Bat Days

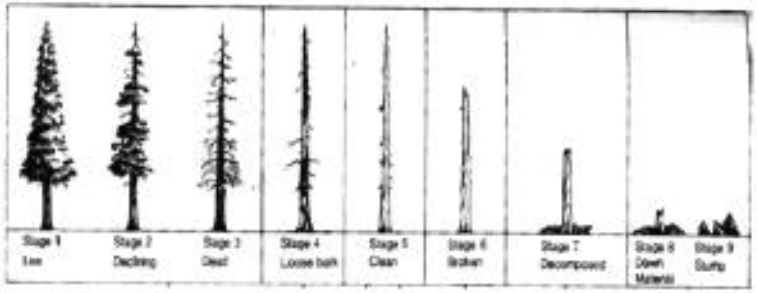
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2/25	302	CC2110	M	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	2/25	71	clear	1	1753	1809	1809	1809	1	SC
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1	bark	270	8	25	3.5	
2						
3						
4						



Comments: _____

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 25 Feb 2018 **Surveyor(s) Full Name:** Shelby Conam, Daniel Batie
State: NC **County:** DARE **Project Name:** Eastern NC MYSE
Site Name/#: ARNWR **Roost Name/#** RT935 **Bat #:** CCBHD
Lat/Long or UTM of Roost: 35.804770, -75.890554
Description of Roost/Habitat Feature Surveyed: loose, sloughing bark on NYSA Spp. snag
Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis
Other Suspected Bat Species (explain):
Weather Conditions during Survey (temperature, precipitation, wind speed):
72°, clear with light wind
Survey Start Time: 1730 **Time of Sunset:** 1753 **Survey End Time:** 1820

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1809	1	Freq. 172.791

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/172.741 **Band #** CC2110 Sheet 1 of 1

Roost No. 463 **Project.Phase#** 167.04 **Project Name** Eastern NC MYSE **Date First Found** 26 Feb 2018

Location South West of Mittel Rd **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Wetzel, M. Raley **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.80611 **W/Northing** -75.89825 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	463	Nyssa biflora	13	9	4	1	0	100	SC	
2		N. biflora	13.7	5		6	0	100	SC	
3		N. biflora	11.4	6.5		1	0	100	SC	
4		N. biflora	8.5	7.5		1	0	100	SC	
5		Chamaecyparis thyoides	21	12.5		3	0	90	C	
6		Persea palustris	6.5	4		1	0	10	U	
7		Persea palustris	12.5	5		1	0	100	U	
8		N. biflora	39.3	13		2	0	100	C	
9		Acer rubra	20.1	9		1	0	100	SC	
10		C. thyoides	21	12		3	0	100	C	
11		C. thyoides	35.2	14		3	0	100	C	
12		C. thyoides	20.1	6		6	0	95	SC	
13		C. Thyoides	30	13		5	0	90	C	
14		C. thyoides	16.7	4		6	0	75	U	
15		C. thyoides	45.	13		6	0	95	C	
16		C. thyoides	34.7	13		3	0	100	C	
17		C. thyoides	26.5	10		6	0	100	SC	
18		Pinus taeda	44.1	15		2	0	100	C	
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
80	100	180

↓ Roost Only ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure

10%

Roost Type[4]

Tree-live

MicroHabitat[5] **Used by Bat**

Cavity

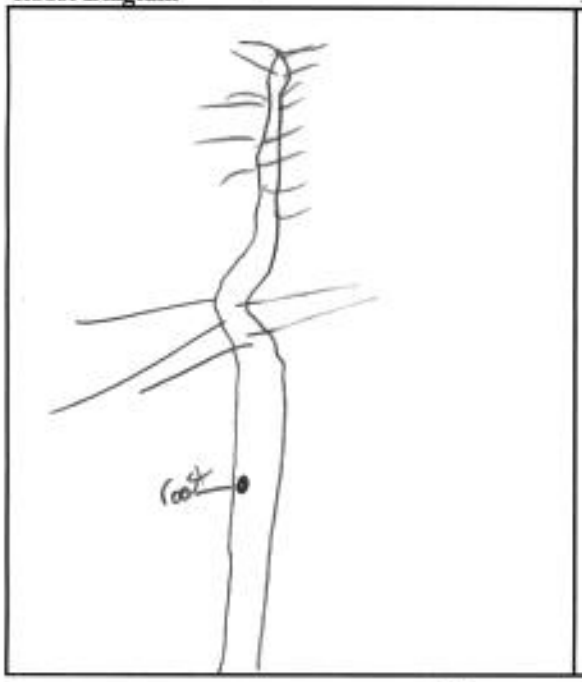
Notes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

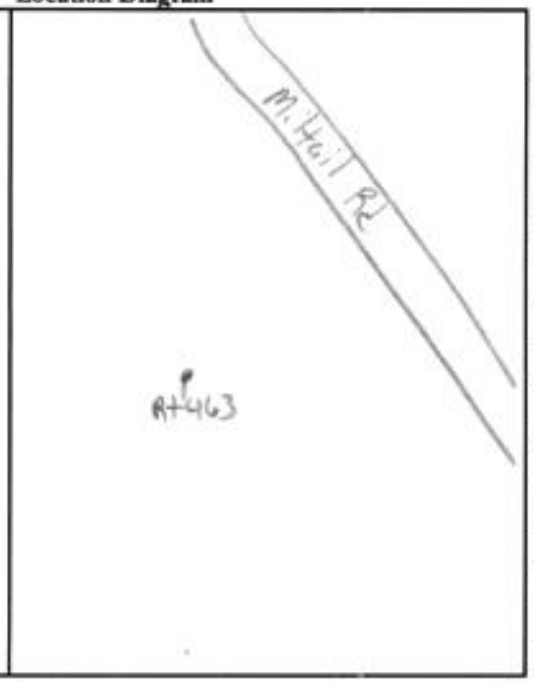
COPPERHEAD

Roost No. 463 Bat Species/Sex/Frequency: MYSE/M/.741 Band # CC 2110

Roost Diagram



Location Diagram



Bat Days

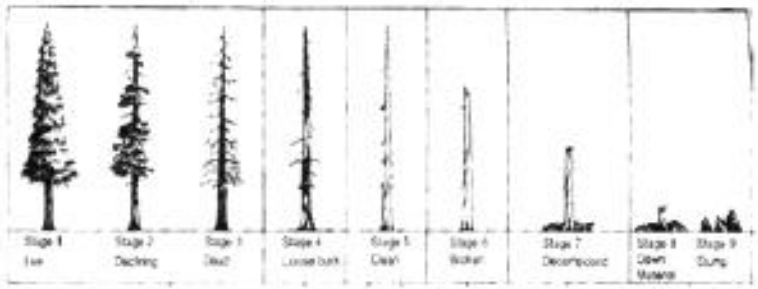
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2/26	.741	CC 2110	M	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	7 Mar	51	Clear	0	1903	—	—	—	—	MH
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 7-May-19 **Surveyor(s) Full Name:** Matt Hinds

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: [illegible] **Roost Name/#** 463 **Bat #:** CC2110

Lat/Long or UTM of Roost: 35.80611 -75.89225

Description of Roost/Habitat Feature Surveyed: Tree cavity in Mixed Forest, Lowland

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis

Other Suspected Bat Species (explain):

Weather Conditions during Survey (temperature, precipitation, wind speed):
51°, Clear, No Wind

Survey Start Time: 1733 **Time of Sunset:** 1807 **Survey End Time:** 1907

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
—	—	No bats emerged

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE / F / 172.182 **Band #** CC2112 Sheet 1 of 1

Roost No. 264 **Project.Phase#** 647.09 **Project Name** Eastern NC MYSE **Date First Found** 21 Feb 2018

Location ALNWR South west of Sawyer Lake **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Culbertson, Meghan Ridley **Datum** NAD83

Lat/Long or UTM (circle one): (N)/Easting 35.83464 (W)/Northing -75.91590 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	264	Nyssa biflora	14.8	14	6	1	0	100	SC	
2		Chamaecyparis Thyoides	28.6	8		6	0	100	SC	
3		C. thyoides	31.8	16		3	0	100	C	
4		C. thyoides	24.6	17		3	0	100	C	
5		P. rigida taeda	27.9	18		1	0	100	C	
6		C. thyoides	32.8	17		3	0	100	C	
7		C. thyoides	30.8	9		6	0	160	C	
8		C. thyoides	23.5	17		3	0	100	C	
9		C. thyoides	22.5	17		3	0	100	C	
10		C. Thyoides	8.5	6		5	0	160	SC	
11		C. thyoides	30.5	18		3	0	100	C	
12		C. Thyoides	14.8	16		3	0	100	SC	
13		C. Thyoides	34.5	18		3	0	100	C	
14		C. thyoides	15.5	16		4	0	100	C	
15		C. Thyoides	20.6	17		4	0	160	C	
16		C. Thyoides	19.4	17		5	0	30	C	
17		C. Thyoides	18.4	17		6	0	160	SC	
18		P. taeda	25.7	18		1	0	100	C	
19		C. Thyoides	26	17		3	0	100	C	
20		C. Thyoides	30.5	15		4	0	100	SC	
21		P. Taeda	28	17		1	0	100	C	
22		C. Thyoides	17.8	15		3	0	100	SC	

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
50	190	240

↓ Roost Only ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 25

Roost Type[4]: Live Tree

MicroHabitat[5] **Used by Bat**: Cavity

Notes _____

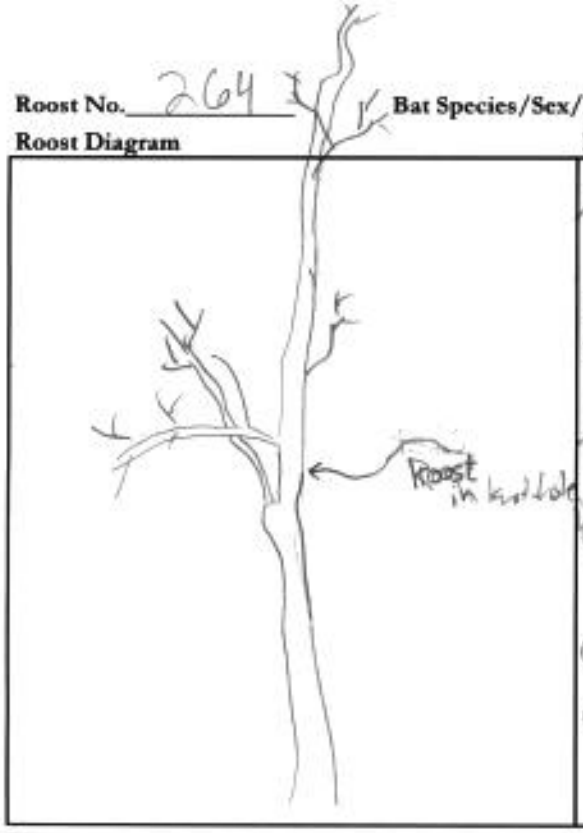
1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

N. biflora | 17.3 | 16 | | 17 | 0 | 100 | SC
C. Thyoids | 30.4 | 17 | | 3 | 0 | 100 | C

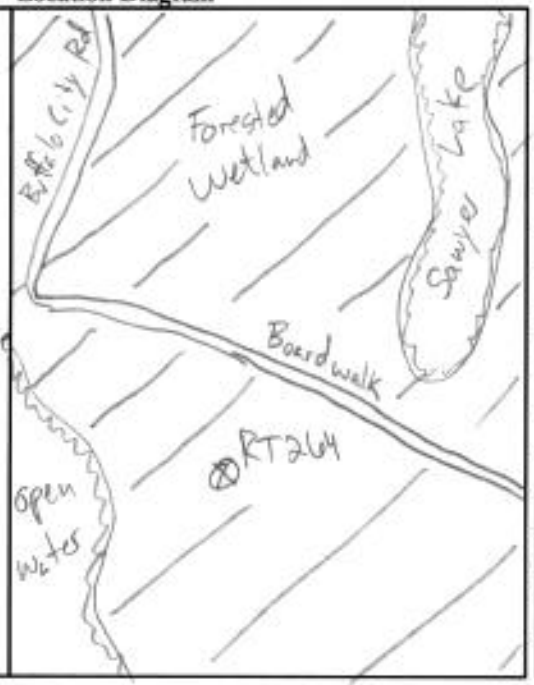
COPPERHEAD

Roost No. 264 Bat Species/Sex/Frequency: MYSE/F/172.162 Band # CC2112

Roost Diagram



Location Diagram



Bat Days

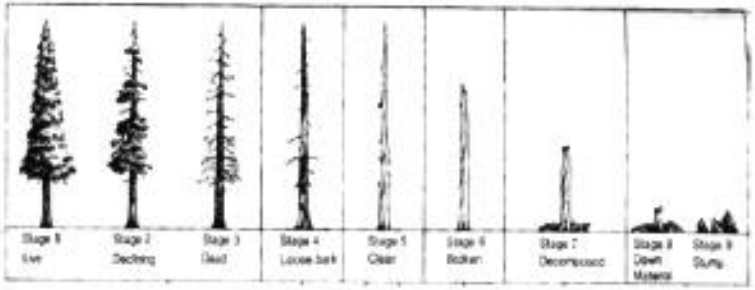
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2-21	.182	CC2112	F	
2	22 Feb	.182	CC2112	F	
3	23 Feb	.182	CC2112	F	
4	24 Feb	.182	CC2112	F	
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	21 Feb	68	Clear	1	1751	1819	1819	1819	1	HB, MR
2	22 Feb	68	Clear	1	1751	1812	1812	1812	1	HB
3	23 Feb	54	Clear	1	1754	1818	1818	1818	1	HB *
4	24 Feb	72	Clear	1	1754	1816	1816	1816	1	KE, MR
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	Cavity	220	6	6	6	—
2						
3						
4						



Comments: Signal bounces a lot (22nd came strongest from tree 6' North of tree; 25th came strongest from tree 3' west of tree) but clearly exited from RT 264 on 21st & 22nd & 23rd.

*23rd Feb → she came back to tree 20 min after leaving @1838

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 21 Feb 19 **Surveyor(s) Full Name:** Heidi Braunreiter, Meghan Raley

State: NC **County:** Duke **Project Name:** Eastern NC MYSE

Site Name/#: _____ **Roost Name/#** 264 **Bat #:** CC 2112

Lat/Long or UTM of Roost: 35.83464 -78.91590

Description of Roost/Habitat Feature Surveyed: Cavity in tree, mixed forest wetland

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis Septentrionalis

Other Suspected Bat Species (explain): _____

Weather Conditions during Survey (temperature, precipitation, wind speed):
68, Clear, No Precip

Survey Start Time: 1721 **Time of Sunset:** 1751 **Survey End Time:** 1849

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1819	1	tagged bat

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 22 Feb 18 **Surveyor(s) Full Name:** Heidi Braunfels

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: _____ **Roost Name/#** 264 **Bat #:** CC212

Lat/Long or UTM of Roost: 35.87464 -75.91598

Description of Roost/Habitat Feature Surveyed: Cavity

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis

Other Suspected Bat Species (explain): _____

Weather Conditions during Survey (temperature, precipitation, wind speed):
68°, Clear, no Precip

Survey Start Time: 1724 **Time of Sunset:** 1751 **Survey End Time:** 1842

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1812	1	tagged bat

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 23 Feb 18 **Surveyor(s) Full Name:** Heidi Brandreiter

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: _____ **Roost Name/#** 264 **Bat #:** CC2112

Lat/Long or UTM of Roost: 35.83464 -75.91590

Description of Roost/Habitat Feature Surveyed: Cavity in tree, Mixed Forest Wetland

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis Septentrionalis

Other Suspected Bat Species (explain): _____

Weather Conditions during Survey (temperature, precipitation, wind speed):
54° Clear, no Precip

Survey Start Time: 1724 **Time of Sunset:** 1754 **Survey End Time:** 1848

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
+ 1818	~~+818~~ 1	returned to tree at 1838

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 2/24/2018 **Surveyor(s) Full Name:** Kelsie Eshler, Meghan Baley
State: NC **County:** Dare **Project Name:** Eastern NC MYSE
Site Name/#: _____ **Roost Name/#** 264 **Bat #:** CC 2112
Lat/Long or UTM of Roost: 35.83464, -75.91590
Description of Roost/Habitat Feature Surveyed: Nyssa biflora 14m tall 148cm dbh

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
MYSE 172.182

Other Suspected Bat Species (explain): —

Weather Conditions during Survey (temperature, precipitation, wind speed):
72°F, clear

Survey Start Time: 1724 **Time of Sunset:** 1754 **Survey End Time:** 1854

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1816	1	tagged bat

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE / F / c182 **Band #** CC2112 Sheet 1 of 1

Roost No. 475 **Project.Phase#** 1647 **Project Name** Eastern NC MYSE **Date First Found** 25 Feb 18

Location East of Mittail Creek, SW of Buffalo City boardwalk **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Wetzel, K Eshler, M. Raley **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 65 93469 **W/Northing** 79. 91602 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	475	Acer rubrum	20.4	14	4	2	0	85	C	cavities
2		Nyssa biflora	11.5	12		1	0	100	SC	
3		Chamaecyparis thyoides	37.0	16		1	5	100	C	
4			33.5	15		3	5	95	C	
5		Nyssa biflora	12.4	10		9	0	100	SC	
6		C. thyoides	33.5	15		2	0	100	C	
7		Pinus taeda	29.0	16		1	5	100	C	
8		C. thyoides	35.8	13		4	15	50	C	
9		Pinus taeda	20.5	13		1	5	100	C	
10		C. thyoides	30.4	19.5		1	0	100	C	
11		Unknown	10.9	3.5		7	0	0	U	
12		C. thyoides	33.3	16		1	5	100	C	
13		Pinus taeda	32.5	17		1	5	100	C	
14		Nyssa biflora	9.2	9		1	0	100	SC	
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
110	30	140

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 30

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat**: Cavity

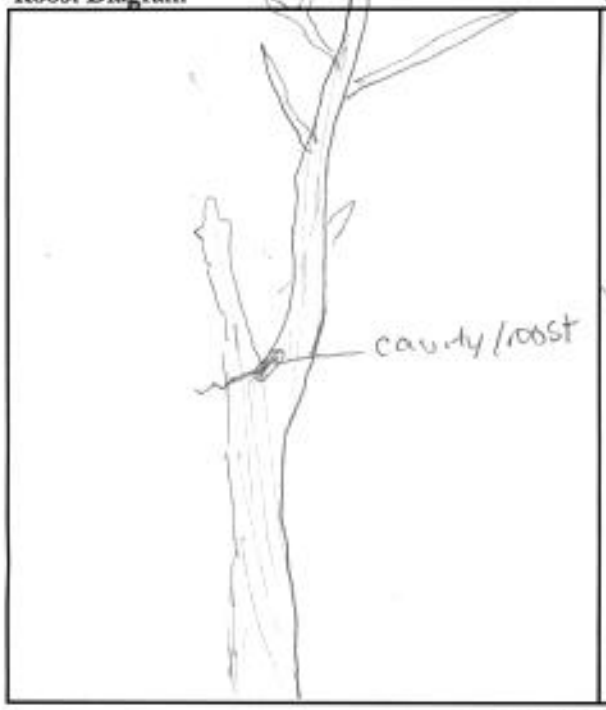
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

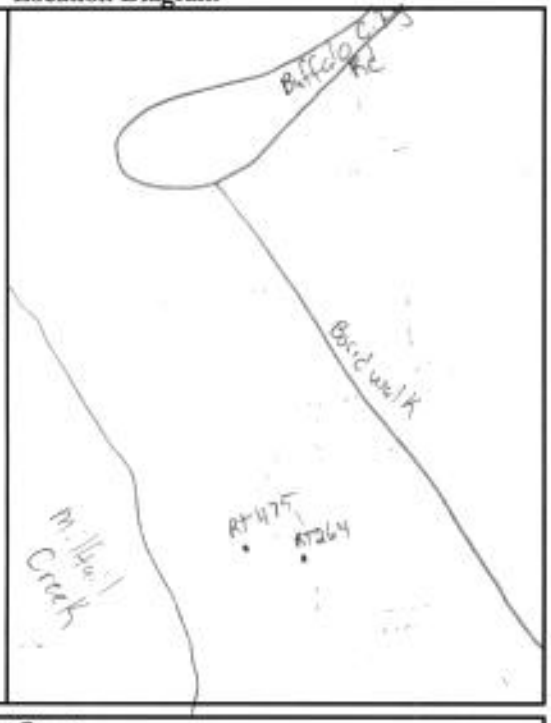
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 475 Bat Species/Sex/Frequency: MYSE / F / 172.182 Band # CC2112

Roost Diagram



Location Diagram



Bat Days

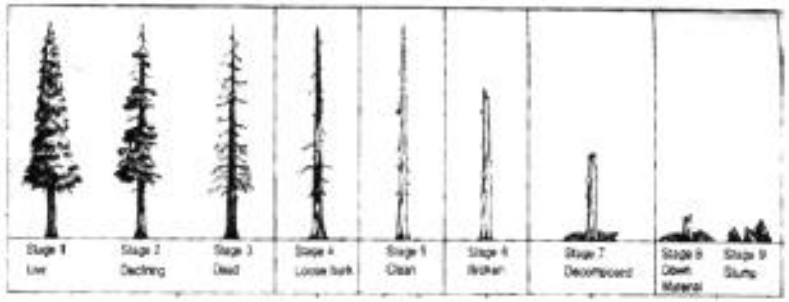
No.	Date 20___	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	25Feb18	182	CC2112	F	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20 18	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	25 Feb	70	Pt Cloudy	1	17:55	18:11	18:11	18:11	1	TW/MR
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 25 Feb 18 **Surveyor(s) Full Name:** Theresa Wetzel, Meghan Raley
State: NC **County:** Dare **Project Name:** 1647 Eastern NC MYSE
Site Name/#: _____ **Roost Name/#** 475 **Bat #:** CC2112
Lat/Long or UTM of Roost: 35.83469, -75.91602
Description of Roost/Habitat Feature Surveyed: Live Acer rubrum with some decline
Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis
Other Suspected Bat Species (explain): _____
Weather Conditions during Survey (temperature, precipitation, wind speed):
70°F, Partly Cloudy, NO rain
Survey Start Time: 1730 **Time of Sunset:** 1755 **Survey End Time:** 1830

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1811	1	Saw bat emerge – tagged bat

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/F/172.182 **Band #** CC2112 Sheet 1 of 1

Roost No. 890 **Project.Phase#** 647 **Project Name** Eastern NC MYSE **Date First Found** 5-March-2018

Location East of Pamlico Scenic Byway, North of Point Peter Rd **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** Z. Baer, C. Knabel **Datum** NAD 83

Lat/Long or UTM (circle one): (N)/Easting 35.79943 (W)/Northing -75.77714 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	890	Pinus tadea	26.8	12	5	1	0	100	Canopy	
2		Persea borbonia	11.5	8	—	1	0	100	S-C	
3		Pinus tadea	23.0	13	—	1	0	100	C	
4		Persea borbonia	8.9	6	—	1	0	100	S-C	
5		Persea borbonia	10.8	6	—	1	0	100	S-C	
6		Pinus tadea	14.7	9	—	1	0	100	S-C	
7		Pinus tadea	23.0	10	—	1	0	100	C	
8		Pinus tadea	29.3	14	—	1	0	100	C	
9		Pinus tadea	15.6	9	—	3	0	100	S-C	
10		Pinus tadea	22.0	10	—	1	0	100	C	
11		Persea borbonia	8.8	5	—	1	0	100	U	
12		Pinus tadea	22.6	13	—	1	0	100	C	
13		Pinus tadea	17.6	10	—	1	0	100	S-C	
14		Persea borbonia	8.9	4	—	2	0	100	U	
15		Pinus tadea	26.4	12	—	1	0	100	C	
16		Pinus tadea	28.6	14	—	1	0	100	C	
17		Pinus tadea	20.2	11	—	1	0	100	C	
18		Pinus tadea	23.9	10	—	1	0	100	S-C	
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
17	1	180

↓ Roost Only ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure: 50

Roost Type[4]: Tree - Live

MicroHabitat[5] **Used by Bat:** Cavity

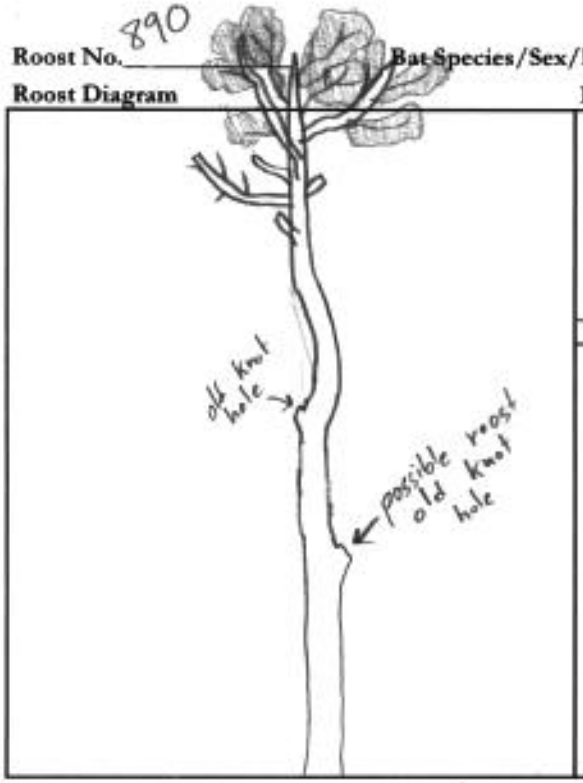
Notes: Roost possibly in old knot hole cavity

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

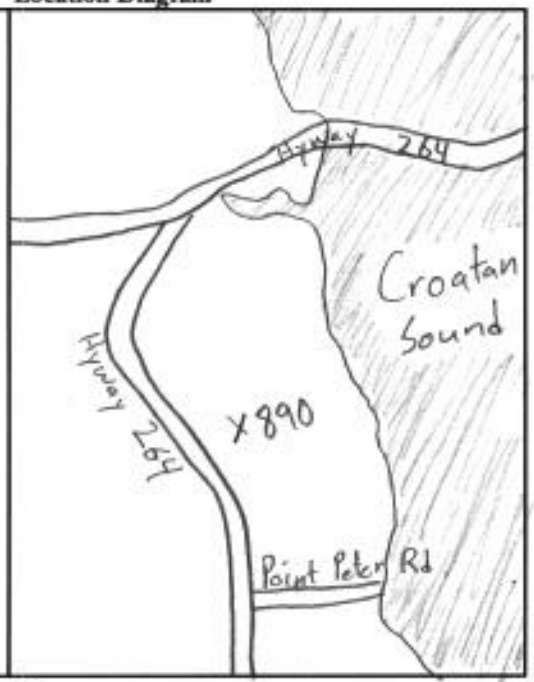
COPPERHEAD

Roost No. 890 **Bat Species/Sex/Frequency:** MYSE/F/172.182 **Band #** CC2112

Roost Diagram



Location Diagram



Bat Days

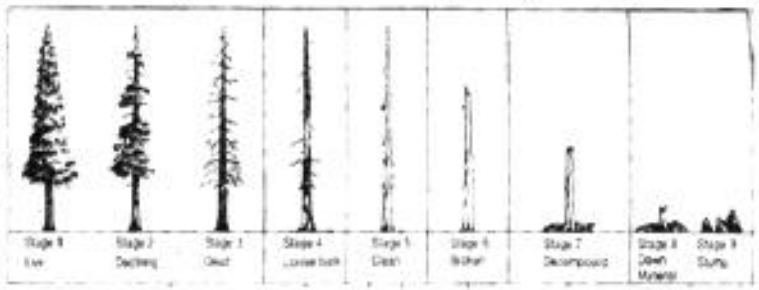
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	5-Mar	182	CC2112	F	
2	6-Mar	182	CC2112	F	
3	7-Mar	182	CC2112	F	
4	8-Mar	182	CC2112	F	
5	9-Mar	182	CC2112	F	
6	10-Mar	182	CC2112	F	transmitter Dead
7	~~11 Mar~~	~~182~~	~~CC2112~~	~~F~~	
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	7-Mar	51	Clear	0	1903	—	—	—	—	ZB,CK
2	10-Mar	50	Clear	0	1907	—	—	—	—	ZB,CK,CH
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1	Cavity	42	3	3	5	knot hole
2						
3						
4						



Comments: I-Button put out 7-Mar @ 5 PM pulled 11 March @ 12:12

* Could hear transmitter for ATS box but too weak to be picked up by ATS. Attempt to move ATS closer to tree if transmitter died by time bat got to tree.

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 7-Mar-18 **Surveyor(s) Full Name:** Zack Baer, Chris Knebel

State: NC **County:** Dare **Project Name:** 647 Eastern NC MYSE

Site Name/#: _____ **Roost Name/#** 890 **Bat #:** CC2112

Lat/Long or UTM of Roost: 35.79943 -75.77714

Description of Roost/Habitat Feature Surveyed: Tree cavity in mixed forest, wetland

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis

Other Suspected Bat Species (explain): _____

Weather Conditions during Survey (temperature, precipitation, wind speed):
51°, Clear, no wind

Survey Start Time: 1733 **Time of Sunset:** 1903 **Survey End Time:** 1908

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
—	—	No bats emerged

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 10 Mar 18 **Surveyor(s) Full Name:** Zach Baer, Chris Knesle, Christin Hoddinott

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: _____ **Roost Name/#** 890 **Bat #:** CC2112

Lat/Long or UTM of Roost: 35.79643 -75.77714

Description of Roost/Habitat Feature Surveyed: Cavity in tree in mixed forest wetland.

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis Septentrionalis

Other Suspected Bat Species (explain): _____

Weather Conditions during Survey (temperature, precipitation, wind speed):
Clear, 50°, no wind

Survey Start Time: 1737 **Time of Sunset:** 1807 **Survey End Time:** 1907

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
—	—	No Emergence

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/302 **Band #** CC0711 Sheet____ of ____

Roost No. 743 **Project.Phase#** 647 **Project Name** Eastern NC MYSE **Date First Found** 24 Feb 18

Location East of Milton Rd **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** J. Wetzel, K. Eshler, M. Raley **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.79844 **W/Northing** 75.87887 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	743	Persea palustris	14.5	13	7	1	0	100	C	
2		Nyssa biflora	19.7	14		1	0	100	C	
3		"	21.6	16		1	0	100	C	
4		"	25.7	16.5		1	0	100	C	
5		Persea borbonia	10.1	4.5		1	0	100	U	
6		Persea palustris	13.9	10		1	0	100	SC	
7		D. thalyoides sprout	40.2	9.5		6	0	60	SC	
8		Taxodium ascendens	72.6	18		1	0	100	C	
9		Nyssa biflora	81.2	14		1	0	100	C	
10		T. thalyoides	59.6	3		7	25	75	U	
11		"	48.6	18		1	5	100	C	
12		Nyssa biflora	25.4	16		1	0	100	C	
13		Persea borbonia	16.5	10		1	0	104	SC	
14	477	Acer rubrum	29.5	18		1	0	100	C	
15		Taxodium ascendens	60.2	22		1	5	95	C	
16		Nyssa biflora	30.2	4.5		6	5	95	SC	
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
130	30	16.5

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure
45

Roost Type[4]
Tree - Live

MicroHabitat[5] Used by Bat
Crack / Crevice

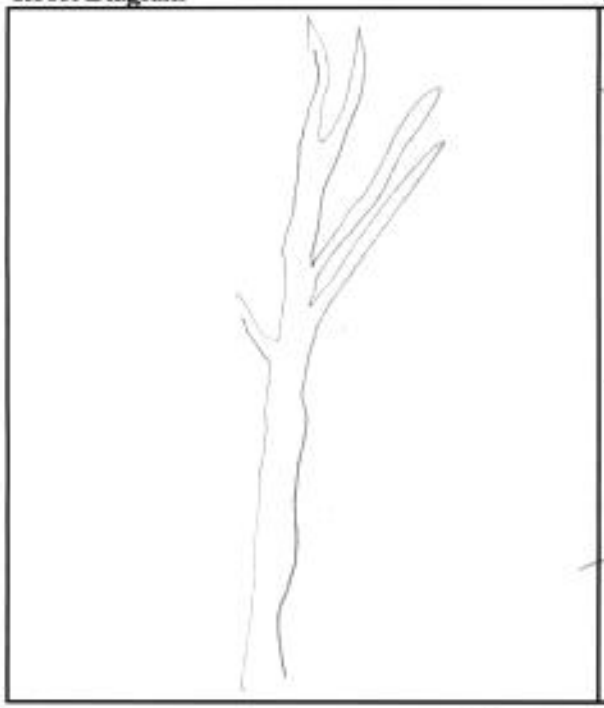
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

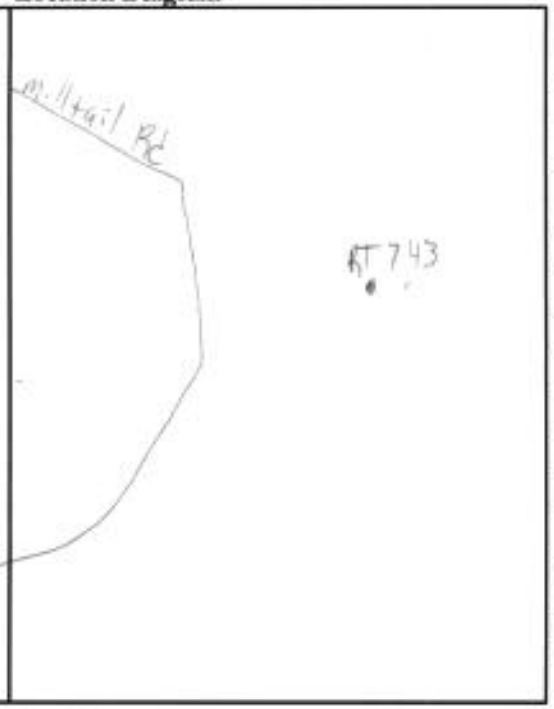
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 743 Bat Species/Sex/Frequency: MYSE/M/172302 Band # CC0711

Roost Diagram



Location Diagram



Bat Days

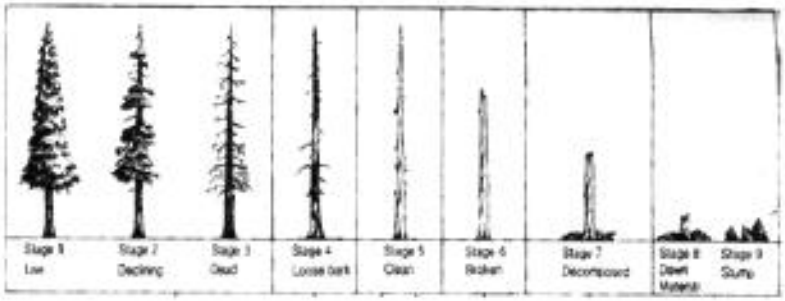
No.	Date 20 18	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2/24	.388	CC0711	M	
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20 18	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1	2/24	71	clear	1	1753	1806	1806	1806	1	S. Cothran B. Estes
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 24 Feb 2018 **Surveyor(s) Full Name:** Shelby Cotham, Daniel Bathe
State: NC **County:** DARE **Project Name:** Eastern NC MYSE
***Site Name/#:** ARNWR **Roost Name/#** RT ~~133~~ 743 ***Bat #:** CC 0711
Lat/Long or UTM of Roost:* 35.79844, -75.87887
Description of Roost/Habitat Feature Surveyed: small cavity 1em off ground

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
myotis septentrionalis
Other Suspected Bat Species (explain):
Weather Conditions during Survey (temperature, precipitation, wind speed):
67°F, clear, calm
Survey Start Time: 1730 **Time of Sunset:** 1753 **Survey End Time:** 1820

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1806	1	Freq. 172.302

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/M/172302 **Band #** CC0711 Sheet____ of____

Roost No. 464 **Project.Phase#**_____ **Project Name** Eastern NC MYSE **Date First Found** 1 March 2018

Location East of Mullet Creek, about 4m from RT 45 **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Wetzel, M. Hinds, C. Knabel **Datum** NAD83

Lat/Long or UTM (circle one): N/Easting 35.79818 W/Northing 75.87199 **UTM Zone**

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	464	Acer rubrum	41.3	18	8	2	0	100	Can	cavities
2		Nyssa biflora	30	17	–	1	0	100	Can	
3		N. biflora	32.8	16	–	1	0	100	Can	
4		A. rubrum	15.9	13	–	2	5	90	Sub	
5		Chamaecyparis thyoides	51.4	20	–	1	5	100	Can	
6		N. biflora	36.4	18	–	1	0	100	Can	
7		N. biflora	29.4	15	–	1	0	100	Can	
8		Taxodium distichum	58.2	23	–	1	0	100	Can	
9		Taxodium ascendens	51.2	20	–	1	0	100	Can	
10		N. biflora	33.8	8	–	10	10	90	Sub	
11		A. rubrum	29.7	10	–	2	0	100	Sub	
12		N. biflora	47.5	22	–	1	0	100	Can	
13		T. distichum	72.3	22	–	1	0	100	Can	
14		N. biflora	37.6	14	–	2	0	100	Can	
15		A. rubrum	36.7	16	–	2	0	100	Can	
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
140	10	150

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure: 75

Roost Type[4]: live tree

MicroHabitat[5] **Used by Bat**: cavity

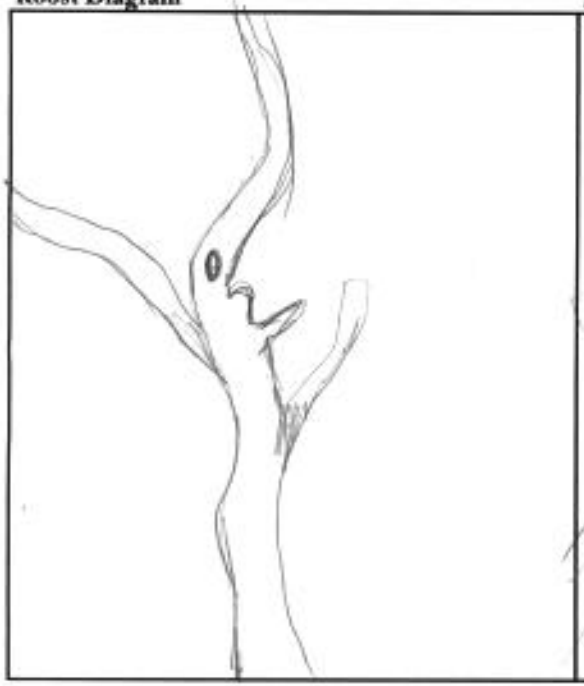
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

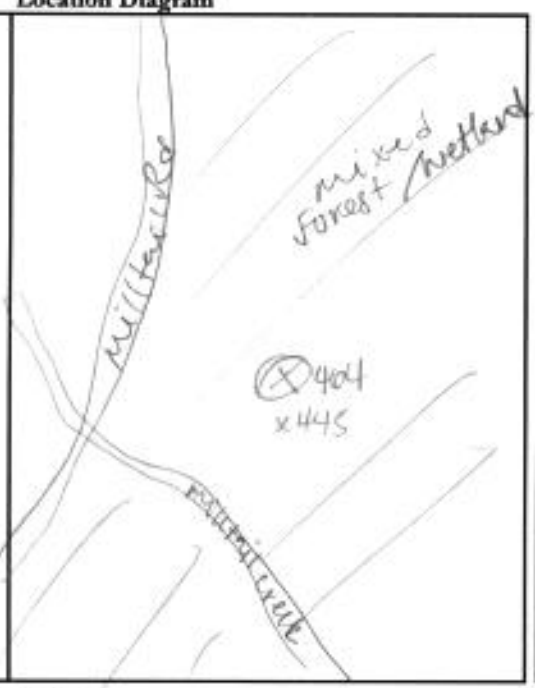
COPPERHEAD

Roost No. 464 **Bat Species/Sex/Frequency:** MYSE/M/172.302 **Band #** CC0711

Roost Diagram



Location Diagram



Bat Days

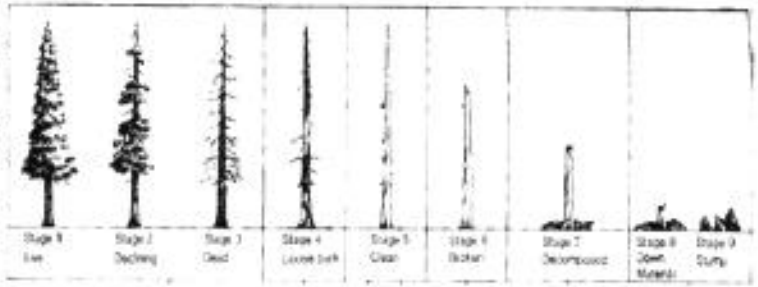
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	3/1	302	CC0711	M	
2	3/2	302	CC0711	M	
3	3/3	302	CC0711	M	
4	3/4	302	CC0711	M	
5	3/5	302	CC0711	M	
6	3/6	302	CC0711	M	
7	3/7	302	CC0711	M	
8	3/8	302	CC0711	M	
9	3/9	302	CC0711	M	
10	3/10	302	CC0711	M	
11	3/11	302	CC0711	M	
12	3/12	302	CC0711	M	
13	3/13	302	CC0711	M	
14	3/14	302	CC0711	M	

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	7 Mar	51	Clear	0	1903	—	—	—	—	16, ND
2	6 Mar	50	Clear	0	1903	—	—	—	—	16, ND
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1						
2						
3						
4						



Comments: 3/1 - emergence not done because of rain
3/2 - emergence not done due to high winds (>30mph)

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 7-May-18 **Surveyor(s) Full Name:** Ian Burns, Nikki Davis

State: NC **County:** Dale **Project Name:** Eastern NC Mysc

Site Name/#: _____ **Roost Name/#** 464 **Bat #:** CC0711

Lat/Long or UTM of Roost: 35.79818 75.97799

Description of Roost/Habitat Feature Surveyed: Tree Cavity, in Mixed Forest, wetland

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis Septentrionalis

Other Suspected Bat Species (explain): _____

Weather Conditions during Survey (temperature, precipitation, wind speed):
Clear, No Wind, 51°

Survey Start Time: 1773 **Time of Sunset:** 1803 **Survey End Time:** 1903

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
—	—	No bats emerged

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 10 May 18 **Surveyor(s) Full Name:** Ian Burke, Nikki Dennis

State: NC **County:** Dare **Project Name:** Eastern NC M/SS

Site Name/#: _____ **Roost Name/#** 464 **Bat #:** CC071

Lat/Long or UTM of Roost: 35.79818 75.87799

Description of Roost/Habitat Feature Surveyed: Cavity in tree in Mixed Forest Wetland

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis Septentrionalis

Other Suspected Bat Species (explain): _____

Weather Conditions during Survey (temperature, precipitation, wind speed):
50°, Clear, calm

Survey Start Time: 1777 **Time of Sunset:** 1867 **Survey End Time:** 1907

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
—	—	No emergence

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE /M/ 302 **Band #** CC0711 Sheet____ of ____

Roost No. 477 **Project.Phase#** 1.47 **Project Name** Eastern NC MYSE **Date First Found** 25 Feb 18

Location East of Mill tail Rd **Ownership**[1] Federal

County Dare **State** NC **Observer(s)** T. Wetzel, K Fehler, M Raley **Datum** NAD 83

Lat/Long or UTM (circle one): N/Easting 35.79849 **W/Northing** 75.87904 **UTM Zone** —

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	477	Acer rubrum	29.8	18		1	0	100	C	
2		Nyssa biflora	30.2	4.5		6	5	95	SC	
3		C. thyoides	19.7	14		1	0	100	C	
4		Taxodium ascens	73.7	18		9	5	100	a	
5		Nyssa biflora	24.6	16		1	0	100	C	
6		Persea borbonia	16.5	10		1	0	100	SC	
7		C. thyoides	48.6	18		1	5	100	C	
8		Nyssa biflora	16.1	14		1	0	100	SC	
9		Persea borbonia	7.4	4		1	0	100	a	
10		Taxodium ascendens	61.2	22		1	5	95	C	
11		"	71.5	23		1	5	95	C	
12		Taxodium distichum	36.8	22		1	0	100	C	
13		Nyssa biflora	21.6	15		1	0	100	C	
14		Acer rubrum	16.9	18		1	0	100	C	
15		C. thyoides	43.7	23		1	5	100	C	
16		Nyssa biflora	28.0	20		1	0	100	C	
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
150	10	160

↓ **Roost Only** ↓

Habitat (Circle One)		
(Interior)	Edge	Open

% Canopy Closure
65

Roost Type[4]
Tree-live

MicroHabitat[5] Used by Bat
Crack/Crevice

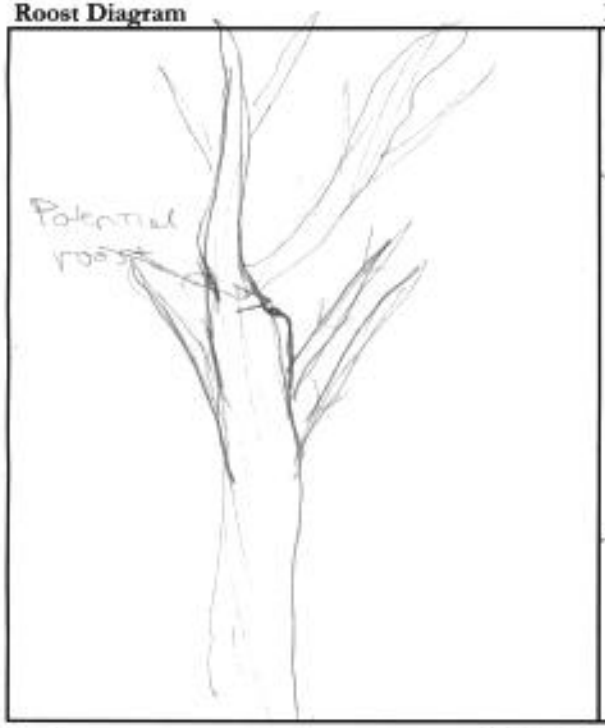
Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

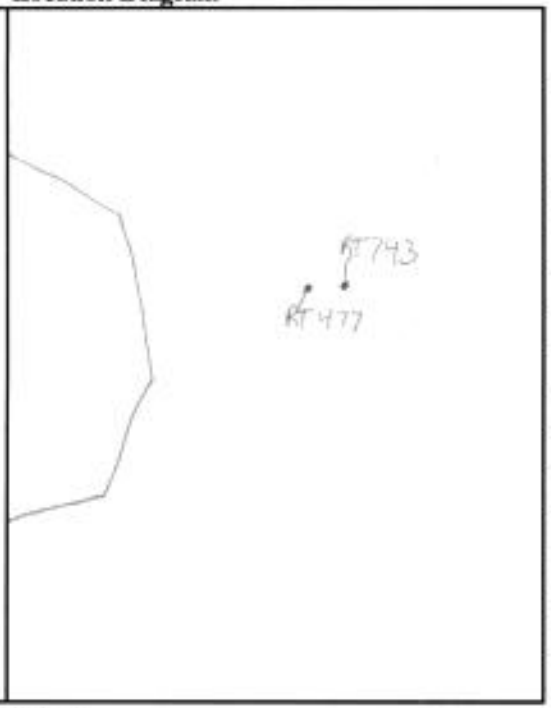
COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 477 Bat Species/Sex/Frequency: MYSE / M / 302 Band # CC0711

Roost Diagram



Location Diagram



Bat Days

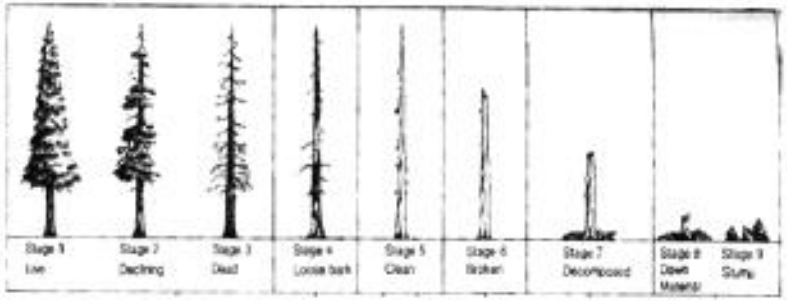
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2/25	302	CC0711	M	
2	26 Feb	302	CC0711	M	
3	2/27	302	CC0711	M	
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	25 Feb	72	Clear	1	1755	1818	1818	1818	1	TC/KE
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1						
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 25 Feb 18 **Surveyor(s) Full Name:** Taylor Culbertson, Kelsie Eshler
State: NC **County:** Dare **Project Name:** Eastern NC MYSE (647)
Site Name/#: _____ **Roost Name/#** 477 **Bat #:** CC071
Lat/Long or UTM of Roost: 35.79849, -75.87904
Description of Roost/Habitat Feature Surveyed: Acer rubrum, live

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis
Other Suspected Bat Species (explain): _____
Weather Conditions during Survey (temperature, precipitation, wind speed):
clear, 72°F, no rain
Survey Start Time: 1730 **Time of Sunset:** 1755 **Survey End Time:** 1845

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
1818	1	Bat was heard leaving roost with 172 receiver

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/F/17:243 **Band #** CC1056 Sheet 1 of 2

Roost No. 159 **Project.Phase#** 097 **Project Name** Eastern NC MYSE **Date First Found** 7/6/2017

Location South of Preston road, about 300m in swamp **Ownership**[1] Private

County Dare **State** NC **Observer(s)** S. Dillon, D Burke **Datum** NAD 83

Lat/Long or UTM (circle one): N/Easting 35.80933 **W/Northing** -75.96962 **UTM Zone** 18

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1	159	magnolia virginiana	17.5	12	10	1	2	95	C	
2		magnolia v.	19.1	10		2	0	100	C	
3		Persea palustris	15.2	10		2	0	100	C	
4		unknown snag	12.9	9		7	5	10	U	
5		magnolia v.	27.8	8		1	0	90	C	
6		magnolia v.	15.9	7		1	0	100	SC	
7		Acer rubrum	15.9	13		1	0	100	C	
8		Acer rubrum	16.1	12		1	0	100	C	
9		snag	15.3	9		7	0	0	U	
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees
70	20	90

↓ Roost Only ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure

80%

Roost Type[4]

Tree-live

MicroHabitat[5] **Used by Bat**

Cavity

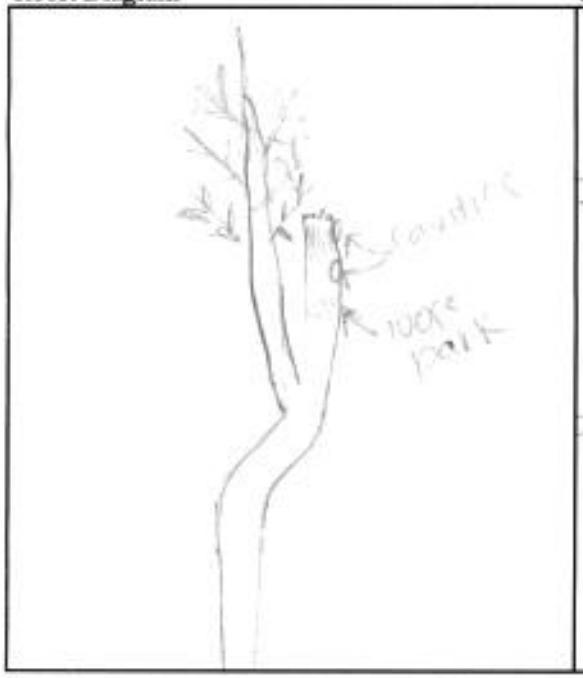
Notes

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

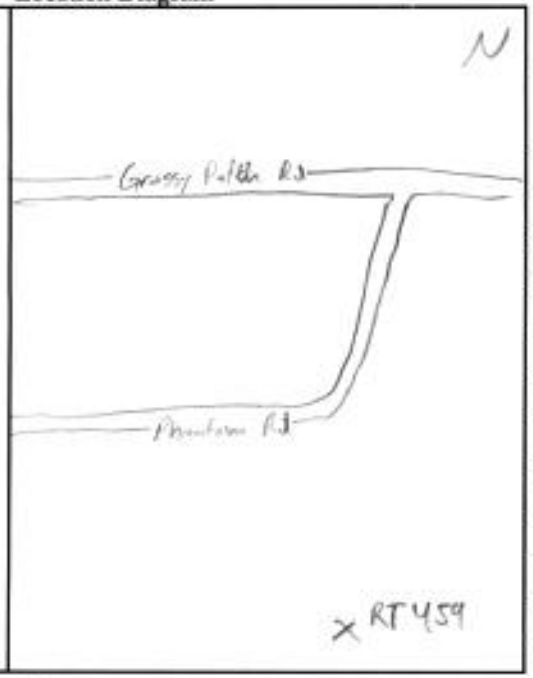
COPPERHEAD

Roost No. 459 **Bat Species/Sex/Frequency:** MYSE/F/172,243 **Band #** CC1056

Roost Diagram



Location Diagram



Bat Days

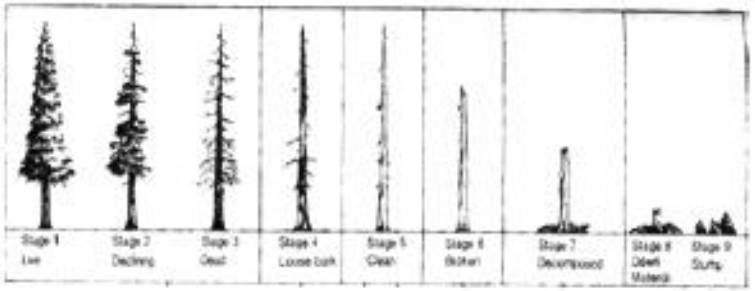
No.	Date 2018	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	2/26	243	CC1056	F	
2	2/27	243	CC1056	F	
3	2/28	243	CC1056	F	
4	3/1	243	CC1056	F	
5	3/2	243	CC1056	F	
6	3/3	243	CC1056	F	
7	3/4	243	CC1056	F	
8	3/5	243	CC1056	F	
9	6-Mar	243	CC1056	F	
10	7-Mar	243	CC1056	F	
11	8-Mar	243	CC1056	F	
12	9-Mar	243	CC1056	F	
13	10-Mar	243	CC1056	F	
14	11-Mar	243	CC1056	F	

Emergence Count

No.	Date 2018	Temp (°F)	Weather	# of Bats	Time: Sunset	Time: Bats Start	Time: Bats End	Time: Tagged Bat	Tagged Bat Exit #	Personnel/ Comments
1	2/26	60	overcast	0	1754	—	—	—	—	T.Wetzel
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements: Width (cm)	Opening Measurements: Height (cm)	Height from Ground (m)	Observation
1	cavity	300	5	5	10	
2						
3						
4						



Comments:

Copperhead Consulting Ph:859-925-9012 Please return to: P.O. Box 73, Paint Lick, KY 40461

Roost Data Form 2017 **Bat Species/Sex/Frequency:** MYSE/F/172.243 **Band #** CC1056 Sheet 2 of 2

Roost No. 459 **Project.Phase#** 647 **Project Name** _____ **Date First Found** 26Feb2018

Location _____ **Ownership**[1] _____

County _____ **State** _____ **Observer(s)** _____ **Datum** _____

Lat/Long or UTM (circle one): N/Easting _____ **W/Northing** _____ **UTM Zone** _____

#	Roost No.	Tree Species	DBH (cm)	Height (m)		Decay State[2] (1-9)	Bark Cover		Tree Ranking[3]	Observation
				Tree	Roost		Usable (%)	Total (%)		
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										

See Sheet 1

A 10 factor English prism is used to identify trees within the plot, centered on the roost tree

Basal Area (#trees × 10)		
Live Trees (Decay State 1-2)	Snags (Decay State 3-9)	All Trees

↓ **Roost Only** ↓

Habitat (Circle One)		
Interior	Edge	Open

% Canopy Closure

Roost Type[4]

MicroHabitat[5] **Used by Bat**

Notes _____

1 Ownership: Private; Federal; State; City; Other; Unknown
2 Decay State: 1 Live; 2 Declining; 3 Dead; 4 Loose Bark; 5 Clean; 6 Broken; 7 Decomposed; 8 Down Material; 9 Stump (See Back for Reference)
3 Tree Ranking: Canopy; Sub-Canopy; Understory
4 Roost Type: Tree-Live; Tree-Dead; Bat Box-Standard; Bat Box-Rocket; Bat Box-Condo; Artificial Bark; Utility Pole; Private Residence; Public Building; Auxiliary Structure-barn/shed; Other Occupied Structure; Other Unoccupied Structure; Cave; Mine; Talus Slope; Rock Outcrop; Unknown
5 MicroHabitat: Exfoliating Bark; Cavity; Crevice/Crack; Canopy/Cluster of Leaves; Other

COPPERHEAD ENVIRONMENTAL CONSULTING

Roost No. 459 Bat Species/Sex/Frequency: MYSE/F/172.243 Band # CC1056

Roost Diagram

see Sheet 1

Location Diagram

Bat Days

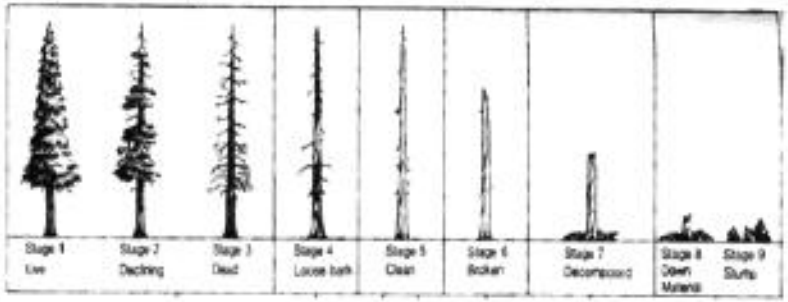
No.	Date 20 18	Bat Freq.	Bat Band #	Sex of Bat	Observations
1	3/12	243	CC1056	F	
2	3/13	243	CC1056	F	
3	3/14	243	CC1056	F	
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Emergence Count

No.	Date 20___	Temp (°F)	Weather	# of Bats	Time				Tagged Bat Exit #	Personnel/ Comments
					Sunset	Bats Start	Bats End	Tagged Bat		
1										
2										
3										
4										
5										
6										

Cavity or Crevice Characteristics

No.	Roost Type	Aspect	Opening Measurements		Height from Ground (m)	Observation
			Width (cm)	Height (cm)		
1						
2						
3						
4						



Comments:

APPENDIX E
PHASE 4 EMERGENCE SURVEYS

USFWS BAT EMERGENCE SURVEY DATASHEET

Date: 28 Feb 2018 **Surveyor(s) Full Name:** Theresa Wetzel

State: NC **County:** Dare **Project Name:** Eastern NC MYSE

Site Name/#: _____ **Roost Name/#** RT~~59~~ 459 **Bat #:** CC1056

Lat/Long or UTM of Roost: 35.80433 -75.96962

Description of Roost/Habitat Feature Surveyed: Live tree, cavity

Bat Species Known to be using this Roost/Feature (if not known, leave blank):
Myotis septentrionalis

Other Suspected Bat Species (explain): None

Weather Conditions during Survey (temperature, precipitation, wind speed):
Overcast 60°F

Survey Start Time: 1720 **Time of Sunset:** 1754 **Survey End Time:** 1854

NOTE: Emergence surveys should begin ½ hour before sunset and continue until at least one hour after sunset or until it is otherwise too dark to see emerging bats. The surveyor(s) should position him or herself so that emerging bats will be silhouetted against the sky as they exit the roost. Tallies of emerging bats should be recorded every few minutes or as natural breaks in bat activity allow. Please ensure that surveyor(s) are close enough to the roost to observe all exiting/returning bats, but not close enough to influence emergence (i.e., do not stand directly beneath the roost and do not make unnecessary noise and/or conversation, and minimize use of lights other than a small flashlight to record data, if necessary). Do not shine a light on the roost tree crevice/cave/mine entrance itself as this may prevent or delay bats from emerging. If available, use of an infra-red, night vision, or thermal-imaging video camera or spotting scope and an ultrasonic bat detector are strongly recommended but not required.

Time	Number of Bats Leaving Roost*	Comments / Notes
—	—	No bats seen emerging, tagged bat never left roost

Appendix G
Photographs of Day Roosts

Roost Tree Photos

Organized by bat and date

CC1451 (172.063) RT900; Roost Date November 16, 2017

CC1451 (172.063) RT14; Roost Date November 17, 2017

CC1451 (172.063) RT422; Roost Date November 18, 2017

CC1451 (172.063) RT17; Roost Date November 19, 2017

CC1451 (172.063) RT21; Roost Dates November 20-21, 2017

CC1451 (172.063) RT431; Roost Date November 22, 2017

CC1451 (172.063) RT437; Roost Dates November 23-29, 2017

CC1451 (172.063) RT983; Roost Dates November 30 - December 12, 2017

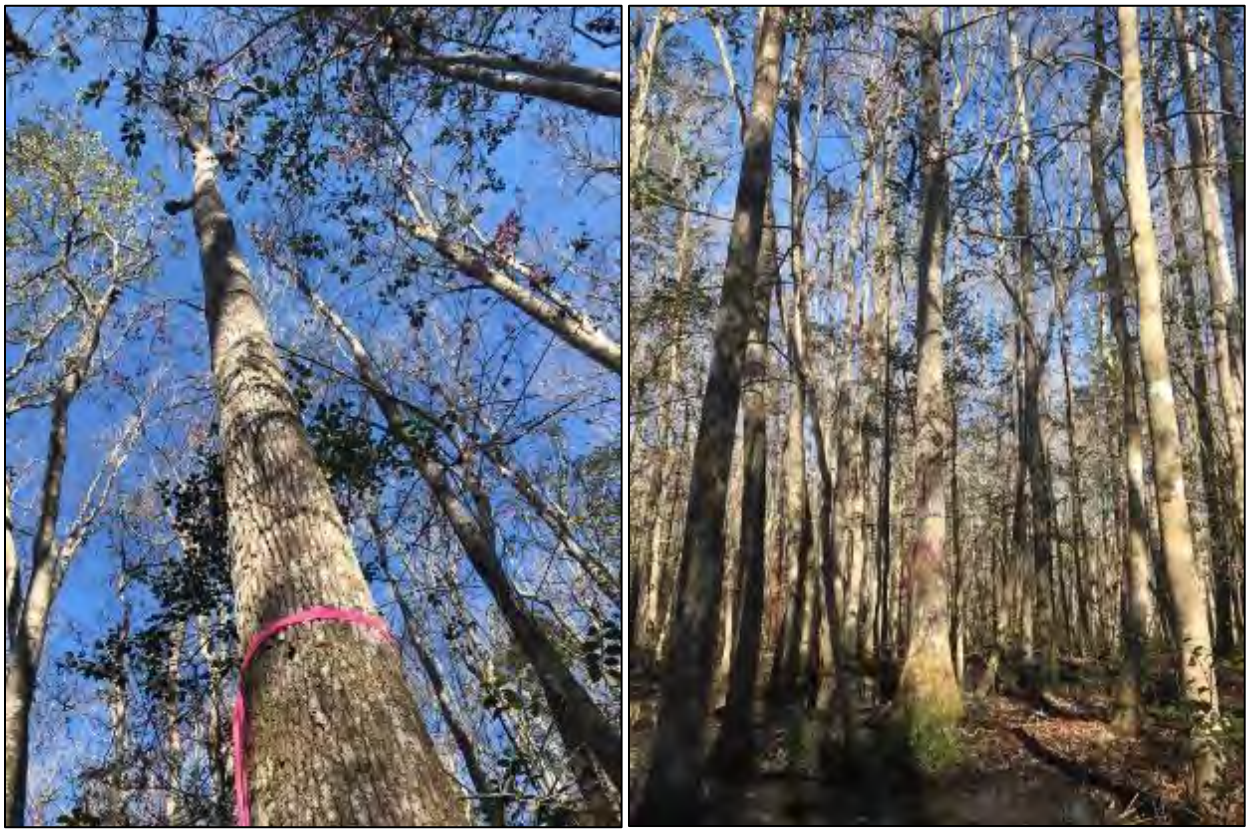
CC1451 (172.063) RT678; Roost Dates December 14-15, 2017

NCDOT1630 (172.603) RT891; Roost Date November 16, 2017

NCDOT1630 (172.603) RT32; Roost Dates November 17-18, 2017

NCDOT1630 (172.603) RT33; Roost Dates November 19-21, 2017

NCDOT1630 (172.603) RT438; Roost Dates November 22-28, 2017



NCDOT1630 (172.603) RT982; Roost Date November 29, 2017

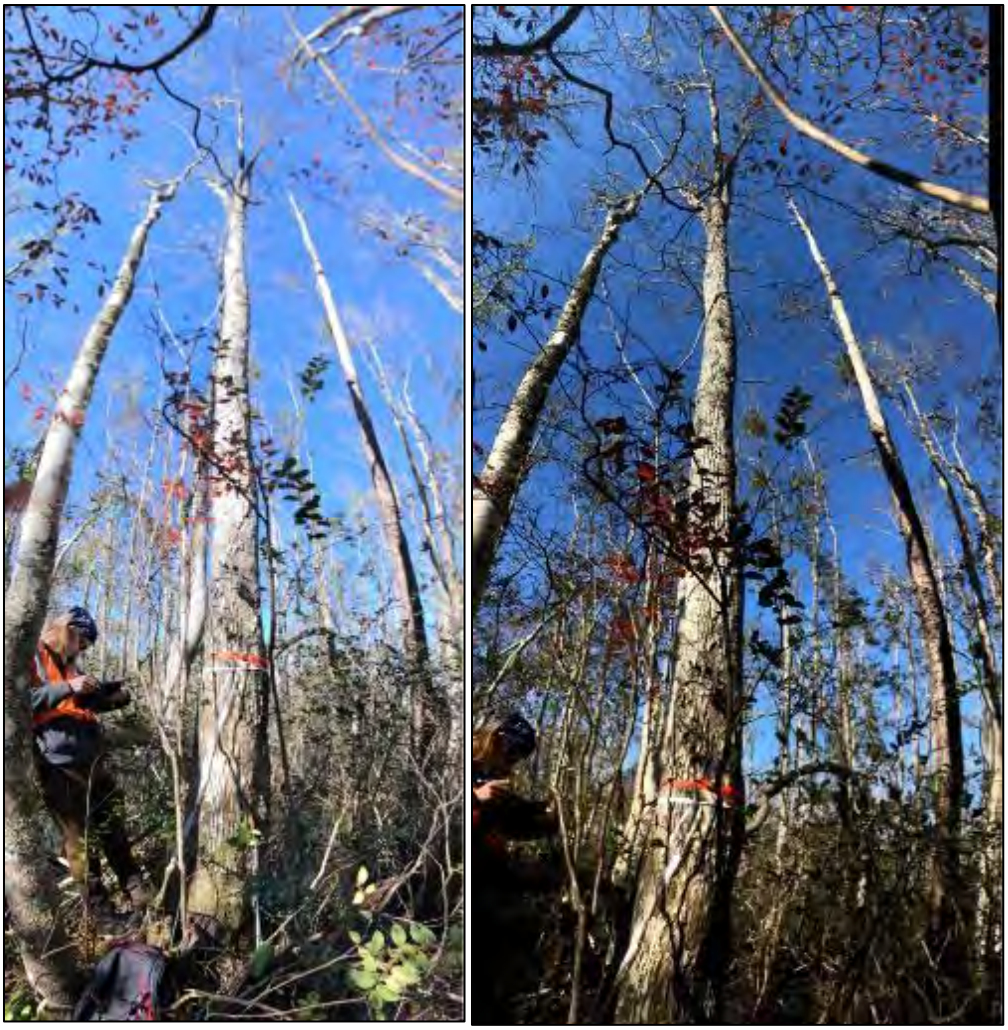
NCDOT1630 (172.603) RT255; Roost Dates November 30 - December 5, 2017

NCDOT1630 (172.603) RT259; Roost Date December 6, 2017

CC1700 (172.664) RT762; Roost Dates November 16, 2017

CC1700 (172.664) RT16; Roost Date November 17-18, 22-25, 2017

CC1700 (172.664) RT406; Roost Date November 19, 2017



CC1700 (172.664) RT19; Roost Date November 20-21, 2017

CC1453 (172.124) RT405; Roost Date November 19, 2017

CC1453 (172.124) RT23; Roost Dates November 20- December 1, 2017

CC1453 (172.124) RT984; Roost Date December 2, 2017

CC1453 (172.124) RT440; Roost Dates December 3-5, 2017

CC1453 (172.124) RT991; Roost Date December 6, 2017

CC1453 (172.124) RT260; Roost Dates December 7-11, 2017

CC2103 (172.722) RT439; Roost Dates November 19-25, 2017

CC2103 (172.722) RT432; Roost Dates November 26-28, 2017

CC2103 (172.722) RT254; Roost Dates November 29- December 3, 2017

CC2103 (172.722) RT986; Roost Dates December 4-16, 2017

CC1691 (172.783) RT436; Roost Dates November 22-23 & 25, 2017

CC1691 (172.783) RT22; Roost Date November 24, 2017

CC1691 (172.783) RT433; Roost Dates November 26-28, 2017

CC1691 (172.783) RT985; Roost Dates December 2-6, 12, 15, 2017

CC1691 (172.783) RT261; Roost Dates December 7-11, 13, 16-17, 2017

CC0100 (172.905) RT745; Roost Dates February 8-11 & 14-15, 2018

CC0100 (172.905) RT444; Roost Dates February 12, 16, 2018

CC0100 (172.905) RT265; Roost Dates February 17-19, 2018

CC0100 (172.905) RT443; Roost Date February 20, 2018

CC2110 (172.741) RT441; Roost Date February 20, 2018

CC2110 (172.741) RT679; Roost Date February 21, 2018

CC2110 (172.741) RT681; Roost Date February 22, 2018

CC2110 (172.741) RT682; Roost Dates February 23-24, 27 & March 1-7, 8-14, 2018

CC2110 (172.741) RT435; Roost Date February 25, 2018

CC2110 (172.741) RT463; Roost Date February 26 & March 7, 2018

CC0711 (172.302) RT445; Roost Date February 20, 2018

CC0711 (172.302) RT266; Roost Date February 21-23, 28, 2018

CC0711 (172.302) RT743; Roost Date February 24, 2018

CC0711 (172.302) RT477; Roost Dates February 25-27, 2018

CC0711 (172.302) RT464; Roost Dates March 1-15, 2018

CC2112 (172.182) RT264; Roost Dates February 21-24, 2018

CC2112 (172.182) RT475; Roost Date February 25, 2018

CC2112 (172.182) RT890; Roost Dates March 5-12, 2018

CC1056 (172.243) RT459; Roost Dates 26 February- 15 March 2018

Appendix H
Laboratory Report Detailing the Results of White-nose Syndrome Analysis

DIAGNOSTIC SERVICES SECTION

FINAL REPORT

SOUTHEASTERN COOPERATIVE WILDLIFE DISEASE STUDY (SCWDS)
COLLEGE OF VETERINARY MEDICINE
THE UNIVERSITY OF GEORGIA
ATHENS, GEORGIA 30602-7393
TELEPHONE: 706-542-1741; FAX: 706-542-5865

CASE NUMBER CC17-757 A-H
DATE RECEIVED December 13, 2017
DATE OF REPORT January 5, 2018

STATE NC **COUNTY** Dare **AREA** Alligator River National Wildlife Refuge

SPECIES (NO.) * **SEX** * **AGE** * **WEIGHT** *

*

Bat	NCWRC#	Species	Sex	Age	Weight (g)
A	CC1451	MYSE	Male	Adult	8
B	NCDOT1630	MYSE	Female	Adult	9.25
C	CC1700	MYSE	Male	Adult	8
D	CC1689	PESU	Male	Adult	6.75
E	CC2103	MYSE	Male	Adult	8.75
F	CC1453	MYSE	Female	Adult	8.5
G	CC1691	MYSE	Male	Adult	7.5
H	CC2107	MYSE	Male	Adult	8.25

CASE HISTORY: Refrigerated skin swabs from eight adult bats were submitted by Ms. Theresa Wetzel of Copperhead Environmental Consulting (Paint Lick, Kentucky), on behalf of Dr. Maria Palamar of the North Carolina Wildlife Resources Commission. These swabs were collected from bats during mist net exercises between November 15 and 21, 2017. They were shipped to SCWDS on December 12, 2017, for white nose syndrome (WNS) testing. They were received on December 13, 2017, and processed the same day.

FINAL DIAGNOSIS: *Pseudogymnoascus destructans* not detected (A-H)

MYCOLOGY: Skin swabs from bats A-H were submitted to the SCWDS Mycology Laboratory for WNS testing via polymerase chain reaction assay. No evidence of infection with *Pseudogymnoascus destructans*, the causative fugal agent of WNS, was detected in any of the samples.

COMMENTS: *Pseudogymnoascus destructans* was not detected in any of the samples.

Receipt of the submission was reported to Ms. Wetzel and Dr. Palamar on December 13, 2017. A final update was provided on January 4, 2018. All communication took place via electronic mail.

WILDLIFE IMPLICATIONS: None.

PUBLIC HEALTH IMPLICATIONS: None.

DOMESTIC ANIMAL IMPLICATIONS: None.

DIAGNOSTICIAN John A. Bryan, II, DVM, MS **SUPERVISOR** John R. Fischer, DVM, PhD

DISTRIBUTION: SCWDS File, Palamar, Wetzel