

January 8, 2010

Document Control Desk U.S. Nuclear Regulatory Commission Washington, DC 20555-0001

VP, Nuclear Plant Development

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Subject:

Duke Energy Carolinas, LLC

William States Lee III Nuclear Station - Docket Nos. 52-018 and 52-019

AP1000 Combined License Application for the William States Lee III Nuclear Station Units 1 and 2 Response to Request for Additional Information

Ltr# WLG2010.01-01

References: Letter from J.M. Muir (NRC) to B.J. Dolan (Duke Energy), Request for Additional Information Regarding the Environmental Review of the Combined License Application for William States Lee III Nuclear Station, Units 1 and 2, dated August 21, 2008

> Letter from B.J. Dolan to Document Control Desk, Duke Energy Carolinas, LLC, William States Lee III Nuclear Station - Docket Nos. 52-018 and 52-019 AP1000 Combined License Application for the William States Lee III Nuclear Station Units 1 and 2, Response to Request for Additional Information, Ltr# WLG2009.12-07, dated December 11, 2009

This letter provides supplemental information to the Duke Energy response to the Nuclear Regulatory Commission's (NRC) request for additional information (RAI) included in the referenced letter:

RAI 89, Ecology

The response to this NRC request is addressed in the enclosure which also identifies any associated changes that will be made in a future revision of the William States Lee III Nuclear Station application.

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If you have any questions or need any additional information, please contact Peter S. Hastings, Nuclear Plant Development Licensing Manager, at 980-373-7820.

Bryan J. Dolan Vice President

Nuclear Plant Development

Enclosure:

1) Supplemental Response C to RAI 89, Ecology

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AFFIDAVIT OF BRYAN J. DOLAN

Bryan J. Dolan, being duly sworn, states that he is Vice President, Nuclear Plant Development, Duke Energy Carolinas, LLC, that he is authorized on the part of said Company to sign and file with the U. S. Nuclear Regulatory Commission this supplement to the combined license application for the William States Lee III Nuclear Station and that all the matter and facts set forth herein are true and correct to the best of his knowledge.

| Myas Ablan |
|----------------------------------------------------|
| Bryan J. Dolan |
| Subscribed and sworn to me on <u>faway</u> 8, 2010 |
| L'NSlarp |
| Notary Public / // |
| My commission expires: <i>April</i> 19, 2010 |



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xc (w/o enclosure):

Loren Plisco, Deputy Regional Administrator, Region II Stephanie Coffin, Branch Chief, DNRL Robert Schaaf, Branch Chief, DSER

xc (w/ enclosure):

Michelle Moser, Project Manager, DSER Brian Hughes, Senior Project Manager, DNRL Enclosure No. 1 Page 1 of 1

Duke Letter Dated: January 8, 2010

Lee Nuclear Station Response to Request for Additional Information (RAI)

RAI Letter Dated: August 21, 2008

Reference NRC RAI Number: ER RAI-89 Supplement C

NRC RAI:

Provide information regarding the biota of the site, particularly within the construction footprint. In addition, provide information on the methodology used during associated fieldwork, and maps (GIS layers preferred) of all areas investigated, including sampling/observation points and locations of features of significance to the survey.

In a follow-up teleconference, NRC requested copies of the herpetological surveys species lists by location.

Duke Energy Response:

Ecological surveys were submitted as part of the previous responses to RAI-89 (Letters WLG2008.11-19, and WLG2009.12-07).

Species lists for each survey, providing species found at each location, are attached to this enclosure.

Associated Revisions to the Lee Nuclear Station Combined License Application:

No COLA revisions have been identified with this response.

Associated Attachments:

| Attachment 89SC-1 | Map and Species List – | Herpetological Survey | Species by Location, Lee Nuclear |
|-------------------|------------------------|-----------------------|----------------------------------|
|-------------------|------------------------|-----------------------|----------------------------------|

Station, 2009

Attachment 89SC-2 Map and Species List – Herpetological Survey Species by Location, Lee Nuclear

Station Rail Corridor, 2009

Attachment 89SC-3 Map and Species List – Herpetological Survey Species by Location, London

Creek

Enclosure No. 1

Duke Letter Dated: January 8, 2010

Attachment 89SC-1

Species List

Map and Species List

Herpetological Survey Species by Location, Lee Nuclear Station, 2009

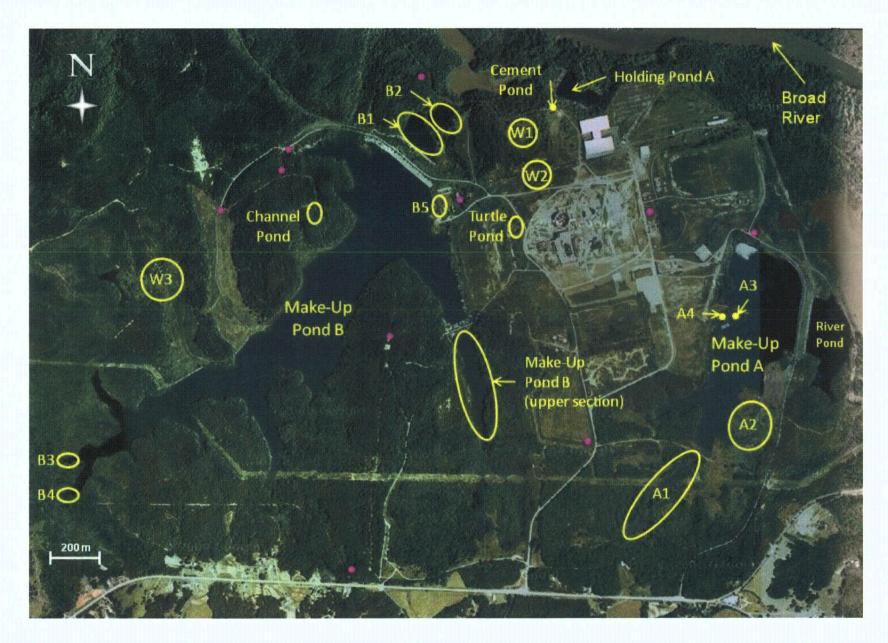


Figure 1. Map of the Lee Nuclear Station with all study sites indicated in yellow. Pink dots represent an amphibian and/or reptile observation that was recorded outside of one of the study sites.

| Scientific Name | Common Name | Status | Listing | Pond A | A1 | A2 | A3 | A4 | Pond B | 81 | B2 : | B3 | B4 | B5 | W1 | W2 | W3 | Turtle Pond | Cement Pond | Channel Pond | Other | Museum Record/ Vicinity | A | bundances |
|-----------------------------------------|---------------------------------|-------------|--------------|-------------|----------|--------------------------------------------------|--------------|-------------|----------|----------------|--------------------------------------------------|---------------------------------------|--------------------------------------------------|----------------|--------------|----------|--------------------------------------------------|----------------|--------------------------------------------------|--------------------------------------------------|-----------------------------------------------|-------------------------------|-------------|--------------|
| AMPHIBIANS | | | | | | | | | | | | | | | | | | | | | | | | |
| Acris crepitans | Northern cricket frog | Recorded | SCSC | | x | x | | | x | x | х | | x | x | x | × | x | | | × | х | Yes (CHA) | A | bundant |
| Bufo americanus | American toad | Recorded | | | x | x | | | | x | x | | x | x | | | | х | T | | × | Yes (NCSM) | Co | оттоп |
| Bufo fowleri | Fowler's toad | Recorded | <u> </u> | | х | | | | _ | x | x | | | | x | x | × | | | | | Yes (NCSM) | AÌ | bundant |
| Gastrophryne carolinensis | Eastern narrowmouth toad | Recorded | ļ_, | | | | | | | | | | | | x | х | x | | 3 | | x | | Co | ommon |
| Hyla chrysoscelis | Cope's gray treefrog | Recorded | <u> </u> | | x | | | | x | x | | | | | x | × | x | | | | | Yes (CHA) | . <u>A</u> | bundant |
| Hyla cinerea | Green treefrog | Recorded | <u> </u> | | x | | | | | x | x | | | | x | x | × | | | | | | A | bundant |
| Hyla versicolor | Gray treefrog | Potential | | | | | | | | | | | | | | | | | | | | | | |
| Pseudacris crucifer | Spring peeper | Recorded | | | x | х | x | | | х | x | | Ī | | х | х | x | x | | | | | A | bundant |
| Pseudacris feriarum | Upland chorus frog | Recorded | | | x | x | | | | х | | x | | | x | х | х | x | | | | Yes (MPM, NCS | M) A | bundant |
| Rana catesbeiana | Bullfrog | Recorded | | | | | | | | x | x | | | x | x | x | x | X | , x | | х | Yes (NCSM) | Al | bundant |
| Rana clamitans | Green frog | Recorded | | | x | x | 1. | | | х | × | | | | х | - x | x | | , | | | Yes (NCSM) | Al | bundant |
| Rana palustris | Pickerel frog | Recorded | SCSC | | х | x | | | | x | × | | x | | × | | x | x | | | | Yes (NCSM) | Co | ommon |
| Rana sphenocephala | Southern leopard frog | Recorded | | | x | x | × | | | | x | x | | | x | x | х | | | | | | Al | bundant |
| Scaphiopus holbrookii | Eastern spadefoot toad | Probable | | | | | | | | | | | | | | | | | 1 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Ambystoma maculatum | Spotted salamander | Recorded | | | x | x | | | | | | | x | x | x | | | | - | | | Yes (NCSM) | Co | ommon |
| Ambystoma opacum | Marbled salamander | Recorded | | | | x | | | | | | | | x | x | | x | | Ϊ. | | | Yes (CHA) | | omewhat Rare |
| Desmognathus fuscus | Northern dusky salamander | Recorded | | | | | | | | | | × | | T | | | | | | T | Ì | Yes (CHA,NCSN | | are |
| Eurycea cirrigera | Southern two-lined salamander | Potential | | | | | | | | | | | | | | ĺ | | i | | | i | Yes (NCSM) | | |
| Eurycea guttolineata | Three-lined salamander | Recorded | | | | | | | | | | | | | T | | | | · . | İ | x | Yes (CHA) | Ra | are |
| Gyrinophilus porphryticus | Spring salamander | Probable | | | | | | | | | İ | İ | | | | | <u> </u> | 1 | | | 1 | Yes (NCSM) | | |
| Hemidactylium scutatum | Four-toed salamander | Potential | | | | | | İ | | | 1 | | | İ | | | i | 1 | 1 | 1 | i | 1 | 1 | |
| Notophthalmus viridescens | Red spotted newt | Recorded | | | x | x | | | 1 | | | i | 1 | | x | | x | | | | 1 | | Co | ommon |
| Plethodon chlorobryonis | Atlantic coast slimy salamander | Recorded | | | <u> </u> | | <u> </u> | | | | | 1 | | † | | | <u> </u> | | 1 | | x | | | are |
| Pseudotriton montanus | Mud salamander | Potential | | | | <u> </u> | | | | <u> </u> | i | | | 1 | | 1 | <u> </u> | | <u> </u> | <u> </u> | | 1 | 1 1 | |
| Pseudotriton ruber | Red salamander | Probable | | | | | | | 1 | | İ | | | | i | 1 | - | | | | | Yes (NCSM) | | |
| | | | <u> </u> | | <u> </u> | | | | 1 | | i | - | | 1 | † | | | | | - | 1 | Tes (Nestri) | | |
| REPTILES | | i | | İ | | | | | | | | <u> </u> | - | \ - | | <u> </u> | | - | - | 1 | | - | | |
| Apalone spinifera | Spiny softshell turtle | Potential | | | | | | | 1 | <u> </u> | | <u> </u> | | 1 | | - | - | - | | | | | | |
| Chelydra serpentina | Common snapping turtle | Recorded | | | † | | | | <u> </u> | x | ļ | | | | - | <u> </u> | | | | + | | Yes (CHA) | c, | omewhat Rare |
| Chrysemys picta | Painted turtle | Recorded | | | х | | | | | X | | | 1 | | + | + | | | | х | 1 | res (CIA) | | ommon |
| Kinosternon subrubrum | Eastern mud turtle | Recorded | | X | | | | | | x | X | - | | x | · | 1 | | · | | ^ | | | | |
| Pseudemys concinna | Eastern river cooter | Recorded | | <u> </u> | | | - | <u> </u> | | x | X | | - | * | | | | - | 1 | | <u>i </u> | | | ommon |
| Sternotherus odoratus | Common musk turtle | Recorded | | - | | | 1 | 1 | - | ^ | | - | | 1 | 1 | | - | | | | 1 | - | | omewhat Rare |
| Terrapene carolina | Eastern box turtle | Recorded | <u> </u> | | 1 | | | | | | - | | , x | 1 | <u> </u> | <u> </u> | × | | - | Х | | V (NICCN 1) | | are |
| Trachemys scripta | Yellow-bellied slider | Recorded | ! | x | | | | | X | x | x | <u> </u> | -i^ | <u> </u> | - | | X | - | ' | + | 1 | Yes (NCSM) | | ommon |
| Traditionly, sor qua | 7 chow befined studen | Recorded | 1 | | | <u> </u> | | | 1 | <u> </u> | <u> </u> | <u> </u> | | X | | 1 | + | + | X | X | | Yes (CHA) | . <u>Al</u> | bundant |
| Anolis carolinensis | Green anole | Recorded | 1 | + | | | <u> </u> | | - | <u> </u> | 1 | - | 1 | | 1 | + | - | | <u> </u> | 1 | <u>i</u> | - 40111 | <u>;</u> | |
| Aspidoscelis sexlineatus | Six-lined racerunner | Probable | - | | 1 . | <u> </u> | | <u> </u> | X | X | <u> </u> | - | | | 1 | <u> </u> | | | X | | 1 | Yes (CHA) | i CC | ommon |
| Eumeces fasciatus | Five-lined skink | Probable | | | <u> </u> | | - | - | | <u> </u> | <u> </u> | | | 1 | | 1 | _ | - | | | | + | | |
| Eumeces jusciulus Eumeces inexpectatus | Southeastern five-lined skink | Potential | <u> </u> | | 1 | l l | ļ | | | 1 | ļ | - | | | ļ | <u> </u> | _ | | | - | 1 | Yes (NCSM) | | |
| Eumeces laticeps | Broadhead skink | Potential | | | 1 | <u> </u> | | 1 | 1 | <u> </u> | ļ | <u> </u> | - | 1 | | 1 | - | | 1 | 1 | <u> </u> | - | | |
| Ophisaurus attenuatus | Slender glass lizard | Potential | | : | 1 | 1 | 1 | - | | | 1 | | -! | - | 1 | 1 | - | 1 | | 1 | <u>i</u> | | - 1 | |
| Sceloporus undulatus | | | · | | 1 | | | - | | 1 | - | - | : | - | 1 | 1 | | - | - | 1 | ! | | : | |
| Scincella lateralis | Fence lizard | Recorded | | | 1 | 1 | 1 | | | | 1 | X | | 1 | 1 | | 1 | | | 1 | | Yes (NCSM) | | are |
| Scinceita tateratis | Ground skink | Recorded | | 1 | | | | | | | <u> </u> | - | - | | ļ | | | - | _ | ļ | X | Yes (CHA) | !Ra | are |
| Audintus Israel | Connorbood | In the Late | | | 1 | | 1 | 1 | - | - | 1 | - | 1 | - | | | | - | <u> </u> | | <u> </u> | | | |
| Agkistrodon contortrix | Copperhead | Probable | | | | | - | | 1 | 1 | | | - | ļ | | 1 | | | 1 | | ! | Yes (NCSM) | | |
| Carphophis amoenus | Worm snake | Probable | | i | | | | | <u> </u> | ļ | - | | - | - | 1 | | | | - | | [| Yes (NCSM) | | |
| Cemophora coccinea | Scarlet snake | Potential | <u>.</u> | | <u> </u> | 1 | | | | | <u> </u> | | | 1 | | | ļ | | 1 | 1 | ! | 1 | | |
| Coluber constrictor | Black racer | Recorded | | - | - | | <u> </u> | - | ļ | | | - | | .i | <u> </u> | | | | | | . x | Yes (NCSM) | <u>5c</u> | omewhat Rare |
| Protalus horridus | Canebrake rattlesnake | | SCSC | | <u> </u> | 1 | - | | | | | - | 1 | | | | | | ļ | | <u> </u> | | | |
| Diadophis punctatus | Ringneck snake | Probable | ļ | _i | | <u> </u> | | | | <u> </u> | <u> </u> | 1 | - | <u> </u> | | 1 | . | | | | 1 | Yes (NCSM) | I | |
| Elaphe guttata | Corn snake | Potential | | 1 | | | 1 | - | | | <u> </u> | | - | ļ | | | _ | | | | <u> </u> | 1 | | |
| Elaphe obsoleta | Rat snake | Recorded | <u> </u> | | | <u> </u> | <u> </u> | | | <u> </u> | <u> </u> | - | | | | | | | | | x | Yes (NCSM) | Sc | omewhat Rare |
| Heterodon platirhinos | Eastern hognose snake | Probable | | | - | | | | | | | | - | | - | | | | 1 : | | | | | |
| Lampropeltis calligaster | Mole kingsnake | Potential | 1 | <u> </u> | | | | | | | | | ; | | | | | | | | : | | | |
| ampropeltis getula | Eastern kingsnake | Probable | 1 | [| | | | | | | Ϊ | | | | | | | | | | | Yes (NCSM) | | |
| ampropeltis triangulum | Scarlet kingsnake-milksnake | Potential | SCSC | | | 1 | | | | | | | | | 1 | | | | | | : | | | |
| Masticophis flagellum | Coachwhip | Potential | | | : | | | | | | <u> </u> | · · · · · · · · · · · · · · · · · · · | | | - | ; | | : | , . | : | *************************************** | | ~~~ | : |
| lerodia sipedon | Northern watersnake | Recorded | | .: | | | | | i x | 1 | , | | | | | | | 1 | 1 | | X | I | Sc | omewhat Rare |
|)pheodrys aestivus | Rough green snake | Probable | | | 1 | 1 | 1 | | 1 | | ! | | | 1 | T | 1 | | 1 | | 1 | | Yes (NCSM) | | |

| Scientific Name | Common Name | Status | Listing | Pond A | A1 | A2 | А3 | A4 | Pond B | B1 | B2 | B3 | B4 | 85 | W1 | W2 | W3 | Turtle Pond | Cement Pond | Channel Pond | Other | Museum Record/ Vicinity | Abundance | :es |
|------------------------------------|----------------------------|------------|-------------|------------|----|----|----|----|--------|----|----|----|----|----|----|----|----|----------------|----------------|-----------------|-------|-------------------------------|-----------|---------|
| Pituophis melanoleucus | Pine snake | Potential | SCSC | | | | | | | | | | | | | | | | | | | | | T |
| Regina septemvittata | Queen snake | Probable | | | | | | | | | | | | | | | | | T. | | | | | 1 |
| Sistrurus miliarius | Pigmy rattlesnake | Potential | SCSC | | | | | | | | | | | | | | | | | | | | | |
| Moreria dekayi | Brown snake | Probable | | | | | | | | | | ŀ | | | | | | | | | | Yes (NCSM) | | |
| Storeria occipitomaculata | Redbelly snake | Probable | | | | | | | | | | | | | | | | | | | | | | |
| l'antilla coronata | Southeastern crowned snake | Probable | | | | | | | | | | | | | | | | | | | | | | |
| hamnophis sauritus | Ribbon snake | Potential | | | | | | | | | | | | | | | | | | | | | | T |
| Thamnophis sirtalis | Garter snake | Probable | | | | | | | | | | | | | | | | | | | | | | |
| ⁷ irginia valeriae | Smooth earth snake | Probable | | , | | | | | | | | | | | | | Ì | | | | | | | |
| Virginia striatula | Rough earth snake | Potential | | | | | | | | | | | | | | | | | | | | | | 1 |
| CSC=Special Concern in South Carol | lina | | | | | | | | | | | | | | | | | | | | | | | <u></u> |
| CHA=Carolina Herp Atlas | | Rare= 1 ob | servance | _ | | | | | | | | | | | | | - | | | | | | | + |
| APM=Milwaukee Public Museum | | Somewhat | Rare= 2 obs | ervances | | | | | | | | | | | | | | | | | | | | 1 |
| ICSM=North Carolina State Museus | m | Common= | 3-7 observa | nces | | | | | | | | | | | Ï | | | | | | | | | 1 |
| 71.40 | | Abundant= | 8 or more o | bservances | | | | 1 | | | | | | | | | | | | | | | i | |

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Enclosure No. 1

Duke Letter Dated: January 8, 2010

Attachment 89SC-2

Species List

Map and Species List

Herpetological Survey Species by Location, Lee Nuclear Station Rail Corridor, 2009

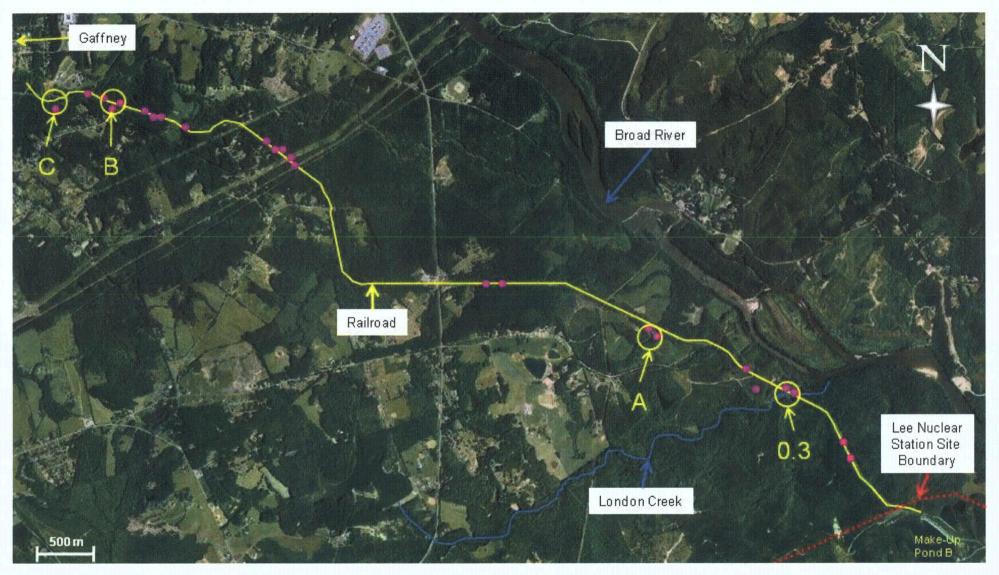


Figure 1. Map of the Lee Nuclear Station railroad with specific study sites circled and labeled. Pink dots represent all amphibian and/or reptile observations, keeping in mind that there can be several records for each dot. Note that study site 0.3 is where London Creek intersects with the railroad bed.

| Scientific Name | Common Name | Status | Listing | А | В | С | *Site 0.3 | Other | Museum Record/ | Abundances | |
|---------------------------|---------------------------------|------------|-------------|---------------|--------------|-----------------------------------------|--------------|----------|-------------------|---------------|-----------------------------------------|
| AMPHIBIANS | | | | - | | · · · · · · · · · · · · · · · · · · · | - | | Vicinity | | |
| Acris crepitans | Northern cricket frog | Recorded | SCSC | X | x | | x | | Yes (CHA) | Abundant | |
| Bufo americanus | American toad | Recorded | 3030 | - | | | x | × | Yes (NCSM) | Somewhat Rare | |
| Bufo fowleri | Fowler's toad | Recorded | | - | | | - x | | Yes (NCSM) | Common | |
| Gastrophryne carolinensis | Eastern narrowmouth toad | Recorded | | | | | x | | Tes (Nestri) | Somewhat Rare | |
| Hyla chrysoscelis | Cope's gray treefrog | Recorded | | | | | x | | Yes (CHA) | Rare | |
| Hyla cinerea | Green treefrog | Potential | | | | | | | 1.65 (5.11.) | | |
| Hyla versicolor | Gray treefrog | Potential | | , | | · | | | | | |
| Pseudacris crucifer | Spring peeper | Recorded | | | x | | x | | | Common | |
| Pseudacris feriarum | Upland chorus frog | Recorded | | | | · | x | | Yes (MPM, NCSM) | Somewhat Rare | |
| Rana catesbeiana | Bullfrog | Recorded | ļ | | | <u> </u> | x | х | Yes (NCSM) | Abundant | |
| Rana clamitans | Green frog | Recorded | 1 | | | | X | х | Yes (NCSM) | Abundant | |
| Rana palustris | Pickerel frog | Recorded | SCSC | | | · | | × | Yes (NCSM) | Common | |
| Rana sphenocephala | Southern leopard frog | Recorded | | X | | ļ | × | x | | Abundant | |
| Scaphiopus holbrookii | Eastern spadefoot toad | Potential | | | ļ | | | | | | |
| Scapmopus notoroom | | - Colonial | | | | | | | | | |
| Ambystoma maculatum | Spotted salamander | Potential | - | | | | | | Yes (NCSM) | | |
| Ambystoma opacum | Marbled salamander | Recorded | | | | | x | l | Yes (CHA) | Rare | |
| Desmognathus fuscus | Northern dusky salamander | Recorded | | | × | × | x | l | Yes (CHA,NCSM) | Abundant | |
| Eurycea cirrigera | Southern two-lined salamander | Recorded | | | | | x | - | Yes (NCSM) | Rare | |
| Eurycea guttolineata | Three-lined salamander | Potential | | | | | | | Yes (CHA) | | |
| Gyrinophilus porphryticus | Spring salamander | Potential | | <u> </u> | | | | | Yes (NCSM) | | |
| Hemidactylium scutatum | Four-toed salamander | Potential | | | | · · · · · · · · · · · · · · · · · · · | | | | | |
| Notophthalmus viridescens | Red spotted newt | Recorded | | | | <u> </u> | × | | | Rare | |
| Plethodon chlorobryonis | Atlantic coast slimy salamander | Recorded | | - | | | x | x | | Somewhat Rare | |
| Pseudotriton montanus | Mud salamander | Potential | | - | - | | | | | | |
| Pseudotriton ruber | Red salamander | Recorded | | - | x | | | | Yes (NCSM) | Rare | *************************************** |
| • | | | | | | | | | | | |
| REPTILES | | | | | | | | | | | |
| Apalone spinifera | Spiny softshell turtle | Potential | | | | | | | | | |
| Chelydra serpentina | Common snapping turtle | Recorded | | · x | | | | | Yes (CHA) | Somewhat Rare | |
| Chrysemys picta | Painted turtle | Recorded | | x | | | | | | Somewhat Rare | |
| Kinosternon subrubrum | Eastern mud turtle | Recorded | - | | | | x | | | Rare | - |
| Pseudemys concinna | Eastern river cooter | Potential | <u> </u> | | | | | | | | |
| Sternotherus odoratus | Common musk turtle | Potential | | | | | | | | | |
| Terrapene carolina | Eastern box turtle | Recorded | | | | | × | × | Yes (NCSM) | Common | |
| Trachemys scripta | Yellow-bellied slider | Recorded | | х | | | | | Yes (CHA) | Somewhat Rare | |
| | | | | | | - | | | | | |
| Anolis carolinensis | Green anole . | Recorded | | X | | | x | | Yes (CHA) | Common | |
| Aspidoscelis sexlineatus | Six-lined racerunner | Recorded | - | | | | × | | | Common | |

| - | | | | | | | | | Museum | | |
|--------------------------------------|-------------------------------|------------|--------------|------------|---|--------------|-----------|---------------------------------------|------------|-------------|------|
| Scientific Name | Common Name | Status | Listing | Α | В | С | *Site 0.3 | Other | Record/ | Abundand | es |
| | | | | | | | | | Vicinity | | |
| Eumeces fasciatus | Five-lined skink | Potential | | | | | | | Yes (NCSM) | | |
| Eumeces inexpectatus | Southeastern five-lined skink | Potential | | | | | | | | | |
| Eumeces laticeps | Broadhead skink | Potential | | | | | | | | | |
| Ophisaurus attenuatus | Slender glass lizard | Potential | | | | | | | | | |
| Sceloporus undulatus | Fence lizard | Recorded | | | | | | х | Yes (NCSM) | Rare | |
| Scincella lateralis | Ground skink | Probable | | | | | | | Yes (CHA) | | |
| | | | | | | | | | | | |
| Agkistrodon contortrix | Copperhead | Recorded | | | | | х | | Yes (NCSM) | <u>Rare</u> | |
| Carphophis amoenus | Worm snake | Recorded | | | | | х | х | Yes (NCSM) | Common | |
| Cemophora coccinea | Scarlet snake | Potential | | | | | | | | | |
| Coluber constrictor | Black racer | Recorded | | | | | х | х | Yes (NCSM) | Common | |
| Crotalus horridus | Canebrake rattlesnake | Potential | SCSC | | | <u> </u> | | | | | |
| Diadophis punctatus | Ringneck snake | Recorded | | | | - | х | | Yes (NCSM) | Somewhat F | Rare |
| Elaphe guttata | Corn snake | Potential | | | | | | | | | |
| Elaphe obsoleta | Rat snake | Recorded | | | | | х | × | Yes (NCSM) | Common | |
| Heterodon platirhinos | Eastern hognose snake | Probable | | | | | | | | | |
| Lampropeltis calligaster | Mole kingsnake | Potential | | | | | | | | | |
| Lampropeltis getula | Eastern kingsnake | Recorded | | | | | X | | Yes (NCSM) | Rare | |
| Lampropeltis triangulum | Scarlet kingsnake-milksnake | Potential | SCSC | | | | | | | | |
| Masticophis flagellum | Coachwhip | Potential | | | | | | | | | |
| Nerodia sipedon | Northern watersnake | Recorded | | x | | | | | | Rare | |
| Opheodrys aestivus | Rough green snake | Probable | | | | | | | Yes (NCSM) | | |
| Pituophis melanoleucus | Pine snake | Potential | SCSC | | | | | | | | |
| Regina septemvittata | Queen snake | Probable | | | | | | | | | |
| Sistrurus miliarius | Pigmy rattlesnake | Potential | SCSC | | | | | | | | |
| Storeria dekayi | Brown snake | Recorded | | | | | x ´ | | Yes (NCSM) | Rare | |
| Storeria occipitomaculata | Redbelly snake | Probable | | | | | | | | | |
| Tantilla coronata | Southeastern crowned snake | Probable | | | | | | | | | |
| Thamnophis sauritus | Ribbon snake | Probable | | | | | i | | | | |
| Thamnophis sirtalis | Garter snake | Probable | | | | | | | | | |
| Virginia valeriae | Smooth earth snake | Probable | | | | | | | | | |
| Virginia striatula | Rough earth snake | Potential | | | | | | | | | |
| SCSC=Special Concern in South Caro | lina | | | | | - | | | | | |
| CHA=Carolina Herp Atlas | | Rare= 1 ob | Servance | | | | | | | | |
| MPM=Milwaukee Public Museum | | | Rare= 2 obse | rvances | | | | | | | |
| NCSM=North Carolina State Museu | um | | 3-7 observan | | | | | | - | | - |
| 1.00.12 Troi in Carolina Giale Museu | | | 8 or more of | | | | | ATTOO | - | | |
| | | | o or more of | SCIVATICES | ļ | | | · · · · · · · · · · · · · · · · · · · | | | - |

| Scientific Name | Common Name | Status | Listing | А | В | С | *Site 0.3 | Other | Museum Record/ Vicinity | Abundances |
|-------------------|-------------|-------------|----------------|----------------|--------------|--------------|---------------|---------------|-------------------------------|------------|
| A=Thompson's Pond | | *Site 0.3 w | s studied inte | nsively in 200 | 08 and a few | times in 200 | 9, but the ma | jority of the | records are from 2008 | |
| B= Stream/seep | | | | | | | | , | | |
| C= Rocky seep | | | | | | | | | | |

Enclosure No. 1

Duke Letter Dated: January 8, 2010

Attachment 89SC-3

Map and Species List
Herpetological Survey Species by Location, London Creek

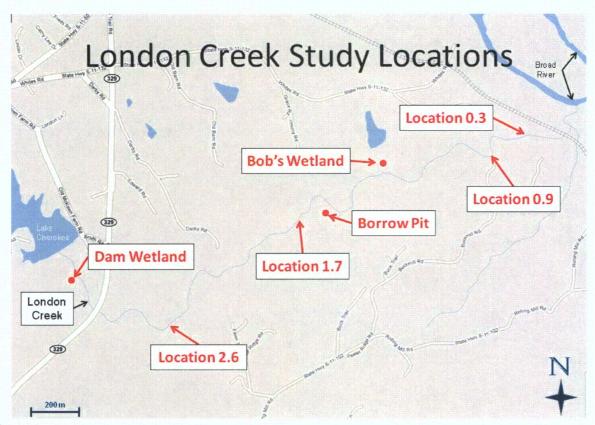


Figure 4. Map indicating the primary study locations used in our study at London Creek.

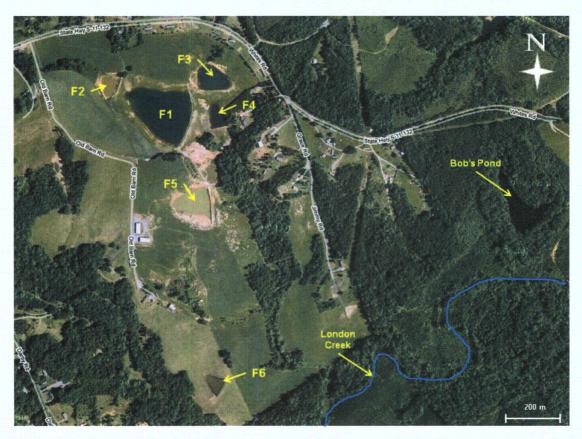


Figure 5. Map indicating locations of farm ponds in the pastureland adjacent to London Creek as well as Bob's Pond in the forested area close to the creek.

| Scientific Name | Common Name | Status | Listing | Site 0.3 | Site 0.9 | Site 1.7 | Site 2.6 | Borrow Pit | Dam Wetland | Bob's Wetland | Other | Museum Record/ (Vicinity) | Abundances |
|-----------------------------------------------|---------------------------------|-----------|---------------------------------------|------------------|----------|--------------|-------------|---------------|----------------|---------------------------------------|-------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AMPHIBIANS | | | | | | - | | | | | | | |
| Acris crepitans | Northern cricket frog | Recorded | SCSC | × | × | х | х | x | | x | | Yes (CHA) | Abundant |
| Bufo americanus | American toad | Recorded | | x | | × | | | | | х | Yes (NCSM) | Common |
| Bufo fowleri | Fowler's toad | Recorded | | × | | х | | | | | | Yes (NCSM) | Common |
| Gastrophryne carolinensis | Eastern narrowmouth toad | Recorded | | х | | | | | | | | | Somewhat Rare |
| Hyla chrysoscelis | Cope's gray treefrog | Recorded | | × | | × | | | | | | Yes (CHA) | Abundant |
| Hyla cinerea | Green treefrog | Probable | | | | | | | | | | | |
| Hyla versicolor | Gray treefrog | Potential | | | | | | | | | | | |
| Pseudacris crucifer | Spring peeper | Recorded | | × | | | × | | | | | | Common |
| Pseudacris feriarum | Upland chorus frog | Recorded | | × | | Х | х | | | x | x | Yes (MPM, NCSM) | Abundant |
| Rana catesbeiana | Bullfrog | Recorded | | × | х | х | х | | | × | | Yes (NCSM) | Abundant |
| Rana clamitans | Green frog | Recorded | | х | | X | х | х | | | | Yes (NCSM) | Abundant |
| Rana palustris | Pickerel frog | Recorded | SCSC | | | х | х | | | x | | Yes (NCSM) | Common |
| Rana sphenocephala | Southern leopard frog | Recorded | | х | - | х | x | x | | x | | | Abundant |
| Scaphiopus holbrookii | Eastern spadefoot toad | Potential | | | | | | | | | | | |
| | | | | - | | | | | | | | | |
| Ambystoma maculatum | Spotted salamander | Recorded | | | | × | | x | | x | | Yes (NCSM) | Common |
| Ambystoma opacum | Marbled salamander | Recorded | | × | | × | × | | | x | | Yes (CHA) | Abundant |
| Desmognathus fuscus | Northern dusky salamander | Recorded | | x | x | × | x | x | | | | Yes (CHA,NCSM) | Abundant |
| Eurycea cirrigera | Southern two-lined salamander | Recorded | | x | | × | × | | | | | Yes (NCSM) | Abundant |
| Eurycea guttolineata | Three-lined salamander | Probable | | | | | | | | | | Yes (CHA) | |
| Gyrinophilus porphryticus | Spring salamander | Recorded | | | | | × | | | | | Yes (NCSM) | Somewhat Rare |
| Hemidactylium scutatum | Four-toed salamander | Potential | | | | | | | | | | Tres (ites it) | - John Carrier |
| Notophthalmus viridescens | Red spotted newt | Recorded | | x | | × | | x | | × | | · . · · | Common |
| Plethodon chlorobryonis | Atlantic coast slimy salamander | Recorded | | x | | x | × | | | - × | | | Abundant |
| Pseudotriton montanus | Mud salamander | Potential | | - - | | | | | | | | | - Assertant |
| Pseudotriton ruber | Red salamander | Recorded | | - | | | x | | | | | Yes (NCSM) | Rare |
| 1 School Thou | red salamander | recorded | | - | | | | | | | | Tes (incom) | The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s |
| REPTILES | | | | | | | | | | | | 1 | |
| Apalone spinifera | Spiny softshell turtle | Potential | | - | | | | | | | | | |
| Chelydra serpentina | Common snapping turtle | Recorded | - | | | × | | | | | | Yes (CHA) | Rare |
| Chrysemys picta | Painted turtle | Potential | | | | - | | | | | | 105 (01) // | - Indic |
| Kinosternon subrubrum | Eastern mud turtle | Recorded | | × | | x | | | | | | - | Somewhat Rare |
| Pseudemys concinna | Eastern river cooter | Recorded | | ^ | | × | | | | | | | Rare |
| Sternotherus odoratus | Common musk turtle | Potential | | | | | | | | | | 1 | hore |
| Terrapene carolina | Eastern box turtle | Recorded | · · · · · · · · · · · · · · · · · · · | × | | × | × | | | | | Yes (NCSM) | Common |
| Trachemys scripta | Yellow-bellied slider | Probable | 1 | <u> </u> | | | ^- | | | | | Yes (CHA) | |
| тисненув встри | 1 Chow-bolled shidel | 1 TOURDIC | - | | | | | | | | | 1.03 (0.17) | |
| Anolis carolinensis | Green anole | Recorded | | x | | × | × | | | | | Yes (CHA) | Abundant |
| Aspidoscelis sexlineatus | Six-lined racerunner | Recorded | - | x | | | × | | | | | 1.23 (2.1.1) | Common |
| Eumeces fasciatus | Five-lined skink | Probable | | <u> </u> | | | | | | | | Yes (NCSM) | Common |
| Eumeces juscialus Eumeces inexpectatus | Southeastern five-lined skink | Potential | 1 | | | | | | | | | (1105/41) | |
| | Broadhead skink | Recorded | - | - | | | | | | | | - | Para |
| Eumeces laticeps Ophicarmus attenuatus | Slender glass lizard | Potential | - | | | X | <u></u> | <u></u> | | · · · · · · · · · · · · · · · · · · · | | | Rare |
| Ophisaurus attenuatus Sceloporus undulatus | Fence lizard | Recorded | - | | | | ļ | | | | | Yes (NCSM) | Common |
| Scincella lateralis | Ground skink | Recorded | + | | | . x | x | | | | | | Common |
| Scincella lateralis | OTOURG SKIRK | Recorded | | | | | X | ļ | | | | Yes (CHA) | Rare |

| Scientific Name | Common Name | Status | Listing | Site 0.3 | Site 0.9 | Site 1.7 | Site 2.6 | Borrow Pit | Dam Wetland | Bob's Wetland | Other | Museum Record/ (Vicinity) | Abundances |
|------------------------------------|-----------------------------|-------------|--------------|------------|-----------------------------------------|----------|----------|---------------|----------------|------------------|-----------------------------|---------------------------------|---------------|
| Agkistrodon contortrix | Copperhead | Recorded | | x | | | | | | | | Yes (NCSM) | Rare |
| Carphophis amoenus | Worm snake | Recorded | | х | | х | х | , | | | | Yes (NCSM) | Common |
| Cemophora coccinea | Scarlet snake | Potential | | | | | | | | | | | |
| Coluber constrictor | Black racer | Recorded | | х | | х | х | | | | х . | Yes (NCSM) | Common |
| Crotalus horridus | Canebrake rattlesnake | Probable | SCSC | | | | , | | | | | | |
| Diadophis punctatus | Ringneck snake | Recorded | | х | | | | _ | | | | Yes (NCSM) | Common |
| Elaphe guttata | Corn snake | Potential | | | | | | | | | | | |
| Elaphe obsoleta | Rat snake | Recorded | | × | | × | × | | | | | Yes (NCSM) | Common |
| Heterodon platirhinos | Eastern hognose snake | Probable | | | | | | | | | | | |
| Lampropeltis calligaster | Mole kingsnake | Potential | | | | | | | | | | | |
| Lampropeltis getula | Eastern kingsnake | Recorded | | x | | | | | 1 | | X | Yes (NCSM) | Somewhat Rare |
| Lampropeltis triangulum | Scarlet kingsnake-milksnake | Potential | scsc | | | | | | T | | | | |
| Masticophis flagellum | Coachwhip . | Potential | | | | | | | i | | | | |
| Nerodia sipedon | Northern watersnake | Recorded | | | *************************************** | х | X | | | | | | Common |
| Opheodrys aestivus | Rough green snake | Probable | | | | | | | | | | Yes (NCSM) | |
| Pituophis melanoleucus | Pine snake | Potential | SCSC | | | | | | | | | | |
| Regina septemvittata | Queen snake | Probable | | | | · | | | | | | | |
| Sistrurus miliarius | Pigmy rattlesnake | Potential | scsc | | | | | | | | | | |
| Storeria dekayi | Brown snake | Recorded | | х | | | | | | | - - | Yes (NCSM) | Rare |
| Storeria occipitomaculata | Redbelly snake | Probable | | | | | | | | | - transit days - re-sources | | |
| Tantilla coronata | Southeastern crowned snake | Probable | | | | | | | | | | | |
| Thamnophis sauritus | Ribbon snake | Probable | | | | | | | - | | | | |
| Thamnophis sirtalis | Garter snake | Recorded | | | | | х | , | | | | | Rare |
| Virginia valeriae | Smooth earth snake | Probable | | | | | | | | | | | |
| Virginia striatula | Rough earth snake | Potential | | | | | | | | | | | |
| SCSC=Special Concern in South Caro | lina | | | - | · · · · · · · · · · · · · · · · · · · | | | , | | | | | |
| CHA=Carolina Herp Atlas | | Rare= 1 obs | servance | | <u> </u> | | | | | | | | |
| MPM=Milwaukee Public Museum | | Somewhat I | Rare= 2 obse | rvances | | | | | | | | | ***** |
| NCSM=North Carolina State Museu | ım | Common= . | 3-7 observan | ces | | | | | | | | | |
| | | Abundant= | 8 or more o | hservances | | - | | | | | | | |

| Scientific Name | Common Name | Status | Listing | Bob's Pond | F1 | F2 | F3 | F4 | F5 | F6 | Museum Record/Vicinity | Abundances |
|---------------------------|---------------------------------|-------------|--------------------------------------------------|---------------|---------------------------------------|----------------|---------------|--------------|----------|--------------|--------------------------------------------------|---------------|
| AMPHIBIANS | | | | | | | | | | | | |
| Acris crepitans | Northern cricket frog | Recorded | SCSC | х | х | | х | х | | х | Yes (CHA) | Abundant |
| Bufo americanus | American toad | Recorded | | | | | | Ĭ | | | Yes (NCSM) | Rare |
| Bufo fowleri | Fowler's toad | Recorded | | х | | х | | x | | | Yes (NCSM) | Abundant |
| Gastrophryne carolinensis | Eastern narrowmouth toad | Recorded | | | | | | х | | | | Rare |
| Hyla chrysoscelis | Cope's gray treefrog | Recorded | | | | × | | x | | | Yes (CHA) | Somewhat Rare |
| Hyla cinerea | Green treefrog | Recorded | | | | | × | × | × | × | | Abundant |
| Hyla versicolor | Gray treefrog | Potential | | | | | | | | | | |
| Pseudacris crucifer | Spring peeper | Probable | | | | | | | | | | |
| Pseudacris feriarum | Upland chorus frog | Recorded | | | | | | | | | Yes (MPM, NCSM) | Rare |
| Rana catesbeiana | Bullfrog | Recorded | | х | | | | | | х | Yes (NCSM) | Somewhat Rare |
| Rana clamitans | Green frog | Recorded | | х | | | | | | | Yes (NCSM) | Rare |
| Rana palustris | Pickerel frog | Probable | SCSC | | · · · · · · · · · · · · · · · · · · · | | | | | | Yes (NCSM) | |
| Rana sphenocephala | Southern leopard frog | Probable | | . | İ | | | | | | | |
| Scaphiopus holbrookii" | Eastern spadefoot toad | Potential | | | | | | <u> </u> | | | | |
| | | | | | · · · · · · · · · · · · · · · · · · · | | | | | | | |
| Ambystoma maculatum | Spotted salamander | Potential | | | | | | | | | Yes (NCSM) | |
| Ambystoma opacum | Marbled salamander | Potential | | | | | | · | | | Yes (CHA) | |
| Desmognathus fuscus | Northern dusky salamander | Potential | | | | | | | | 1 | Yes (CHA,NCSM) | - |
| Eurycea cirrigera | Southern two-lined salamander | Potential | | - | | · | | | | 1 | Yes (NCSM) | |
| Eurycea guttolineata | Three-lined salamander | Potential | 1 | | | | | | | | Yes (CHA) | |
| Gyrinophilus porphryticus | Spring salamander | Potential | 1 | | i | ļ | | | i | | Yes (NCSM) | |
| Hemidactylium scutatum | Four-toed salamander | Potential | 1 | | | | | | | | 1.65 (1.651.) | |
| Notophthalmus viridescens | Red spotted newt | Probable | | | | | | | | ļ | | |
| Plethodon chlorobryonis | Atlantic coast slimy salamander | Potential | - | | | - | | | | † | | |
| Pseudotriton montanus | Mud salamander | Potential | | | | | | | <u> </u> | | | |
| Pseudotriton ruber | Red salamander | Potential . | | | | | | | | | Yes (NCSM) | - |
| | | | - | | | | | | | † | | |
| REPTILES | | | · | | | | | i | | i | | |
| Apalone spinifera | Spiny softshell turtle | Potential | | | | l | | | | l | | |
| Chelydra serpentina | Common snapping turtle | Recorded | | x | | | x | x | | | Yes (CHA) | Common |
| Chrysemys picta | Painted turtle | Recorded | 1 | - | x | × | | x | х | × | 1.03 (0.17,7) | Abundant |
| Kinosternon subrubrum | Eastern mud turtle | Recorded | 1 | × | | | | | ^ | - x | | Common |
| Pseudemys concinna | Eastern river cooter | Potential | † | | | | | <u> </u> | | | | Compon |
| Sternotherus odoratus | Common musk turtle | Recorded | <u> </u> | x | | | | | | | i | Rare |
| Terrapene carolina | Eastern box turtle | Recorded | | × | | | | <u> </u> | | - | Yes (NCSM) | Rare |
| Trachemys scripta | Yellow-bellied slider | Recorded | 1 | . x | x | x | × | ļ | × | × | Yes (CHA) | Abundant |
| | Tomas delice sines | recorded | | | | | | ļ | | | resterial | Additiont |
| Anolis carolinensis | Green anole | Probable | | - | ļ · | | - | | | | Yes (CHA) | - |
| Aspidoscelis sexlineatus | Six-lined racerunner | Probable | | | | l | | | | | | |
| Eumeces fasciatus | Five-lined skink | Potential | | | | | | <u> </u> | | | Yes (NCSM) | |
| Eumeces inexpectatus | Southeastern five-lined skink | Potential | 1 | | | | | · | | | (00 (1100)) | |
| Eumeces laticeps | Broadhead skink | Potential | | | | | | | <u></u> | | | |
| Ophisaurus attenuatus | Slender glass lizard | Potential | | | | | | | | | 1. | |
| Sceloporus undulatus | Fence lizard | Probable | | | | | | | | | Yes (NCSM) | |
| Scincella lateralis | Ground skink | Probable | | | | | J-11-1 | | | | Yes (CHA) | - |
| Jemesta Interation | Ground Skills | 11000010 | | | | | | | | | TES (CITA) | |
| | Copperhead | Probable | - | | | | | | | ļ | | - |

| Scientific Name | Common Name | Status | Listing | Bob's Pond | F1 | F2 | F3 | F4 | F5 | F6 | Museum Record/Vicinity | Abundances |
|------------------------------------|-----------------------------|-------------|-------------|---------------|----------|----|----|----|----|----|------------------------|------------|
| Carphophis amoenus | Worm snake | Probable | | | | | | | | | Yes (NCSM) | |
| Cemophora coccinea | Scarlet snake | Potential | | | | | | | | | | |
| Coluber constrictor | Black racer | Probable | | | | | | | | | Yes (NCSM) | |
| Crotalus horridus | Canebrake rattlesnake | Potential | scsc | | | | | | | | | |
| Diadophis punctatus | Ringneck snake | Probable | | | | | | | | | Yes (NCSM) | |
| Elaphe guttata | Corn snake | Potential | | | | | | | | | | |
| Elaphe obsoleta | Rat snake | Probable | | | | | | | | | Yes (NCSM) | |
| Heterodon platirhinos | Eastern hognose snake | Probable | | | | | | | | | | |
| Lampropeltis calligaster | Mole kingsnake | Potential | | | | | | | | | | |
| Lampropeltis getula | Eastern kingsnake | Probable | | | | | | | | | Yes (NCSM) | |
| Lampropeltis triangulum | Scarlet kingsnake-milksnake | Potential | scsc | | | | | | | | | |
| Masticophis flagellum | Coachwhip | Potential | | Ì | | | | | | | | |
| Nerodia sipedon | Northern watersnake | Probable | | | | | | | | | | |
| Opheodrys aestivus | Rough green snake | Probable | | | | | | | | | Yes (NCSM) | |
| Pituophis melanoleucus | Pine snake | Potential | SCSC | | | | | | | | | |
| Regina septemvittata | Queen snake | Potential | | | | | | | | | | |
| Sistrurus miliarius | Pigmy rattlesnake | Potential | SCSC | | | | | | | | | |
| Storeria dekayi | Brown snake | Probable | | | | | | | | | Yes (NCSM) | |
| Storeria occipitomaculata | Redbelly snake | Probable | | | | | | | | | | |
| Tantilla coronata | Southeastern crowned snake | Potential | | | | | | | | | | |
| Thannophis sauritus | Ribbon snake | Potential | | | | | | | | - | | |
| Thamnophis sirtalis | Garter snake | Probable | | | | | | | | | | |
| Virginia valeriae | Smooth earth snake | Potential | | | | | | | | | | |
| Virginia striatula | Rough earth snake | Potential | | | | | | | | | | |
| SCSC=Special Concern in South Caro | lina | | | | <u> </u> | | | | | | | |
| CHA=Carolina Herp Atlas | | Rare= 1 obs | ervance | | | | | | | | | |
| MPM=Milwaukee Public Museum | | Somewhat I | Rare= 2 obs | ervances | <u> </u> | | | | | | | |
| NCSM=North Carolina State Muset | um | Common= . | 3-7 observa | nces | <u> </u> | | | | | | | i |
| | 1 | Abundant= | | | | | | i | 1 | | - | |