

FINAL REPORT

White-nose Syndrome Grants to States SC-E-F18AP00557

South Carolina Department of Natural Resources

October 1, 2018 – September 30, 2019

Project Title: South Carolina White-nose Syndrome State Support in 2018

The purpose of this grant was to fund an hourly technician to assist the SCDNR bat biologist for 10 months in bat population monitoring and disease surveillance; to help provide White-nose Syndrome (WNS) outreach and Northern long-eared bat information to Nuisance Wildlife Control Operators (NWCO's) and the public, and to update the SC Bat Conservation and SC WNS Response plans. This grant also funded WNS-related supplies and materials, and covered travel of the SCDNR bat biologist to the 2019 regional Southeastern Bat Diversity Network meeting. Because the WNS workshop was made into a webinar, funds set aside for WNS workshop travel were not used.

The State Wildlife Grant *SC-T-F17AF01195 South Carolina Bat Monitoring and Research Project* covered costs for the SCDNR bat biologist to organize, manage, and find assistance in the field with all WNS and bat netting projects. This report includes activities the bat biologist managed in conjunction with the WNS hourly technician duties funded by this grant.

Objective: Continue to ship bat samples from rabies-negative bats submitted to the South Carolina Department of Health and Environmental Control (SCDHEC) to the Southeastern Cooperative Wildlife Disease Study (SCWDS) for WNS testing, as SCDHEC makes those specimens available. Ship specimens of hibernating species from public sources, and sick or dead bats collected from Objective 2.

Accomplishments:

SCDNR sent 47 winter bat specimens from January through April 2019 to the SCWDS to determine cause of death and test for *Pseudogymnoascus destructans* (*Pd*, the causative agent of WNS). These specimens were provided by the public (35 specimens) or were rabies negative bats collected by SCDHEC (12 specimens). Because *Pd* was detected on Brazilian free-tailed bats (*Tadarida brasiliensis*, TABR) in 2018, they were saved for *Pd* testing from the winter of 2018/19. Overall, SCWDS selected 15 specimens to test for *Pd*, all of which were negative (Table 1). The majority of those from the public (32 specimens) were TABR collected from under large, multi-chamber bat boxes in January 2019 after a cold snap and chemical spraying reportedly occurring on neighboring properties. Results for cause of death for the 32 TABR in January are unknown – the bats appeared to be in good general health, including fair to good nutritional condition; microscopic fat stores were also evident, and the immune system appeared robust (i.e., no evidence of immune suppression). Numerous bats had evidence of recently eating insects, and it is suspected that they likely died acutely. Although no significant toxins were detected in a pooled liver sample by a general toxin screening test (designed to detect a large number of organic compounds, including pesticides, environmental contaminants, drugs, and natural products), toxicosis remains a possibility. Other potential causes or contributors to death that cannot be ruled out include environmental events, such as severe weather, or other potentially injurious physiological insult (such as acute stress) that may lead to sudden death without overt lesions. Gross and microscopic findings in the other bat specimens submitted to SCWDS are suggestive of trauma as a cause or contributor to death.

Table 1. Winter bat carcasses tested by SCWDS for *Pseudogymnoascus destructans* (*Pd*). Results indicated no gross or microscopic evidence of *Pd* in the skin, were negative for *Pd* by real-time PCR.

SCWDS ID	Date collected	County	Species	Sex	Age	Weight (gr)
CC19-048A	1/28/2019	Greenville	<i>Tadarida brasiliensis</i>	Female	Adult	12.2
CC19-048B	1/28/2019	Greenville	<i>Tadarida brasiliensis</i>	Male	Adult	9.7
CC19-048C	1/25/2019	Greenville	<i>Tadarida brasiliensis</i>	Male	Adult	9.4
CC19-048D	1/25/2019	Greenville	<i>Tadarida brasiliensis</i>	Male	Adult	11.8
CC19-048E	1/25/2019	Greenville	<i>Tadarida brasiliensis</i>	Male	Adult	10.4
CC19-048F	1/25/2019	Greenville	<i>Tadarida brasiliensis</i>	Female	Adult	9.8
CC19-049A	1/27/2019	Greenville	<i>Tadarida brasiliensis</i>	Female	Adult	10.3
CC19-049B	1/27/2019	Greenville	<i>Tadarida brasiliensis</i>	Male	Adult	10.5
CC19-049C	1/27/2019	Greenville	<i>Tadarida brasiliensis</i>	Male	Adult	9.5
CC19-368C	2/28/2019	Richland	<i>Lasiurus borealis</i>	Male	Adult	8
CC19-368G	3/21/2019	Berkeley	<i>Tadarida brasiliensis</i>	Male	Adult	14.5
CC19-368E	3/29/2019	Aiken	<i>Nycticeius humeralis</i>	Unknown	Adult	6
CC19-368A	1/17/2019	Anderson	<i>Eptesicus fuscus</i>	Male	Adult	15.5
CC19-368B	1/17/2019	Anderson	<i>Eptesicus fuscus</i>	Female	Adult	17
CC19-368A2	3/29/2019	Spartanburg	<i>Tadarida brasiliensis</i>	Male	Adult	12.75

Significant deviations:

There were no significant deviations.

Objective: Conduct WNS surveillance at eight or more hibernacula in the winter of 2017/2018, including at least one bridge known to have winter *Myotis* in the past.

Accomplishments:

The WNS technician assisted with 19 potential bat hibernacula surveys from December 3, 2019 to March 8, 2019 (Table 2): 8 mines, 5 culverts, 2 caves, 2 rock shelters, and 2 caves and discovered a total of 22 tri-colored bats (*Perimyotis subflavus*, PESU), 3 big brown bats (*Eptesicus fuscus*, EPFU), 2 Eastern small-footed bats (*Myotis leibii*, MYLE), and 1 Rafinesque’s big-eared bat (*Corynorhinus rafinesquii*, CORA). None of these bats had obvious clinical signs of WNS. We learned three old mines had been closed, one of which harbored a Northern long-eared bat (*Myotis septentrionalis*, MYSE, federally threatened) in a past survey. A new mine, cave, and rock shelter were surveyed with only 1 PESU detected. However, that single PESU was in a key county (Abbeville) needing to be tested for *Pseudogymnoascus destructans* (*Pd*, the causative agent of WNS). Three counties either not yet tested for *Pd* (Abbeville and McCormick counties) or with no *Pd* previously detected (Calhoun County), were tested through kits provided by the National Wildlife Health Center (NWHC) as part of their ongoing national *Pd* surveillance study. Results indicated that swabs collected from all three counties tested negative for *Pd* by real-time PCR. Note the lack of a positive result by PCR does not definitively indicate the absence of the organism. PCR may not detect the organism if it is at very low abundance in the sample.

The WNS technician also assisted with culvert surveys as potential bat hibernacula. This was the first year SCDNR attempted culvert surveys, gaining knowledge of culvert locations from SCDOT ArcGIS

layers shared from a new collaborator, Kat Hoenke of Southeast Aquatic Resources Partnership (SARP; a regional collaboration of partners developed to strengthen the management and conservation of aquatic resources in the southeastern United States). Culvert surveys were conducted at 5 culverts

Table 2. Winter bat counts in South Carolina (winter 2018-2019). Type: BR= bridge, C = cave, CU= culvert, M = mine, RS = rock shelter; Bat Count/Previous Count: CORA = *Corynorhinus rafinesquii*, MYSE = *Myotis septentrionalis*, PESU = *Perimyotis subflavus*, Myotis = unknown *Myotis* species. No new counties were considered WNS suspect in winter of 2018/2019.

Type	Date	Site	County	Bat Count	Previous Count	Pd testing	Ownership
BR	12/3/18	Hwy25BeavBridge	Greenville	1 EPFU	New		SCDOT
M	12/7/18	Moody mine	Oconee	closed	05/13/90: 1 CORA, 1 MYSE		USFS
M	12/7/18	Mica	Oconee	closed	No data		USFS
RS	12/18/18	Harbour RS	Greenville	0	New		Private
C	1/17/19	BooneCrk	Oconee	0	New		Private
M	2/5/19	Ne45Inpit	Oconee	closed	12/24/95: no bats		USFS
M	2/5/19	Forkedone	Oconee	7 PESU	2/5/16: 9 PESU		USFS
M	2/5/19	P Eye	Oconee	9 PESU	2/5/16: 3 PESU		USFS
M	2/2/19	Heritage Gold mine	Mccormick	1 PESU	1/24/08: 1 PESU	NWHC	Private
M	2/8/19	CB Stone mine	Abbeville	1 PESU	New	NWHC	Private
M	2/18/19	Bynum Adit	Oconee	water filled	2/7/95: 28 PESU		Private
RS	2/18/19	Dianemtncora	Pickens	2 PESU, 1 CORA, 1 EPFU	9/3/18: no bats		SCDNR
BR	2/18/19	Hwy11LittleEastatoe	Pickens	2 MYLE, 1 EPFU, 1 Myotis	9/13/18: 8 bats including MYLE, EPFU, Myotis		SCDOT
CU	3/6/19	34.854066, -82.382452	Greenville	0	New		SCDOT
CU	3/6/19	34.815284, -82.330687	Greenville	0	New		SCDOT
CU	3/6/19	34.816937, -82.324765	Greenville	0	New		SCDOT
CU	3/6/19	34.786691, -82.28102	Greenville	0	New		SCDOT
CU	3/6/19	34.764731, -82.279714	Greenville	0	New		SCDOT
C	3/8/19	Cave Hall	Calhoun	2 PESU	3/6/17: 5 PESU	NWHC	Private

under I-385 and I-85 in the Greenville area. The first four culverts were large, mostly straight box culverts (10 x 10 feet or larger) that could not trap heat and humidity and turned out to be unlikely candidates for bat hibernacula. The last culvert was a long, 8 x 8 structure with two turns and tapered at the end. No wind was blowing through and warmth and humidity were somewhat trapped. Though we didn't find any bats, we will survey this culvert earlier in the season next year. During the culvert surveys, we learned about the characteristics of culverts that may/may not be useable to bats (height, length, # of bends).

On the coastal plain in April of 2019, the WNS technician assisted with *Pd* swabbing in cooperation with NWHC provided kits. Swabs for 12 EPFU, 5 MYSE, 5 Southeastern bats (*Myotis austroriparius*, MYAU), 2 PESU and 1 environmental were taken and 15 guano pellets were collected. No visible fungus or mortality was noted in the bat population at the time of the survey. All combined wing/muzzle swabs, environmental sample, and guano pellets collected tested negative for *Pd* by real-time PCR. Note 2019 is the first year *Pd* has not yet been detected through all our survey efforts since 2016 (Figure 1).

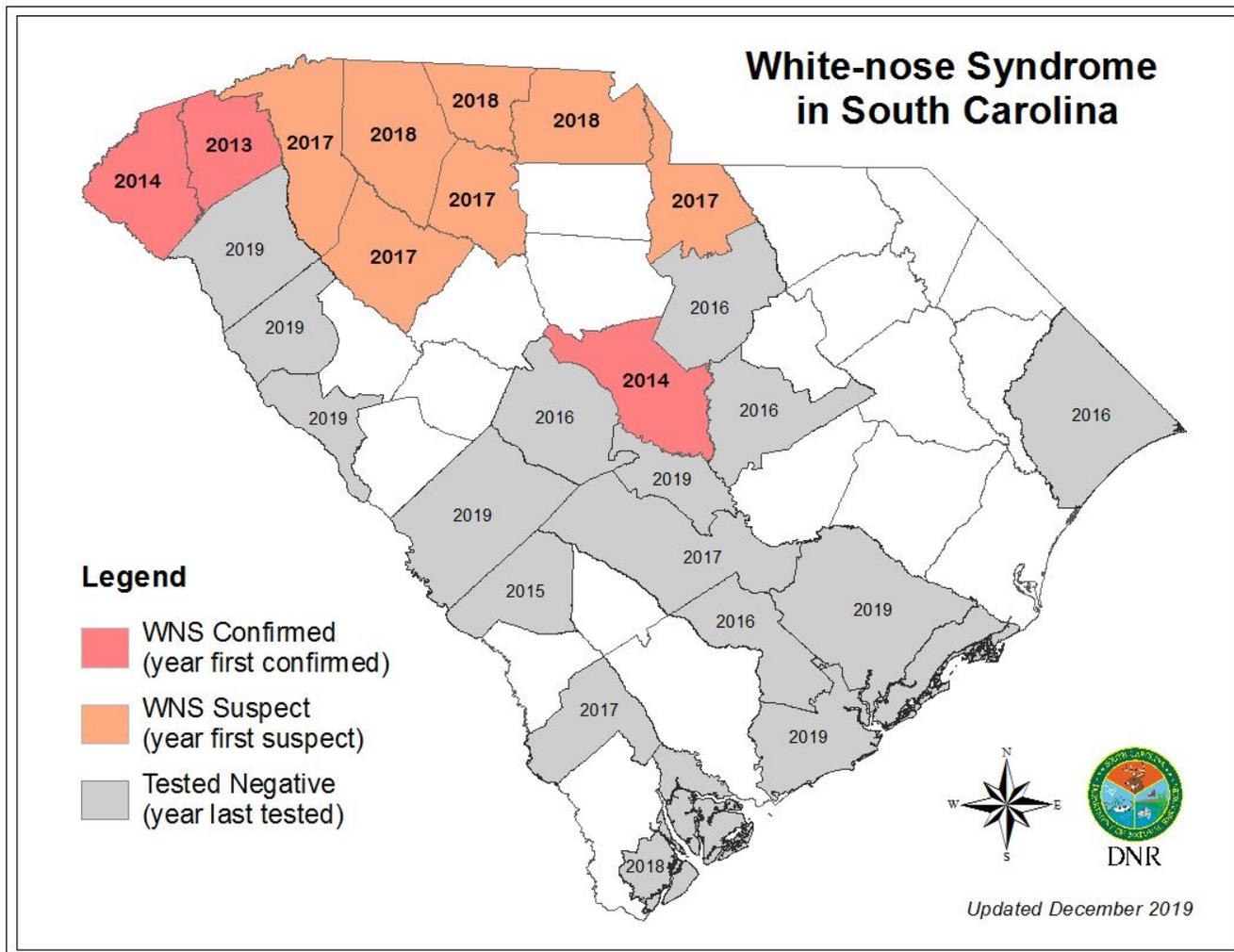


Figure 1: White-nose Syndrome and *Pd* testing in South Carolina since 2013.

The WNS technician also completed Element of Occurrence Records for each hibernaculum where bats were present, entered them into the Heritage Trust database, and wrote thank you letters with hibernacula results and sent them to land owners for the 2018/2019 winter survey season.

Significant deviations:

There were no significant deviations.

Objective: Conduct some summer and fall netting or trapping on state-owned or conservation partner-held properties; emphasis will be on sites with MYSE, sites not previously sampled, and/or on sites slated for acquisition. This will help identify important habitat. The target location and number of sites

will be based on results from sampling planned this summer but will include at least one site on the coastal plain.

Accomplishments:

Full netting results are reported in the *SC-T-F17AF01195 South Carolina Bat Monitoring and Research Project* interim report. SCDNR depended on the WNS technician to prep gear for the season including checking the condition of all the old mist nets; assist with *Pd* swabbing, handling, and banding of bats while following national WNS decontamination protocols; track radio-tagged bats during the day; help organize and instruct volunteers; decontaminate and organize gear at the end of the season; and ensured bat data collected was entered into the Heritage Trust database. What follows is a summary of the combined efforts by the bat biologist and WNS technician.

SCDNR captured 5 MYSE at Santee Coastal Reserve and Wildlife Management Area in the coastal plain. Of the 2 adult males and 3 pregnant females captured, 1 male and 2 females were tracked. This marked the first time pregnant Northern long-eared bats have been captured on the SC Coastal Plain since discovered in Beaufort County in 2016 (Appendix A). We estimate the pup season to be between late April and early May, approximately one month earlier than the June 1 – July 31 pup season outlined by the [US Fish and Wildlife Service](#) in the current 4(d) rule. All females roosted under bark of live, mature longleaf pine (*Pinus palustris*) within 150 feet of a road, in uniform aged stands approximately 85 years old undergoing frequent fire (1 to 4 years) and managed for local populations of endangered red-cockaded woodpeckers (*Leuconotopicus borealis*). Average female roost tree (n = 10) characteristics were mature longleaf pine with 30% canopy closure, 14-inch DBH, 30% exfoliating bark, and approximately 58 feet tall. All females were found to switch roosts daily, and distances between the previous roost varied between 5 and 1,500 feet. Only one roost tree was used twice. Though pregnant MYSE are known to form the largest colonies while pregnant, the pregnant females we tracked roosted alone or with only one other bat and no maternity colonies were recorded. The adult male utilized a sweetgum cavity roost with 75% canopy closure, 21.3-inch DBH, 10% exfoliating bark, approximately 70 feet tall, had a basal cavity opening of 6.5 inches wide by 4.5 inches tall with a cavity height of at least 3 feet for at least 5 days before the transmitter was dropped in bottomland hardwood swamp 2.75 miles away.

Significant deviations:

There were no significant deviations.

Objective: Provide WNS outreach and MYSE information to: (1) NWCOs and notify them about any training opportunities and updated WNS and bat-related protocol or regulatory changes, (2) local caving and mining groups, and (3) the public via signs at critical sites, links on the DNR website, news releases and social media.

Accomplishments:

Letters updating 125 NWCOs listed as working on bats were distributed on April 10, 2019. The WNS technician wrote, printed, stuffed, and sent these letters, and kept the NWCO spreadsheet updated based on letters that bounced back. These NWCO letters included information about the most current National WNS Decontamination Protocol, and updates on WNS, the ten SC counties positive for either WNS or *Pd*. and included the most current National WNS Decontamination Protocol and SC Bat ID Guide (Appendix B). The USFWS WNS fact sheet had not been updated since our last letter, so we did not include it.

The WNS technician assisted with the creation of slides for presentations, writing of news releases, and summaries of hibernacula, summer mist netting and tracking efforts used in presentations. A total of 1 interview, 1 article, 5 news releases, and 13 presentations provided WNS outreach and bat information. Over 300 people attended presentations, and Social Media post response was over 494 likes and 128 shares. A Bats of South Carolina flyer (printed using a different funding source) with WNS info was provided to the public at each outreach event.

Articles and News Releases: Oct 4: Q & A published in Greenville Journal: <https://greenvillejournal.com/2018/10/04/116000/>; Oct 17: SCDNR partnering with Greenville area groups for Bat Week, http://www.dnr.sc.gov/news/2018/oct/oct17_batweek.html; Oct 22: Governor's office recognizes Bat Week in South Carolina, http://www.dnr.sc.gov/news/2018/oct/oct22_batweek.html; Oct 26: What to do when a bat is inside your home, http://www.dnr.sc.gov/news/2018/oct/oct26_bats.html; Sept 24: First pregnant Northern long-eared bats found along South Carolina coast: http://www.dnr.sc.gov/news/2019/sept/sept24_bats.php

Presentations: Oct 10: Greenville Zoo Conservation Lecture Series, "White-nose Syndrome: What's Being Done," 30 people; Oct 11: 7:45 am spot on WSPA with Lynn Watkins about bats and Greenville Boo in the Zoo; Oct 27: Sunrift Halloween Bat Count: 60 people, 600 bats counted; Oct 31: Gave kids bat talk at UU World of Children, 15 people; Nov 1: Harbour Island community center bat talk, 30 people; Nov 2: Palmetto Bluff bat presentation, 25 people; Nov 8: Google Hangout presentation to elementary school class 1st grade in Goose Creek, SC, 30 students; Dec 17: Georgia Bat Working Group meeting, SCDNR update, 25 people; Feb 26: Wildlife and Freshwater Fisheries Committee Meeting, "The Importance of Bats," 25 people; Mar 12: Furman Child Development Center, Bat Facts and discussion, 15 students. Kids asked a ton of great bat questions, read a bat poem, sang a bat song, and explained how they'd earned hundreds of dollars at their lemonade stand to take part in Bat Conservation International's Adopt A Bat program, adopting multiple bats in the name of conservation; Mar 27: Soundwave Comics, South Carolina Bats, 10 people; Aug 9: Wired Minds class, South Carolina's Bats, 15 students; Sep 13: Fall into the Lowcountry master naturalist retreat in Awendaw, SC, bat walk and talk, conducted netting (though no bats captured), 30 people.

Social Media (Facebook): Greenville Zoo Conservation Lecture on WNS in bats: 18 likes, 10 shares; Daily Bat Facts shared with Greenville Zoo: 168 Likes, 15 shares over 7 days; No WNS detected in 3 recently tested counties: Abbeville, McCormick, Calhoun: 129 likes, 12 shares; Bat in Home post: 21 Likes, 13 shares; Bat Week Proclamation: 77 Likes, 48 shares; Bat Week Bat Hero: 20 Likes, 9 shares; WSPA TV spot: 35 likes, 10 shares; Celebrate Batman - And Help Bats!, Soundwave Comics event and bat trivia night, 26 likes, 11 shares.

Significant deviations:

There were no significant deviations.

Objective: Review, circulate, and update the SC Bat Conservation and SC WNS Response Plans.

Accomplishments:

The SC WNS Response Plan was edited and updated on the [SCDNR WNS website](#), along with the newer WNS in SC map pdf, on April 11, 2019 and July 31, 2019. The SC Bat Conservation Plan was [updated online](#) on July 16, 2019. The hourly technician played a significant role in these edits,

specifically for updates regarding the Northern long-eared bat and its range, the spread of *Pd* in SC and across the US, and other species specific WNS information.

Significant deviations:

There were no significant deviations.

Objective: Keep staff and partners current by participating in WNS partner conference calls, the 2019 WNS Workshop, and the 2019 Southeastern Bat Diversity Network (SBDN) Meeting.

Accomplishments:

The SCDNR bat biologist and WNS technician participated in monthly WNS partner conference calls and watched the WNS Webinar on June 20 and June 27. The SCDNR bat biologist attended the SBDN meeting in Jacksonville, FL from Feb 20 – 22, 2019.

Significant deviations:

Because the WNS meeting was made into a webinar, funds set aside for the bat biologist to travel to the WNS meeting were not used.

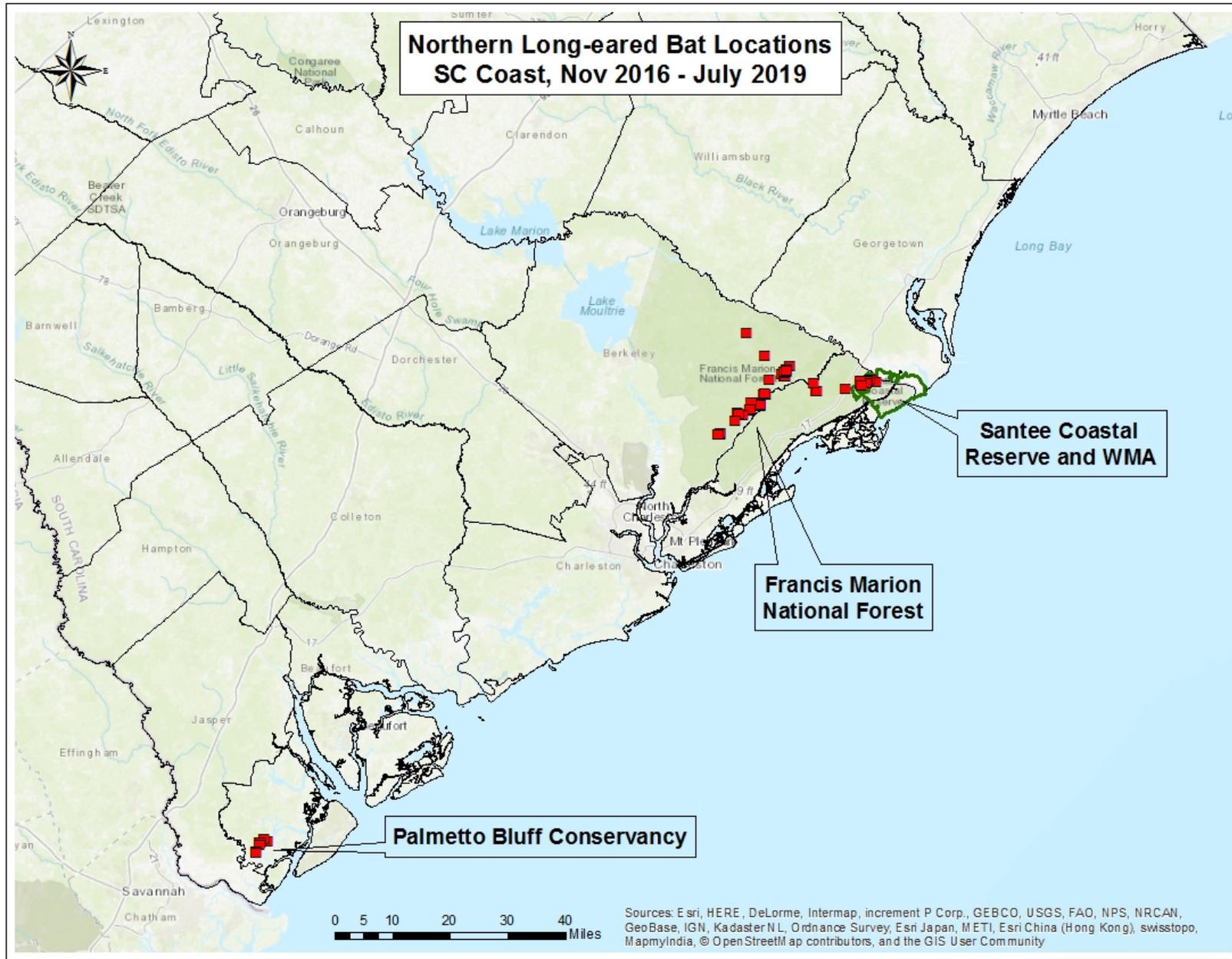
Literature Cited:

Estimated Federal Cost: \$28,000

Recommendations:

Close the grant. Beyond the life of this grant, we recommend continued monitoring of small hibernacula where tri-colored bats seem to be persisting 5 years post WNS, as well as hibernacula that harbor hundreds if not thousands of bats such as the Southeastern bats at Santee State Park. We also recommend continued mist netting efforts to learn more about the distribution and status of South Carolina's bat populations specifically for species most at risk from WNS such as the Northern long-eared bat and tri-colored bat which appear to be surviving thus far on our coastal plain.

Appendix A: Overview of Northern long-eared bat locations since first discovered on the South Carolina coast in 2016.



Appendix B: Wildlife Control Operator letter and SC Bat ID guide sent with WNS

South Carolina Department of Natural Resources



Alvin A. Taylor

Director

Emily C. Cope

Deputy Director for
Wildlife and Freshwater Fisheries

124 Wildlife Drive
Union, SC 29379

April 10, 2019

Dear Wildlife Control Professional,

My name is Jennifer Kindel, Wildlife Biologist with the SCDNR. I am writing you/your company because you're listed on the SCDNR website as a wildlife control specialist that handles nuisance bat jobs. This letter, as well as the most current National White-nose Syndrome (WNS) Decontamination Protocol and SC Bat ID guide, is being sent as a courtesy to help keep you informed on bat related issues in South Carolina. The most updated WNS Fact Sheet remains June 2018, so we will include the newer version when available in our next letter.

- The **September 13, 2018** version of the National WNS Decontamination Protocol continues to be the most recent. The last revision reflected the current known distribution of *Pd* (the fungus that causes WNS) in the US and recent lab testing results of previously approved decontamination agents. Hibiclens is removed from the list until further testing due to mixed results in recent tests, and the product "Accel" has been renamed "Rescue." See enclosed National WNS Decontamination Protocol, also available at the www.whitenosesyndrome.org website. Select the heading "What Can I Do" and "Decontamination."
- Ten SC counties remain positive for either WNS or *Pd*. Oconee, Pickens, and Richland are WNS+ and Cherokee, Greenville, Lancaster, Laurens, Spartanburg, Union, York are *Pd*+ (WNS suspect). See <https://www.whitenosesyndrome.org/static-page/where-is-wns-now>.
- Other counties may also be positive, so precautions should be followed to prevent spreading the fungus between sites. Please consult the included WNS decontamination guidelines for treating materials used on bat exclusions. Please do not move bat exclusion materials between states. Never move bats to new locations; you may accidentally speed the spread of WNS. Please periodically check the national WNS website for updates: <https://www.whitenosesyndrome.org/>
- Acceptable Management Practices for Bat Control Activities in Structures - A Guide for National Wildlife Control Operators is still available on the www.whitenosesyndrome.org website. Just search for "nuisance wildlife control" using the magnifying glass icon in the upper right-hand corner of the website. NWCOA Bat Standards courses are periodically offered in SC, so keep an eye on their event schedule at www.nwcoa.com.
- The fungus that causes WNS has been found on Brazilian free-tailed bats, a common bat found in buildings in SC. It is the only SC species with a tail that extends past the tail membrane. Evening and big brown bats are the other two species common in structures. If you see any other species, contact us or send us a picture (with face and ears visible). **While bats can certainly be a nuisance, several species are in trouble because of WNS. With your help we can better monitor their populations.** See included bat ID guide.
- The public can report known bat roosts, find out about SCDNR's citizen science project SC Bat Watch!, and view the SC Bat Conservation Plan at: <http://www.dnr.sc.gov/wildlife/bats/>

Sincerely,

Jennifer Kindel
KindelJ@dnr.sc.gov
864-419-0739

Enclosures: September 2018 National WNS Decontamination Protocol and SC Bat ID Guide

Rembert C. Dennis Building • 1000 Assembly St • P.O. Box 167 • Columbia, S.C. 29202

EQUAL OPPORTUNITY AGENCY

www.dnr.sc.gov

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SC Bat ID Guide

Many of the 14 bat species found in SC can be tough to identify due to their nocturnal nature. Take good photos when possible without disturbing bats. Sometimes, dead bats may be found at a roost. If so: take pictures of the bat, wear thick gloves to avoid direct contact, place in two Ziploc bags, transfer to a freezer, and contact Jennifer Kindel (864-419-0739, Kindeli@dnr.sc.gov) immediately. DO NOT handle live bats.

MOST LIKELY TO USE BAT BOXES:

Big Brown Bats (*Eptesicus fuscus*)



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Big brown bats are closely associated with humans, often roosting in human-made structures and commonly using buildings as hibernacula. It is the 3rd largest bat in SC. Big brown bats have a relatively heavy body, black ears and wing membranes, and a large head with a broad nose and powerful jaw. The pelage (fur) is dark above and light below and varies from glossy dark brown to pale. The ears and tragus are short and rounded. They can be found throughout the state. Little brown bats are considerably smaller with pointier ears and a small muzzle. Evening bats look very similar to big brown bats but are smaller.



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Brazilian/Mexican Free-tailed Bats (*Tadarida brasiliensis*)

This species is the easiest bat to identify in South Carolina. It is the only bat with a tail that extends beyond the tail membrane. The upper lip of this species is strongly wrinkled, the blackish ears are short and nearly square, and the short, velvety pelage is dark brown to dark gray. In the past, Brazilian free-tailed bats were found primarily south of the Piedmont region, but in recent years they have been commonly recorded into the upper Piedmont.

MORE LIKELY IN BUILDINGS THAN BOXES:

Evening Bats (*Nycticeius humeralis*)



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The evening bat is a medium sized bat with dark brown pelage above and paler below, generally with light ash-gray hair tips on the dorsal area. The bats are found statewide. This bat is just over 2 inches in length. This species has a short, broad skull and the ears are short and rounded. In South Carolina, it is common throughout the majority of the state.

Rafinesque's Big-eared Bat (*Corynorhinus rafinesquii*)



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Rafinesque's big-eared bat is a medium sized bat with ears that measure 1.5 inches long. Another distinctive feature of this species are the facial glands located on either side of the nose. The pelage is a gray brown to dark brown above and whitish with dark rooted hairs below, and the hair on the claws extend past the toes. This species has been found in all parts of SC other than the Piedmont region.

OTHER SPECIES KNOWN TO ROOST IN BOXES, BUT MUCH LESS LIKELY TO FIND:

Eastern Small-footed Bats (*Myotis leibii*)



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The eastern small-footed bat is the smallest bat in South Carolina. This species is a small brown bat with a black mask, black ears, and distinctively small feet measuring only 0.2 to 0.3 inches. The pelage is black at the root with glossy brown on the tips, and is dark on the back and whitish to buff on the belly. The wing and tail membranes, as well as the muzzle, are a dark chocolate color. This species has short, broad wings with rounded wingtips. In SC, this species is only found in the Blue Ridge region.

Little Brown Bats (*Myotis lucifugus*)



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This species is scarce in the southern part of its range. The little brown bat is small to medium sized with a pelage of dark brown to cinnamon-buff with long glossy tips above, and pale gray to buffy below. The ears and membranes of the wing and tail are dark brown to black. The ears are narrow and pointed.

Northern Long-eared Bat (*Myotis septentrionalis*)



© MerlinTuttle.org

The northern long-eared bat is a medium sized bat with short, broad wings. Its pelage is light brown to gray brown on its back and pale grayish brown to pale brown below. The ears and membranes of the wing and tail are slightly darker brown than the dorsal pelage. The ears are narrow and pointed, and the long tragus is pointed. In SC, this species is primarily found in the Blue Ridge Mountains, but there are also some reports on the coastal plain.

Southeastern Bat (*Myotis austroriparius*)



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The southeastern bat is a small to medium sized bat. It can vary in color, but generally, the pelage is dark at the base with whitish tips, and is thick, wooly, and relatively short. Though there are a few records of this species in the upstate, it is usually limited to the upper and lower Coastal Plain in South Carolina.

If you're completing roost counts and can't be certain which bats you have, always mark unknown.

For further information about bat species of SC, visit:

<http://www.dnr.sc.gov/wildlife/bats/SCBatConservationPlanChapter3.pdf>

To find out more about the SCDNR Bat Watch program, visit:

<http://www.dnr.sc.gov/wildlife/bats/batwatch.html>