

<i>Title:</i> TOS Site Characterization Report: Domain 03		<i>Date:</i> 09/30/2016
NEON Doc. #: NEON.DOC.003887	<i>Author:</i> R.Krauss	<i>Revision:</i> A

TOS SITE CHARACTERIZATION REPORT: DOMAIN 03

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See configuration management system for approval history.

The National Ecological Observatory Network is a project solely funded by the National Science Foundation and managed under cooperative agreement by Battelle. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

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CHANGE RECORD

REVISION	DATE	ECO#	DESCRIPTION OF CHANGE
A	09/30/2016	ECO-xxxx	Initial Release

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Figure 10 Map of the tower airshed at and TOS centroids JERC 45

Figure 11 Cumulative root mass by pit depth at JERC 50

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1 DESCRIPTION

1.1 Purpose

Domain and site-specific information collected and described here is used to inform the execution of protocols for the NEON Terrestrial Observation System (TOS), and complements the official NEON TOS data products generated from each site. In addition, the TOS spatial layout and plot allocation is described for each site within the domain.

1.2 Scope

This document includes any site specific characterization methods and the results of characterization efforts for each of the three sites in the Southeast domain. For more information about the sampling methods, reference the TOS Site Characterization Methods Document (RD[06]). The geographic coordinates for all TOS sampling locations can be found in the Reference Documents area of the NEON Data Portal and are provided with TOS data product downloads.

2 RELATED DOCUMENTS AND ACRONYMS

2.1 Applicable Documents

Applicable documents contain information that shall be applied in the current document. Examples are higher level requirements documents, standards, rules and regulations.

AD[01]	NEON.DOC.004300	EHSS Policy, Program, and Management Plan
AD[02]	NEON.DOC.001155	NEON Training Plan
AD[03]	NEON.DOC.050005	Field Operations Job Instruction Training Plan
AD[04]	NEON.DOC.000909	TOS Science Design for Ground Beetle Abundance and Diversity
AD[05]	NEON.DOC.000910	TOS Science Design for Mosquito Abundance, Diversity and Phenology
AD[06]	NEON.DOC. 000912	TOS Science Design for Plant Diversity
AD[07]	NEON.DOC.000915	TOS Science Design for Small Mammal Abundance and Diversity
AD[08]	NEON.DOC.000914	TOS Science Design for Plant Biomass, Productivity, and Leaf Area Index
AD[09]	NEON.DOC.000001	NEON Observatory Design

2.2 Reference Documents

Reference documents contain information complementing, explaining, detailing, or otherwise supporting the information included in the current document.

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RD[01]	NEON.DOC.000008	NEON Acronym List
RD[02]	NEON.DOC.000243	NEON Glossary of Terms
RD[03]	NEON.DOC.000913	TOS Science Design for Spatial Sampling
RD[04]	NEON.DOC.011034	TIS Site Characterization Report
RD[05]	NEON.DOC.001591	AOS Site Characterization Report
RD[06]	NEON.DOC.003885	TOS Site Characterization Methods
RD[07]	NEON.DOC.000481	TOS Protocol and Procedure: Small Mammal Sampling
RD[08]	NEON.DOC.014041	TOS Protocol and Procedure: Breeding Landbird Abundance and Diversity

2.3 Acronyms

Acronym	Definition
BOLD	Barcode of Life Datasystems
NLCD	National Land Cover Database

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3 DOMAIN 03 OVERVIEW: SOUTHEAST DOMAIN

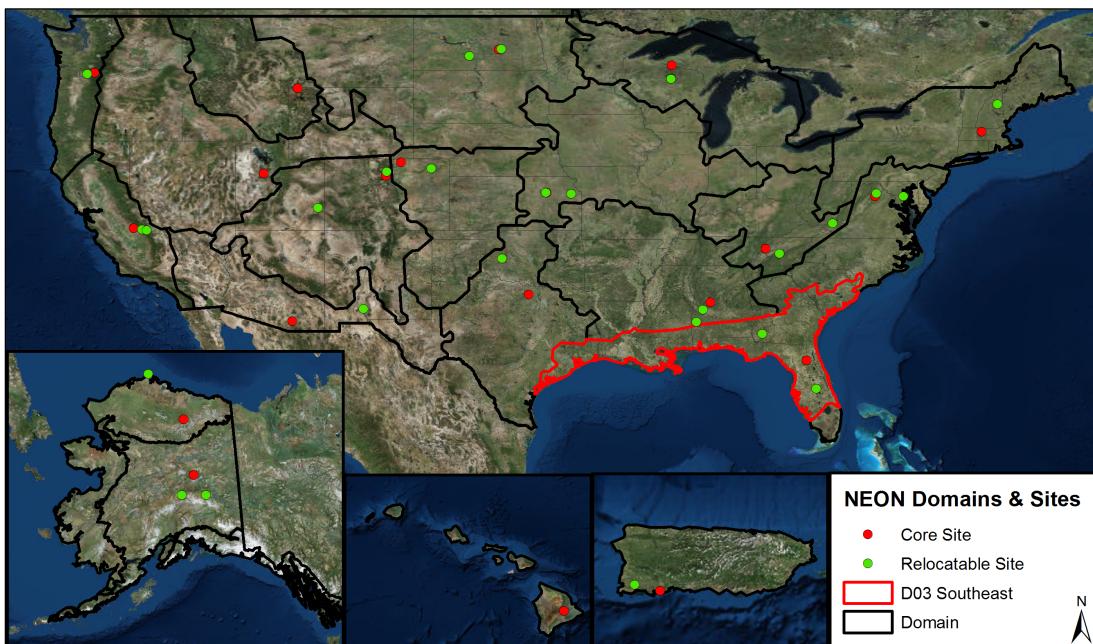


Figure 1: NEON project map with Domain 03 highlighted in red

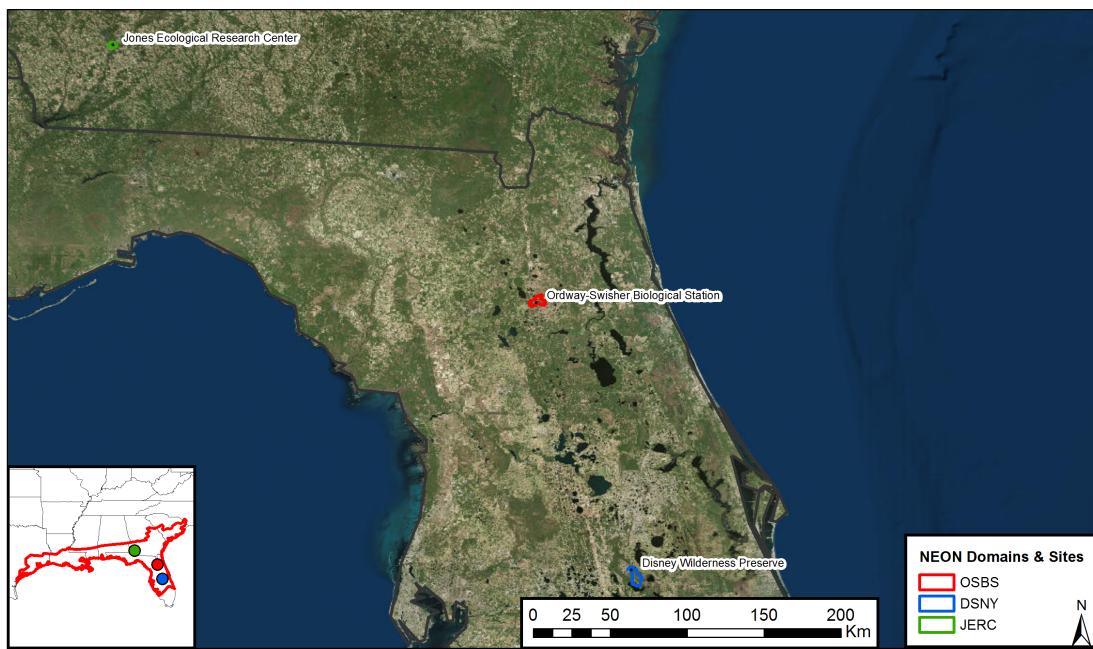


Figure 2: Site boundaries within Domain 03

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- States included in the domain: Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas
- Core site: Ordway-Swisher Biological Station
- Relocatable 1: Disney Wilderness Preserve
- Relocatable 2: Jones Ecological Research Center
- Science themes: Forest Management

4 CORE SITE- ORDWAY-SWISHER BIOLOGICAL STATION (OSBS)

The Ordway-Swisher Biological Station (OSBS) is operated by the University of Florida and comprises over 9,300 acres (38km^2). It is a year-round field station established for the long-term study and conservation of unique ecosystems through management, research, and education. The station is located approximately 20 miles east of Gainesville in Melrose (Putnam County, Florida). The OSBS site is managed to maintain intact longleaf pine ecosystem, which is one of the historically dominant forest types in the region. The longleaf pine ecosystem spans the region, with deep sandy soils through the central ridgeline from North-to-mid Florida.

- Site host: University of Florida Foundation
- Located in: Putnam County, Florida
- Area: 38 km^2
- Elevation: 20-50m
- Dominant vegetation type- Ordway-Swisher is dominated by pine and turkey oak (*Quercus laevis*) vegetation with a grass and forb groundcover. Pines are primarily Longleaf Pines (*Pinus palustris* Mill.) and Loblolly (*P. taeda*) and the dominant perennial grass is wiregrass (*Aristida stricta* Michx.). Numerous species of other perennial grasses and forbs are also present.
- General management: The forest is maintained by fire and has a relatively open structure: it is managed with prescribed burns at a frequency of 3-4 years.
- There are two aquatic arrays at Ordway-Swisher: 1) Suggs lake, a shallow surface water lake that is rich in taxa and biologically active in structure and function; and 2) Barco lake, a deep lake connected to ground water. See the AOS site characterization report for more details (RD[05]).
- Plot Selection: NEON TOS Plots were allocated across the site following NEON standard criteria and avoiding existing research.

4.1 TOS Spatial Sampling Design

TOS plots were allocated at OSBS according to a spatially balanced and stratified-random design (RD[3]). The 2006 National Land Cover Database (NLCD) was selected for stratification because of the consistent and comparable data availability across the United States. Due to a misclassification between a strata described by the NLCD (shrub scrub) and existing ground cover (turkey oak (*Quercus laevis*) and long-leaf pine (*Pinus palustris* Mill.)), TOS plots were not initially allocated to shrub scrub. The associated pixels will be reclassified with data from NEON's remote sensing platform such that this landscape component will be sampled early in NEON Operations. TOS plots that are distributed throughout the site according to the spatial design are hereafter referred to as 'Distributed Plots'. TOS plots that are randomly allocated within the airshed of the NEON Terrestrial Instrument System (TIS) tower to collect complementary data are not stratified by NLCD class; these plots are hereafter referred

to as 'Tower Plots'. The maps below depict the plot locations for the first year of NEON sampling. Some plot locations may change over time due to logistics, safety, and science requirements. Please visit the NEON website (<http://www.neonscience.org>) for updated plot locations at each site.

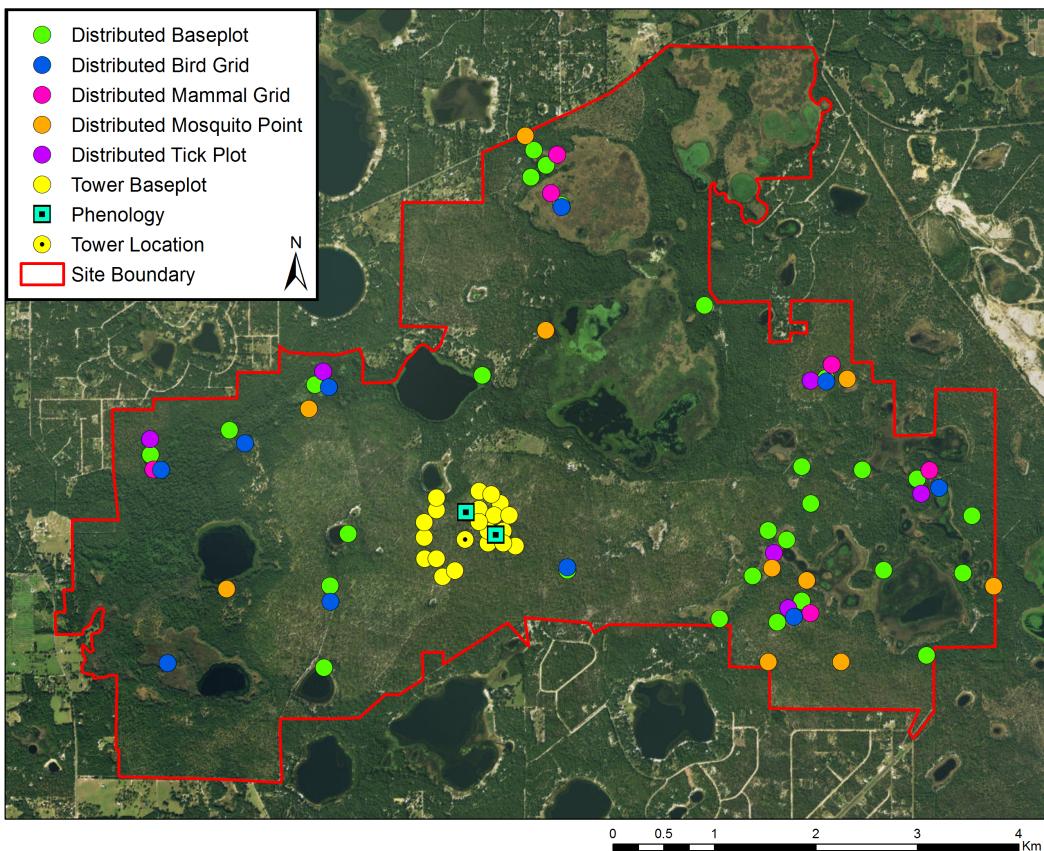


Figure 3: Map of TOS plot centroids within the NEON TOS sampling boundary at OSBS

For a list of protocols associated with each plot see tables below; for additional spatial design information see RD[03].

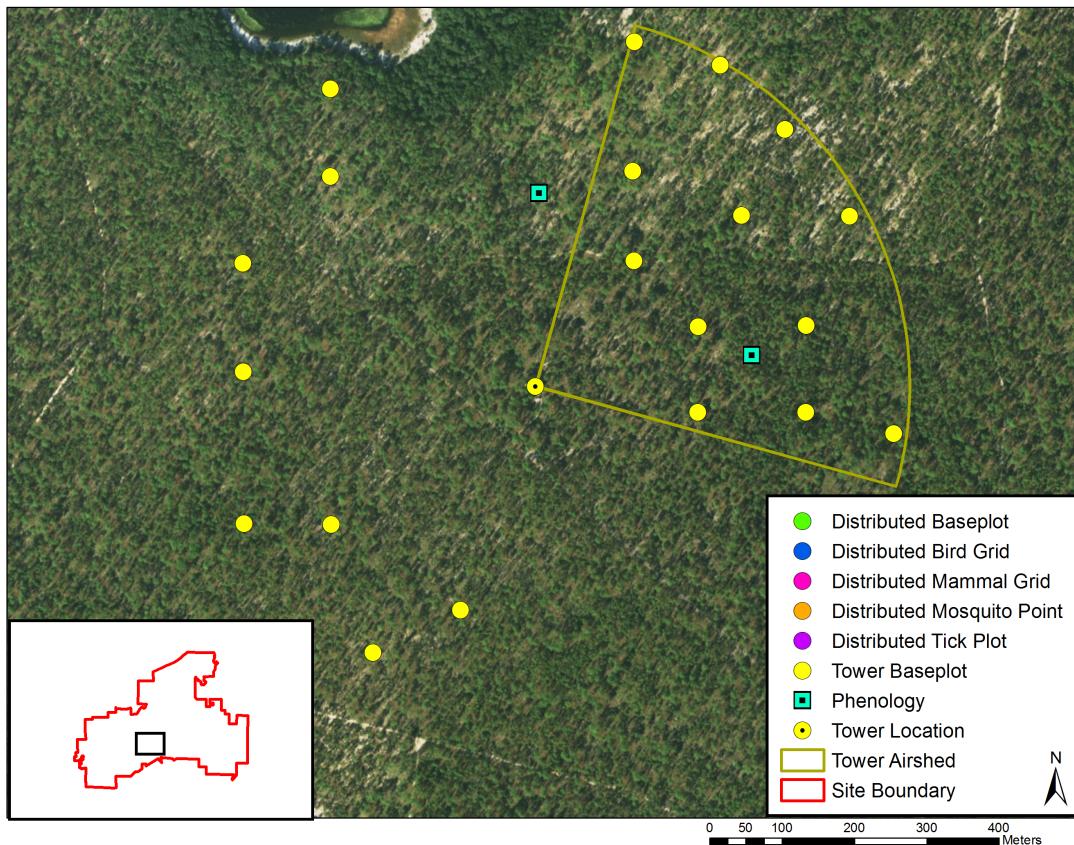


Figure 4: Map of the tower airshed and TOS centroids at OSBS

More information about the tower airshed can be found in the FIU site characterization report (RD[04])

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Table 1: NLCD land cover classes and area within the TOS site boundary at OSBS

NLCD Class	Site Area (km ²)	Percent (%)
Evergreen Forest	11.89	32.25
Shrub Scrub	8.99	24.38
Woody Wetlands	6.18	16.76
Emergent Herbaceous Wetlands	3.49	9.47
Developed Open Space	2.01	5.46
Open Water	2.01	5.44
Grassland Herbaceous	1.72	4.66
Pasture Hay	0.33	0.9
Mixed Forest	0.2	0.54
Deciduous Forest	0.04	0.1
Developed Low Intensity	0.01	0.03

Note: Any NLCD land cover classes less than 5% will not be sampled. Additionally, no sampling will take place in Water, Developed, or Barren Land NLCD classes.

Table 2: NLCD land cover classes and TOS plot numbers at OSBS

Plot Type	Plot Subtype	NLCD Class	Number of Plots Established
Distributed	Base Plot	Evergreen Forest	11
Distributed	Base Plot	Woody Wetlands	10
Distributed	Base Plot	Emergent Herbaceous Wetlands	7
Distributed	Bird Grid	Evergreen Forest	5
Distributed	Bird Grid	Woody Wetlands	4
Distributed	Bird Grid	Emergent Herbaceous Wetlands	1
Distributed	Mammal Grid	Evergreen Forest	4
Distributed	Mammal Grid	Woody Wetlands	2
Distributed	Mammal Grid	Emergent Herbaceous Wetlands	1
Distributed	Mosquito Point	Evergreen Forest	6
Distributed	Mosquito Point	Woody Wetlands	2
Distributed	Mosquito Point	Emergent Herbaceous Wetlands	2
Distributed	Tick Plot	Evergreen Forest	3
Distributed	Tick Plot	Woody Wetlands	2
Distributed	Tick Plot	Emergent Herbaceous Wetlands	1
Tower	Base Plot	NA	20

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Plot Type	Plot Subtype	NLCD Class	Number of Plots Established
Tower	Phenology Plot	NA	2

Note: NLCD land cover classes are not used to stratify Tower Plots

Table 3: Number of Distributed Base Plots per NLCD land cover class per protocol at OSBS.

Plot Type	Plot Subtype	NLCD Class	Protocols	Number of Plots
Distributed	Base Plot	Emergent Herbaceous Wetlands	Beetles	2
Distributed	Base Plot	Evergreen Forest	Beetles	6
Distributed	Base Plot	Woody Wetlands	Beetles	2
Distributed	Base Plot	Emergent Herbaceous Wetlands	Biogeochemistry	2
Distributed	Base Plot	Evergreen Forest	Biogeochemistry	2
Distributed	Base Plot	Woody Wetlands	Biogeochemistry	2
Distributed	Base Plot	Emergent Herbaceous Wetlands	Canopy Foliage Chemistry	2
Distributed	Base Plot	Evergreen Forest	Canopy Foliage Chemistry	2
Distributed	Base Plot	Woody Wetlands	Canopy Foliage Chemistry	2
Distributed	Base Plot	Emergent Herbaceous Wetlands	Coarse Downed Debris	4
Distributed	Base Plot	Evergreen Forest	Coarse Downed Debris	9
Distributed	Base Plot	Woody Wetlands	Coarse Downed Debris	6
Distributed	Base Plot	Emergent Herbaceous Wetlands	Digital Hemispherical Photos for Leaf Area Index	4
Distributed	Base Plot	Evergreen Forest	Digital Hemispherical Photos for Leaf Area Index	9
Distributed	Base Plot	Woody Wetlands	Digital Hemispherical Photos for Leaf Area Index	6
Distributed	Base Plot	Emergent Herbaceous Wetlands	Herbaceous Productivity	4
Distributed	Base Plot	Evergreen Forest	Herbaceous Productivity	9
Distributed	Base Plot	Woody Wetlands	Herbaceous Productivity	6
Distributed	Base Plot	Emergent Herbaceous Wetlands	Plant Diversity	7
Distributed	Base Plot	Evergreen Forest	Plant Diversity	11
Distributed	Base Plot	Woody Wetlands	Plant Diversity	10
Distributed	Base Plot	Emergent Herbaceous Wetlands	Soil Microbes	2
Distributed	Base Plot	Evergreen Forest	Soil Microbes	2
Distributed	Base Plot	Woody Wetlands	Soil Microbes	2
Distributed	Base Plot	Emergent Herbaceous Wetlands	Vegetation Structure	4
Distributed	Base Plot	Evergreen Forest	Vegetation Structure	9

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Plot Type	Plot Subtype	NLCD Class	Protocols	Number of Plots
Distributed	Base Plot	Woody Wetlands	Vegetation Structure	6

Note: Distributed Base Plots typically support more than one TOS protocol; 'Number of Plots' cannot be added to get total TOS Distributed Base Plot number.

Table 4: Number of Tower Plots per protocol at OSBS

Plot Type	Plot Subtype	Protocols	Number of Plots
Tower	Base Plot	Below Ground Biomass Coring	20
Tower	Base Plot	Biogeochemistry	4
Tower	Base Plot	Canopy Foliage Chemistry	4
Tower	Base Plot	Coarse Downed Debris	20
Tower	Base Plot	Digital Hemispherical Photos for Leaf Area Index	20
Tower	Base Plot	Herbaceous Productivity	20
Tower	Base Plot	Litterfall and Fine Woody Debris	20
Tower	Base Plot	Mat-Forming Bryophyte Production	20
Tower	Base Plot	Plant Diversity	3
Tower	Base Plot	Soil Microbes	4
Tower	Base Plot	Vegetation Structure	20
Tower	Phenology	Plant Phenology	2

Note: Tower Base Plots typically support more than one TOS protocol; 'Number of Plots' cannot be added to get the total TOS Tower Base Plot number.

4.2 Belowground Biomass

4.2.1 Site-Specific Methods

Belowground biomass characterization data were collected down to down to a depth of 170 cm by NEON staff in June 2012. Since the NEON protocol for long-term, operational sampling of belowground biomass only collects data to a depth of 30 cm, the belowground biomass site characterization data are critical for scaling belowground biomass measurements to greater depths; see the TOS Science Design for Plant Biomass, Productivity, and Leaf Area Index (AD[8]) for more information. Samples were collected following the standard methods outlined in TOS Site Characterization Methods (RD[6]). A bulk density soil corer was used instead of a soil knife to extract soil. Roots were sorted by diameter size (less than or greater than two mm) and root status (live or dead). The tables below summarize the total belowground biomass; size class data and more information can be found by searching the NEON data portal for the data product numbers in Appendix A.

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4.2.2 Results

Table 5: Fine root mass per depth increment (cm) at OSBS

Upper Depth	Lower Depth	Mean mg per cm ³	Std Dev
0	10	1.77	2.06
10	20	0.99	0.7
20	30	1.61	1.19
30	40	0.71	0.66
40	50	0.21	0.19
50	60	0.22	0.05
60	70	0.18	0.14
70	80	0.12	0.04
80	90	0.05	0.03
90	100	0.05	0.01
100	110	0.02	0.02
110	120	0.15	0.08
120	130	0.02	0.03
130	140	0.06	0.05
140	150	0.01	0.01
150	160	0.01	0
160	170	0.02	0.01

Table 6: Cumulative fine root mass as a function of depth (cm) at OSBS

Upper Depth	Lower Depth	Mean Cumulative g per m ²	Cumulative Std Dev
0	10	177.1	205.81
10	20	275.73	274.98
20	30	436.34	394.37
30	40	507.11	456.76
40	50	528.38	475.39
50	60	550.25	478.45
60	70	568.64	484
70	80	581.06	480.52
80	90	586.05	477.76
90	100	590.79	478.95

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Upper Depth	Lower Depth	Mean Cumulative g per m ²	Cumulative Std Dev
100	110	592.99	477.57
110	120	608.37	472.38
120	130	610.74	471.31
130	140	617.13	468.68
140	150	618.57	468.32
150	160	619.19	468.32
160	170	620.72	467.43

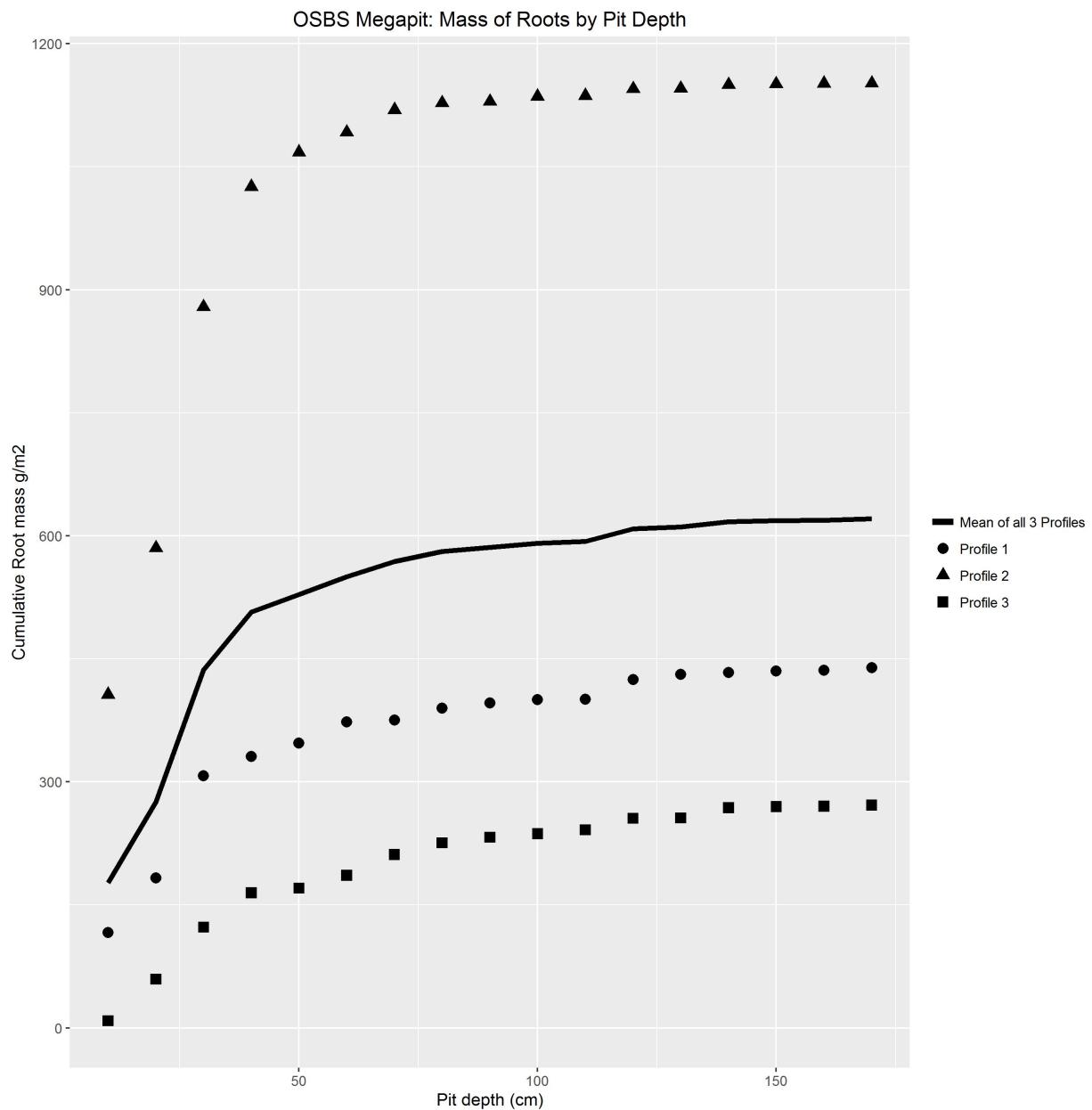


Figure 5: Cumulative root mass by pit depth at OSBS

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Table 7: Fine root biomass sampling summary data at OSBS

Total Pit Depth (cm)	170
Total Cumulative Mass at 30cm (g per m ²)	436.34
Total Cumulative Mass at 100cm (g per m ²)	590.79
Total Cumulative Mass (g per m ²)	620.72

4.3 Plant Characterization and Phenology Species Selection

4.3.1 Site-Specific Methods

Plant characterization data were collected by an external contractor during the summer of July 2013 following the standard methods outlined in TOS Site Characterization Methods (RD[6]). For more information on this protocol and data product numbers see Appendix A.

4.3.2 Results

Table 8: Site plant characterization and phenology species summary at OSBS

Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
QULA2	<i>Quercus laevis</i> Walter	1	9	NA	2.22
PIPA2	<i>Pinus palustris</i> Mill.	2	3	NA	5.86
ARBE7	<i>Aristida beyrichiana</i> Trin. & Rupr.	3	5	NA	NA
LIMI5	<i>Licania michauxii</i> Prance	4	2	NA	NA
DAPI2	<i>Dalea pinnata</i> (J.F. Gmel.) Barneby	5	2	NA	NA
TECH	<i>Tephrosia chrysophylla</i> Pursh	6	1	NA	NA
SOSE5	<i>Sorghastrum secundum</i> (Elliott) Nash	7	<1	NA	NA
ASIN12	<i>Asimina incana</i> (W. Bartram) Exell	8	<1	NA	NA
PIGR4	<i>Pityopsis graminifolia</i> (Michx.) Nutt.	9	<1	NA	NA
DIVI5	<i>Diospyros virginiana</i> L.	10	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
GARE2	<i>Galactia regularis</i> (L.) Britton, Sterns & Poggenb.	11	<1	NA	NA
CHFL2	<i>Chapmannia floridana</i> Torr. & A. Gray	12	<1	NA	NA
ARPU8	<i>Aristida purpurascens</i> Poir.	13	<1	NA	NA
SPJU	<i>Sporobolus junceus</i> (P. Beauv.) Kunth	14	<1	NA	NA
TEVI	<i>Tephrosia virginiana</i> (L.) Pers.	15	<1	NA	NA
DIAC	<i>Dichanthelium aciculare</i> (Desv. ex Poir.) Gould & C.A. Clark	16	<1	NA	NA
SCSC	<i>Schizachyrium scoparium</i> (Michx.) Nash	17	<1	NA	NA
LITE6	<i>Liatis tenuifolia</i> Nutt.	18	<1	NA	NA
TRAM7	<i>Triplasis americana</i> P. Beauv.	19	<1	NA	NA
CRAR2	<i>Croton argyranthemus</i> Michx.	20	<1	NA	NA
VAAR	<i>Vaccinium arboreum</i> Marshall	21	<1	NA	NA
ARMO3	<i>Aristida mohrii</i> Nash	22	<1	NA	NA
TRUR	<i>Tragia urens</i> L.	23	<1	NA	NA
AGFI2	<i>Agalinis filifolia</i> (Nutt.) Raf.	24	<1	NA	NA
BUWA	<i>Bulbostylis warei</i> (Torr.) C.B. Clarke	25	<1	NA	NA
CYRE5	<i>Cyperus retrorsus</i> Chapm.	25	<1	NA	NA
QUGE2	<i>Quercus geminata</i> Small	27	<1	NA	0.1
BCUI	<i>Bulbostylis ciliatifolia</i> (Elliott) Fernald	28	<1	NA	NA
RHCI3	<i>Rhynchosia cinerea</i> Nash	29	<1	NA	NA
STAB	<i>Stylosma abdita</i> Myint	29	<1	NA	NA
STSY	<i>Stillingia sylvatica</i> L.	31	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
ERTO2	<i>Eriogonum tomentosum</i> Michx.	32	<1	NA	NA
PTAQ	<i>Pteridium aquilinum</i> (L.) Kuhn	32	<1	NA	NA
AGJU2	<i>Ageratina jucunda</i> (Greene) Clewell & Woot.	34	<1	NA	NA
ANFL	<i>Andropogon floridanus</i> Scribn.	34	<1	NA	NA
DYOB	<i>Dyschoriste oblongifolia</i> (Michx.) Kuntze	34	<1	NA	NA
PAPA16	<i>Paronychia patula</i> Shinners	34	<1	NA	NA
CRRO5	<i>Crotalaria rotundifolia</i> Walter ex J.F. Gmel.	38	<1	NA	NA
BAAN3	<i>Balduina angustifolia</i> (Pursh) B.L. Rob.	39	<1	NA	NA
COER	<i>Commelina erecta</i> L.	39	<1	NA	NA
STSE3	<i>Stipulicida setacea</i> Michx.	39	<1	NA	NA
CNURS	<i>Cnidoscolus urens</i> (L.) Arthur var. <i>stimulosus</i> (Michx.) Govaerts	42	<1	NA	NA
CLMA4	<i>Clitoria mariana</i> L.	43	<1	NA	NA
PASE5	<i>Paspalum setaceum</i> Michx.	43	<1	NA	NA
RHCO	<i>Rhus copallina</i> L.	43	<1	NA	NA
TEFL	<i>Tephrosia florida</i> (F.G. Dietr.) C.E. Wood	43	<1	NA	NA
ANGY2	<i>Andropogon gyrans</i> Ashe	47	<1	NA	NA
OPHU	<i>Opuntia humifusa</i> (Raf.) Raf.	47	<1	NA	NA
STBI2	<i>Stylosanthes biflora</i> (L.) Britton, Sterns & Poggenb.	47	<1	NA	NA
ANTE2	<i>Andropogon ternarius</i> Michx.	50	<1	NA	NA
CACO37	<i>Carphephorus corymbosus</i> (Nutt.) Torr. & A. Gray	50	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
CAGR25	<i>Callisia graminea</i> (Small) G. Tucker	50	<1	NA	NA
LEDE4	<i>Lechea deckertii</i> Small	50	<1	NA	NA
SCCI	<i>Scleria ciliata</i> Michx.	54	<1	NA	NA
STPA8	<i>Stylosma patens</i> (Desr.) Myint	54	<1	NA	NA
LEHI2	<i>Lespedeza hirta</i> (L.) Hornem.	56	<1	NA	NA
ORLU3	<i>Orbexilum lupinellum</i> (Michx.) Isely	56	<1	NA	NA
PAIN8	<i>Palafoxia integrifolia</i> (Nutt.) Torr. & A. Gray	56	<1	NA	NA
ARSE3	<i>Aristolochia serpentaria</i> L.	59	<1	NA	NA
CYCR6	<i>Cyperus croceus</i> Vahl	59	<1	NA	NA
DICHA2	<i>Dichanthelium</i> sp.	59	<1	NA	NA
MIMI22	<i>Mimosa microphylla</i> Dryand.	59	<1	NA	NA
QUHE2	<i>Quercus hemisphaerica</i> W. Bartram ex Willd.	59	<1	NA	NA
RHME	<i>Rhynchospora</i> <i>megalocarpa</i> A. Gray	59	<1	NA	NA
YUFI	<i>Yucca filamentosa</i> L.	59	<1	NA	NA
ARFL2	<i>Arnoglossum floridanum</i> (A. Gray) H. Rob.	66	<1	NA	NA
GYAM	<i>Gymnopogon ambiguus</i> (Michx.) Britton, Sterns & Poggenb.	66	<1	NA	NA
LYAP3	<i>Lygodesmia aphylla</i> (Nutt.) DC.	66	<1	NA	NA
PHAR14	<i>Physalis arenicola</i> Kearney	66	<1	NA	NA
RHGR2	<i>Rhynchospora grayi</i> Kunth	66	<1	NA	NA
ASTO	<i>Asclepias tomentosa</i> Elliott	71	<1	NA	NA
CRMI8	<i>Croton michauxii</i> G.L. Webster	71	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
CYLU2	<i>Cyperus lupulinus</i> (Spreng.) Marcks	71	<1	NA	NA
PHGR12	<i>Phoebanthus grandiflorus</i> (Torr. & A. Gray) S.F. Blake	71	<1	NA	NA
RHRE	<i>Rhynchosia reniformis</i> DC.	71	<1	NA	NA
RUCAC	<i>Ruellia caroliniensis</i> (J.F. Gmel.) Steud. ssp. <i>ciliosa</i> (Pursh) R.W. Long	71	<1	NA	NA
SET07	<i>Sericocarpus tortifolius</i> (Michx.) Nees	71	<1	NA	NA
SMAU	<i>Smilax auriculata</i> Walter	71	<1	NA	NA
AUPE	<i>Aureolaria pectinata</i> (Nutt.) Pennell	79	<1	NA	NA
COCA5	<i>Conyza canadensis</i> (L.) Cronquist	79	<1	NA	NA
CYPER	<i>Cyperus</i> sp.	79	<1	NA	NA
HIME	<i>Hieracium megacephalon</i> Nash	79	<1	NA	NA
SCSA	<i>Schizachyrium sanguineum</i> (Retz.) Alston	79	<1	NA	NA
TOPU2	<i>Toxicodendron pubescens</i> Mill.	79	<1	NA	NA
VAMY3	<i>Vaccinium myrsinites</i> Lam.	79	<1	NA	NA

Note: Mean canopy area is collected for shrubs. Mean area at breast height (ABH) is collected for trees. Taxon IDs and scientific names are based on the USDA Plants database (plants.usda.gov).

Table 9: Per plot breakdown of species richness, diversity, and herbaceous cover at OSBS

Plot ID	Species Richness	Shannon Diversity Index	Percent Total Herbaceous Cover
OSBS_025	17	2.4	36
OSBS_026	25	2.9	86
OSBS_027	22	2.76	55
OSBS_028	33	3.19	91
OSBS_029	21	2.84	35
OSBS_030	30	3.01	88

Plot ID	Species Richness	Shannon Diversity Index	Percent Total Herbaceous Cover
OSBS_031	19	2.35	89
OSBS_032	17	2.73	26
OSBS_033	23	2.68	47
OSBS_034	16	2.59	33
OSBS_035	39	3.3	125
OSBS_036	16	2.23	54
OSBS_037	30	2.9	134
OSBS_038	21	2.7	62
OSBS_039	23	2.71	69
OSBS_040	22	2.78	39
OSBS_041	26	2.81	76
OSBS_042	28	3.16	69
OSBS_043	23	2.04	74
OSBS_044	21	2.41	59

Note: Percent herbaceous cover was measured by species and then added together to calculate the percent total herbaceous cover for each plot.

4.4 Beetles

4.4.1 Site-Specific Methods

There was no beetle site characterization work done at OSBS. For more information on this protocol and data product numbers see Appendix A.

4.5 Mosquitoes

4.5.1 Site-Specific Methods

Mosquito site characterization was conducted in June and July 2010 by NEON staff following the standard methods outlined in TOS Site Characterization Methods (RD[6]) to test protocol methods and start site level species lists. No pathogen testing was performed. For DNA sequence data generated as a result of these efforts, visit the Barcode of Life Datasystems (BOLD) at <http://www.boldsystems.org>. For more information on this protocol and data product numbers see Appendix A.

4.5.2 Results

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Table 10: Mosquito trap locations at OSBS

Trap ID	Lat	Long
1	29.697	-82.026
2	29.7	-82.019
3	29.678	-82.004
4	29.697	-81.994
5	29.687	-81.983
6	29.691	-81.976
7	29.73	-81.974
8	29.728	-81.968
9	29.692	-81.959

Table 11: Mosquito identification results at OSBS

BOLD Sample ID	Scientific Name	Collection Date	Trap Location
NEONTculicid6239	<i>Aedes triseriatus</i>	7/26/2012	1
NEONTculicid6258	<i>Aedes fulvus pallens</i>	7/25/2012	1
NEONTculicid6416	<i>Psorophora ferox</i>	7/25/2012	1
NEONTculicid6257	<i>Aedes fulvus pallens</i>	7/25/2012	1
NEONTculicid6385	<i>Psorophora ferox</i>	9/5/2012	1
NEONTculicid6256	<i>Aedes fulvus pallens</i>	7/25/2012	1
NEONTculicid6275	<i>Psorophora ferox</i>	7/25/2012	1
NEONTculicid6253	<i>Psorophora howardii</i>	9/5/2012	1
NEONTculicid6250	<i>Psorophora howardii</i>	9/5/2012	1
NEONTculicid6251	<i>Psorophora howardii</i>	9/5/2012	1
NEONTculicid6249	<i>Psorophora howardii</i>	9/5/2012	1
NEONTculicid6246	<i>Psorophora howardii</i>	9/5/2012	1
NEONTculicid6247	<i>Psorophora howardii</i>	9/5/2012	1
NEONTculicid6262	<i>Aedes atlanticus</i>	7/25/2012	1
NEONTculicid6245	<i>Psorophora howardii</i>	9/5/2012	1
NEONTculicid6255	<i>Aedes fulvus pallens</i>	7/25/2012	1
NEONTculicid6263	<i>Aedes atlanticus</i>	7/25/2012	1
NEONTculicid6259	<i>Aedes fulvus pallens</i>	7/25/2012	1
NEONTculicid6254	<i>Psorophora howardii</i>	9/5/2012	1
NEONTculicid6248	<i>Psorophora howardii</i>	9/5/2012	1

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BOLD Sample ID	Scientific Name	Collection Date	Trap Location
NEONTculicid6252	<i>Psorophora howardii</i>	9/5/2012	1
NEONTculicid6242	<i>Aedes triseriatus</i>	7/25/2012	2
NEONTculicid6241	<i>Aedes triseriatus</i>	7/25/2012	2
NEONTculicid6236	<i>Aedes triseriatus</i>	7/26/2012	2
NEONTculicid6238	<i>Aedes triseriatus</i>	7/26/2012	2
NEONTculicid6237	<i>Aedes hendersoni</i>	7/26/2012	2
NEONTculicid6243	<i>Aedes triseriatus</i>	7/25/2012	3
NEONTculicid6314	<i>Aedes atlanticus</i>	9/6/2012	4
NEONTculicid6240	<i>Aedes triseriatus</i>	7/26/2012	4
NEONTculicid6351	<i>Aedes mitchellae</i>	9/5/2012	5
NEONTculicid6274	<i>Culex coronator</i>	9/5/2012	5
NEONTculicid6273	<i>Culex coronator</i>	9/5/2012	6
NEONTculicid6218	<i>Uranotaenia sapphirina</i>	9/25/2012	7
NEONTculicid6215	<i>Uranotaenia sapphirina</i>	9/25/2012	7
NEONTculicid6217	<i>Uranotaenia sapphirina</i>	9/25/2012	7
NEONTculicid6235	<i>Aedes triseriatus</i>	9/26/2012	7
NEONTculicid6216	<i>Uranotaenia sapphirina</i>	9/25/2012	7
NEONTculicid6276	<i>Culex tarsalis</i>	7/25/2012	8
NEONTculicid6281	<i>Culex salinarius</i>	9/25/2012	8
NEONTculicid6214	<i>Culex salinarius</i>	9/25/2012	8
NEONTculicid6279	<i>Culex salinarius</i>	9/25/2012	8
NEONTculicid6280	<i>Culex salinarius</i>	9/25/2012	8
NEONTculicid6261	<i>Culex erraticus</i>	7/25/2012	9
NEONTculicid6267	<i>Aedes infirmatus</i>	7/25/2012	9
NEONTculicid6260	<i>Culex erraticus</i>	7/25/2012	9
NEONTculicid6268	<i>Aedes infirmatus</i>	7/25/2012	9
NEONTculicid6265	<i>Psorophora columbiae</i>	7/25/2012	9
NEONTculicid6271	<i>Aedes mitchellae</i>	7/25/2012	9
NEONTculicid6414	<i>Psorophora columbiae</i>	7/25/2012	9
NEONTculicid6264	<i>Psorophora columbiae</i>	7/25/2012	9
NEONTculicid6272	<i>Aedes mitchellae</i>	7/25/2012	9
NEONTculicid6270	<i>Aedes mitchellae</i>	7/25/2012	9
NEONTculicid6266	<i>Psorophora columbiae</i>	7/25/2012	9
NEONTculicid6244	<i>Aedes triseriatus</i>	7/25/2012	9

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BOLD Sample ID	Scientific Name	Collection Date	Trap Location
NEONTculicid6411	<i>Uranotaenia sapphirina</i>	9/6/2012	9
NEONTculicid6269	<i>Aedes infirmatus</i>	7/25/2012	9
NEONTculicid6586	<i>Culex erraticus</i>	7/25/2012	9
NEONTculicid6590	<i>Aedes infirmatus</i>	7/25/2012	9

4.6 Ticks

4.6.1 Site-Specific Methods

Tick drags were conducted at OSBS in the spring and summer of 2012. For more information on this protocol and data product numbers see Appendix A.

4.6.2 Results

Table 12: Tick sampling results at OSBS

Vegetation Type	Number of Plots Sampled	Tick Abundance (Mean)	Tick Abundance (stDev)	Total Number of Ticks Collected	Max Number of Ticks Collected	Number of Plots With No Ticks	Total Area Sampled (m ³)
Evergreen open tree canopy	3	20	17.1	60	39	0	811
Mixed ever-green/deciduous open tree canopy	14	0.2	0.6	3	2	12	6156
Perennial graminoid grassland	5	1.2	1.8	6	4	3	1615
Total	22	3.1	8.7	69	39	15	8582

Note: Land cover classes here match LANDFIRE (Landscape Fire and Resource Management Planning Tools; <http://www.landfire.gov/>) vegetation categories, not the NLCD land cover types employed in current protocols.

4.7 Species Reference Lists

A review of the literature for taxonomic lists of interest for each site was conducted prior to field work. In the case of vertebrates that NEON may capture (e.g., reptiles, amphibians, small mammals), these lists were often required to secure permits. Key references identified in this effort are listed below. Species lists and associated references for small mammals and breeding landbirds can be found in the appendices of the respective protocols (RD[07], RD[08]).

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Bousquet, Y. 2012. Catalogue of Geadephaga (Coleoptera, Adephaga) of America, north of Mexico. ZooKeys, (245), 1-1722.

Darsie Jr., R. F., and R. A. Ward. 2005. Identification and geographical distribution of the mosquitoes of North America, North of Mexico. University Press of Florida, Gainesville.

Dodd, C.K., Jr. 1992. Biological diversity of a temporary pond herpetofauna in north Florida sandhills. Biodiversity and Conservation. 1: 125-142.

Dodd, C.K., Jr. 1995. Reptiles and amphibians in the endangered longleaf pine ecosystem. Pp. 129-131 In: E.T. LaRoe, G.S. Farris, C.E. Puckett, P.D. Doran and M.J. Mac (eds.). Our Living Resources, National Biological Service, Washington, D.C.

"Flora and DNA Barcoding of Ordway-Swisher Biological Station." University of Florida Herbarium Digital Imaging Projects. University of Florida Herbarium. 31 March 2016. Web. 20 Sep 2016.

Franz, R., Hall, D.W. (1991): Vegetative communities and annotated plant lists for the Katharine Ordway Preserve-Swisher Memorial Sanctuary, Putnam County, Florida. Ordway Preserve Series, Report 3.

5 RELOCATABLE SITE- DISNEY WILDERNESS PRESERVE (DSNY)

The 12,000-acre (49 km²) Disney Wilderness Preserve (DSNY) straddles the headwaters of the Everglades ecosystem in south-central Florida. This site is seasonally wet and flooded. Data from DSNY support greater understanding of wetland regeneration, water storage and quality, and predictive models for future large-scale restorations.

- Site host: The Nature Conservancy
- Located in Polk and Osceola County, Florida
- Area: 49 km²
- Elevation: 16-22 m
- Dominant vegetation type- The dominant ecosystem type is restored wet prairie with regenerating pine; vegetation cover at Disney site is primarily restored broom sedge prairie, interspersed with perennial grasses. The Disney site is composed of short gasses, interspersed with pine saplings. Dominant vegetation types within the Disney Wilderness Preserve include:
 - Pine Flatwoods
 - Southern Coastal Plain Non-riverine Cypress Dome
 - Florida Dry Prairie
- The dominant perennial grass at the site is wiregrass (*Aristida stricta* Michx.), with numerous other species of perennial grasses also present, including:
 - *Andropogon* sp
 - Bottlebrush threeawn (*Aristida spiciformis*)
 - Broom sedge (*Andropogon virginicus*)
- General management: The Disney site was heavily logged and used as ranchland for decades. However, vegetation and site conditions have been restored to closely represent site condition records, documented

by the area's first Spanish missionaries. The large-scale wetland and upland restoration at Disney included the removal of non-native, invasive plants and grasses and the removal of agricultural ditches. The primary management activity is controlled burns.

- Plot Selection: NEON TOS Plots were allocated across the site following NEON standard criteria and avoiding existing research.

5.1 TOS Spatial Sampling Design

TOS plots were allocated at Disney Wilderness Preserve according to a spatially balanced and stratified-random design (RD[3]). The 2006 National Land Cover Database (NLCD) was selected for stratification because of the consistent and comparable data availability across the United States. The maps below depict the plot locations for the first year of NEON sampling. Some plot locations may change over time due to logistics, safety, and science requirements. Please visit the NEON website (<http://www.neonscience.org>) for updated plot locations at each site.

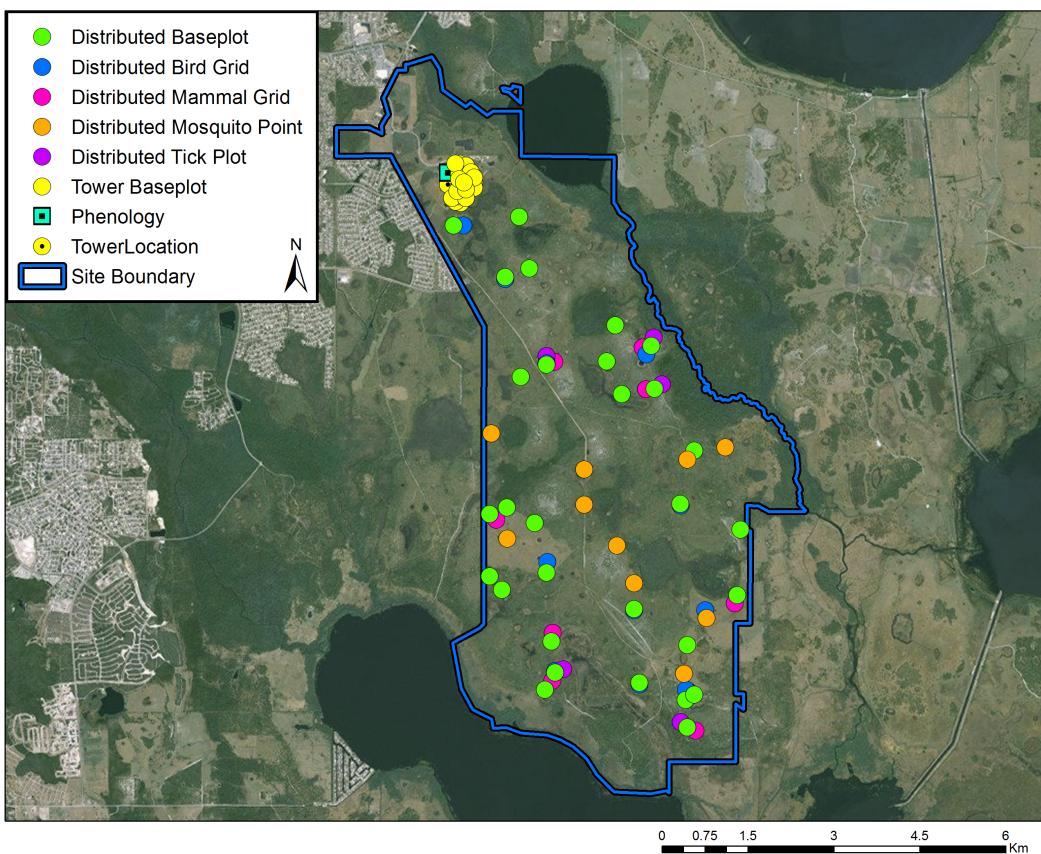


Figure 6: Map of TOS plot centroids within the NEON TOS sampling boundary at DSNY

For a list of protocols associated with each plot see tables below; for additional spatial design information see RD[03].

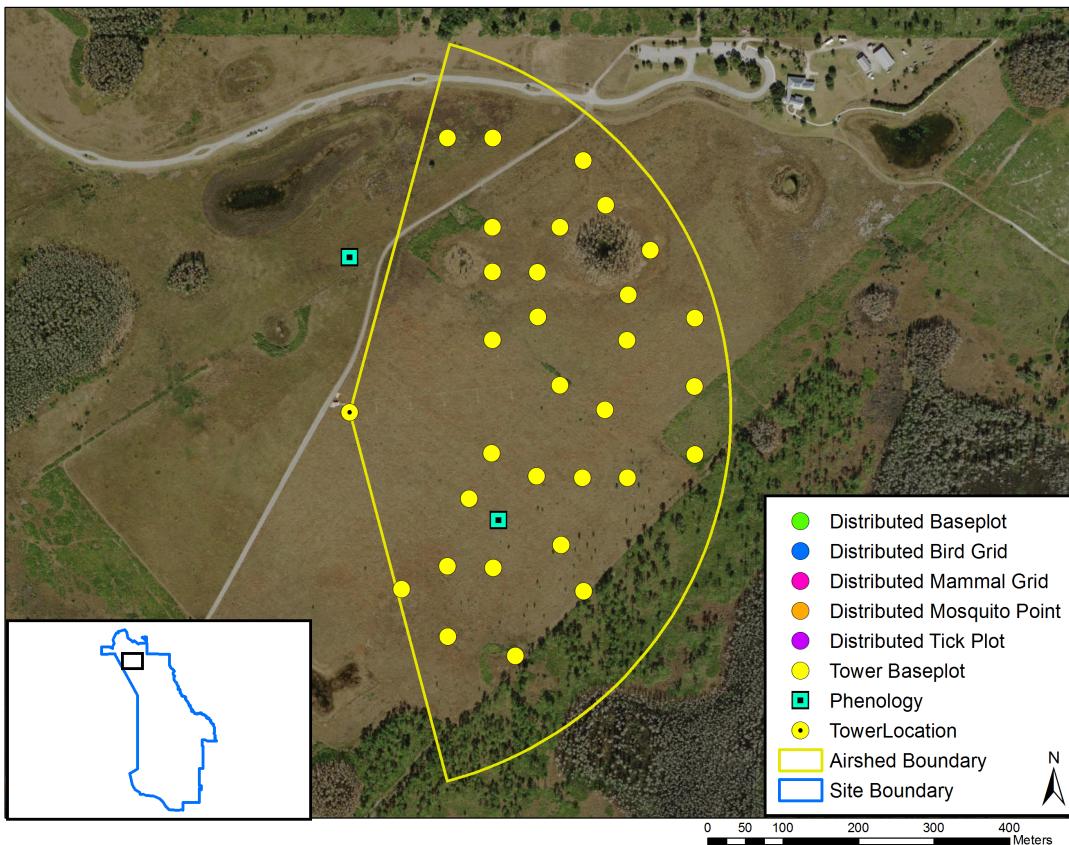


Figure 7: Map of the tower airshed and TOS centroids at DSNY

More information about the tower airshed can be found in the FIU site characterization report (RD[04])

Table 13: NLCD land cover classes and area within the TOS site boundary at DSNY

NLCD Class	Site Area (km ²)	Percent (%)
Woody Wetlands	39.58	81.5
Pasture Hay	3.99	8.22
Emergent Herbaceous Wetlands	2.33	4.79
Shrub Scrub	0.78	1.61
Open Water	0.69	1.43
Grassland Herbaceous	0.7	1.43
Developed Open Space	0.48	1
Developed Low Intensity	0.01	0.03

Note: Any NLCD land cover classes less than 5% will not be sampled. Additionally, no sampling will take place in

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Water, Developed, or Barren Land NLCD classes.

Table 14: NLCD land cover classes and TOS plot numbers at DSNY

Plot Type	Plot Subtype	NLCD Class	Number of Plots Established
Distributed	Base Plot	Woody Wetlands	23
Distributed	Base Plot	Pasture Hay	7
Distributed	Bird Grid	Woody Wetlands	8
Distributed	Bird Grid	Pasture Hay	3
Distributed	Mammal Grid	Woody Wetlands	6
Distributed	Mammal Grid	Pasture Hay	3
Distributed	Mosquito Point	Woody Wetlands	7
Distributed	Mosquito Point	Pasture Hay	3
Distributed	Tick Plot	Woody Wetlands	5
Distributed	Tick Plot	Pasture Hay	1
Tower	Base Plot	NA	30
Tower	Phenology Plot	NA	2

Note: NLCD land cover classes are not used to stratify Tower Plots

Table 15: Number of Distributed Base plots per NLCD land cover class per protocol at DSNY.

Plot Type	Plot Subtype	NLCD Class	Protocols	Number of Plots
Distributed	Base Plot	Pasture Hay	Beetles	3
Distributed	Base Plot	Woody Wetlands	Beetles	7
Distributed	Base Plot	Pasture Hay	Biogeochemistry	2
Distributed	Base Plot	Woody Wetlands	Biogeochemistry	4
Distributed	Base Plot	Pasture Hay	Canopy Foliage Chemistry	2
Distributed	Base Plot	Woody Wetlands	Canopy Foliage Chemistry	4
Distributed	Base Plot	Pasture Hay	Coarse Downed Debris	5
Distributed	Base Plot	Woody Wetlands	Coarse Downed Debris	15
Distributed	Base Plot	Pasture Hay	Digital Hemispherical Photos for Leaf Area Index	5
Distributed	Base Plot	Woody Wetlands	Digital Hemispherical Photos for Leaf Area Index	15
Distributed	Base Plot	Pasture Hay	Herbaceous Productivity	5
Distributed	Base Plot	Woody Wetlands	Herbaceous Productivity	15
Distributed	Base Plot	Pasture Hay	Plant Diversity	7

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Plot Type	Plot Subtype	NLCD Class	Protocols	Number of Plots
Distributed	Base Plot	Woody Wetlands	Plant Diversity	23
Distributed	Base Plot	Pasture Hay	Soil Microbes	2
Distributed	Base Plot	Woody Wetlands	Soil Microbes	4
Distributed	Base Plot	Pasture Hay	Vegetation Structure	5
Distributed	Base Plot	Woody Wetlands	Vegetation Structure	15

Note: Distributed Base Plots typically support more than one TOS protocol; ‘Number of Plots’ cannot be added to get total TOS Distributed Base Plot number.

Table 16: Number of Tower Plots per protocol at DSNY

Plot Type	Plot Subtype	Protocols	Number of Plots
Tower	Base Plot	Below Ground Biomass Coring	30
Tower	Base Plot	Biogeochemistry	4
Tower	Base Plot	Canopy Foliage Chemistry	4
Tower	Base Plot	Coarse Downed Debris	30
Tower	Base Plot	Digital Hemispherical Photos for Leaf Area Index	30
Tower	Base Plot	Herbaceous Productivity	30
Tower	Base Plot	Litterfall and Fine Woody Debris	30
Tower	Base Plot	Mat-Forming Bryophyte Production	30
Tower	Base Plot	Plant Diversity	3
Tower	Base Plot	Soil Microbes	4
Tower	Base Plot	Vegetation Structure	30
Tower	Phenology	Plant Phenology	2

Note: Tower Base Plots typically support more than one TOS protocol; ‘Number of Plots’ cannot be added to get total TOS Tower Base Plot number.

5.2 Belowground Biomass

5.2.1 Site-Specific Methods

Belowground biomass characterization data were collected down to a depth of 120 cm by NEON staff in February 2013. Since the NEON protocol for long-term, operational sampling of belowground biomass only collects data to a depth of 30 cm, the belowground biomass site characterization data are critical for scaling belowground biomass measurements to greater depths; see the TOS Science Design for Plant Biomass, Productivity, and Leaf Area Index (AD[8]) for more information. Samples were collected following the standard methods outlined in TOS

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Site Characterization Methods (RD[6]). A bulk density soil corer and soil knife were used to extract soil to test out protocols methods. Roots were sorted by diameter size (less than or greater than two mm) and root status (live or dead). The tables below summarize the total belowground biomass; size class data and more information can be found by searching the NEON data portal for the data product numbers in Appendix A.

5.2.2 Results

Table 17: Fine root mass per depth increment (cm) at DSNY

Upper Depth	Lower Depth	Mean mg per cm ³	Std Dev
0	10	2.3	0.94
10	20	0.92	0.16
20	30	0.72	0.28
30	40	0.78	0.15
40	50	0.38	0.16
50	60	0.16	0.14
60	70	0.07	0.05
70	80	0.11	0.11
80	90	0.04	0.03
90	100	0.05	0.05
100	120	0.03	0.01

Table 18: Cumulative fine root mass as a function of depth (cm) at DSNY

Upper Depth	Lower Depth	Mean Cumulative g per m ²	Cumulative Std Dev
0	10	229.84	93.84
10	20	322.23	79.11
20	30	394.45	90.54
30	40	472.64	77.19
40	50	510.42	73.29
50	60	526.86	74.3
60	70	533.64	76.2
70	80	544.54	84.79
80	90	548.25	86.16
90	100	553.29	88
100	120	559.65	88.48

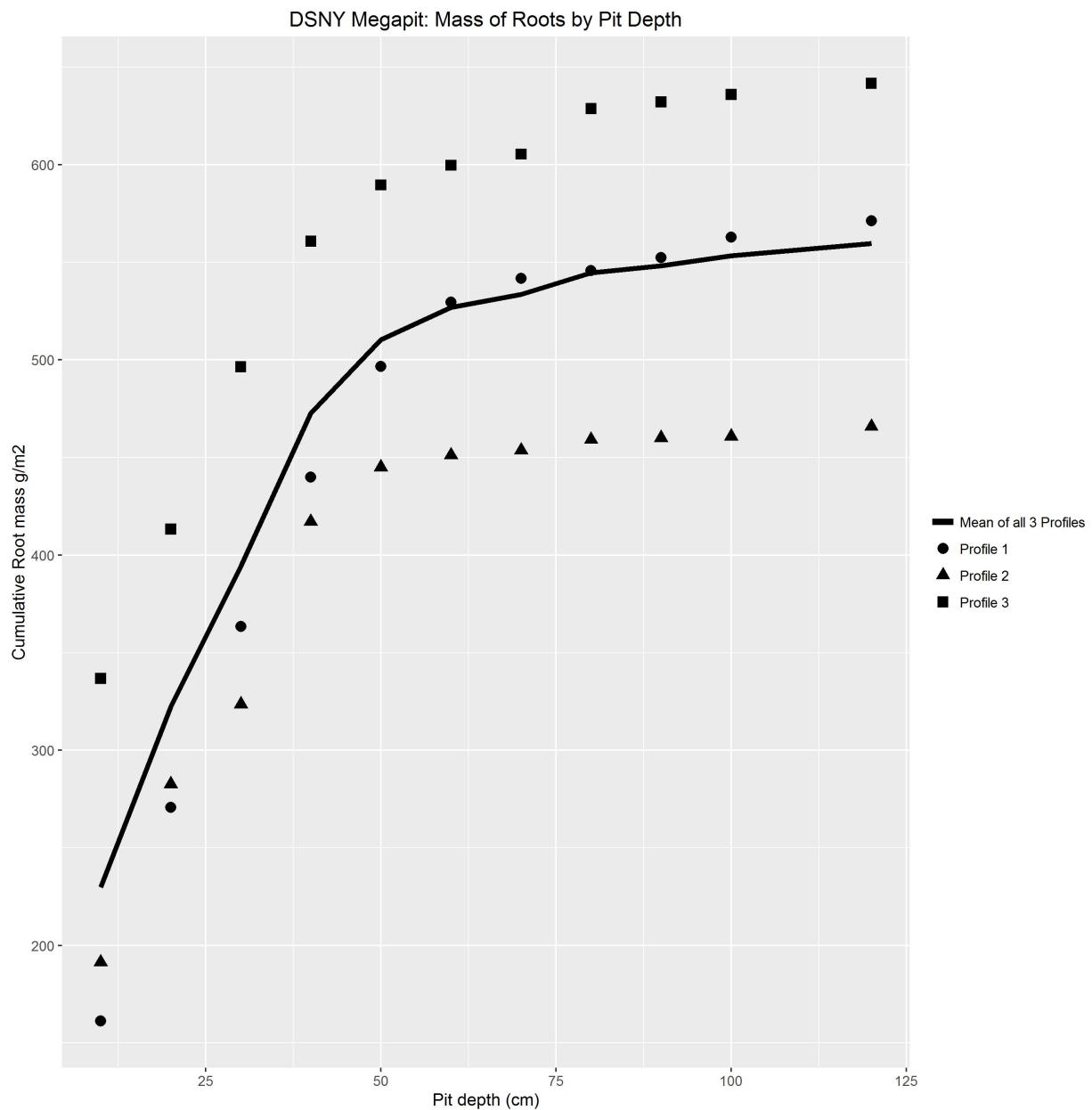


Figure 8: Cumulative root mass by pit depth at DSNY

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Table 19: Fine root biomass sampling summary data at DSNY

Total Pit Depth (cm)	120
Total Cumulative Mass at 30cm (g per m ²)	394.45
Total Cumulative Mass at 100cm (g per m ²)	553.29
Total Cumulative Mass (g per m ²)	559.65

5.3 Plant Characterization and Phenology Species Selection

5.3.1 Site-Specific Methods

Plant characterization data were collected by an external contractor and NEON technicians during the summer of July 2013 following the standard methods outlined in TOS Site Characterization Methods (RD[6]). For more information on this protocol and data product numbers see Appendix A.

5.3.2 Results

Table 20: Site plant characterization and phenology species summary at DSNY

Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
ANVI2	<i>Andropogon virginicus</i> L.	1	24	NA	NA
ARBE7	<i>Aristida beyrichiana</i> Trin. & Rupr.	2	14	NA	NA
AXFU	<i>Axonopus furcatus</i> (Fluegg) Hitchc.	3	7	NA	NA
EUCA26	<i>Euthamia caroliniana</i> (L.) Greene ex Porter & Britton	4	6	NA	NA
POPR4	<i>Polypremum procumbens</i> L.	5	2	NA	NA
SERE2	<i>Serenoa repens</i> (W. Bartram) Small	6	2	NA	NA
SCSC	<i>Schizachyrium scoparium</i> (Michx.) Nash	7	2	NA	NA
GAEL2	<i>Galactia elliottii</i> Nutt.	8	2	NA	NA
DISAT	<i>Dichanthelium sabulorum</i> (Lam.) Gould & C.A. Clark var. <i>thinum</i> (Hitchc. & Chase) Gould & C.A. Clark	9	2	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
SOSE5	<i>Sorghastrum secundum</i> (Elliott) Nash	10	2	NA	NA
AXFI	<i>Axonopus fissifolius</i> (Raddi) Kuhlm.	11	2	NA	NA
ANGL10	<i>Andropogon glaucopsis</i> Elliott	12	2	NA	NA
CYRE5	<i>Cyperus retrorsus</i> Chapm.	13	1	NA	NA
EUCA5	<i>Eupatorium capillifolium</i> (Lam.) Small	14	1	NA	NA
CAVE8	<i>Carex verrucosa</i> Muhl.	15	1	NA	NA
PAHE2	<i>Panicum hemitomon</i> Schult.	16	1	NA	NA
CEER2	<i>Centella erecta</i> (L. f.) Fernald	17	<1	NA	NA
PALA10	<i>Paspalum laeve</i> Michx.	18	<1	NA	NA
DIDIT	<i>Dichanthelium dichotomum</i> (L.) Gould var. <i>tenue</i> (Muhl.) Gould & C.A. Clark	19	<1	NA	NA
PLRO	<i>Pluchea rosea</i> Godfrey	20	<1	NA	NA
JUMA4	<i>Juncus marginatus</i> Rostk.	21	<1	NA	NA
LUMA4	<i>Ludwigia maritima</i> Harper	22	<1	NA	NA
SAGI	<i>Saccharum giganteum</i> (Walter) Pers.	23	<1	NA	NA
SOFI	<i>Solidago fistulosa</i> Mill.	24	<1	NA	NA
ANGLP	<i>Andropogon glomeratus</i> (Walter) Britton, Sterns & Poggend. var. <i>pumilus</i> Vasey ex L.H. Dewey	25	<1	NA	NA
CIHO2	<i>Cirsium horridulum</i> Michx.	26	<1	NA	NA
MISC	<i>Mikania scandens</i> (L.) Willd.	27	<1	NA	NA
RHMI7	<i>Rhynchospora microcarpa</i> Baldw. ex A. Gray	28	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
ARPUT	<i>Aristida purpurascens</i> Poir. var. <i>tenuispica</i> (Hitchc.) Allred	29	<1	NA	NA
ERRE	<i>Eragrostis refracta</i> (Muhl.) Scribn.	30	<1	NA	NA
DISAP	<i>Dichanthelium sabulorum</i> (Lam.) Gould & C.A. Clark var. <i>patulum</i> (Scribn. & Merr.) Gould & C.A. Clark	31	<1	NA	NA
RHMA	<i>Rhexia mariana</i> L.	32	<1	NA	NA
PHAR14	<i>Physalis arenicola</i> Kearney	33	<1	NA	NA
ANVID	<i>Andropogon virginicus</i> L. var. <i>decipiens</i> C.S. Campbell	34	<1	NA	NA
QUMI2	<i>Quercus minima</i> (Sarg.) Small	35	<1	NA	NA
ANBR2	<i>Andropogon brachystachyus</i> Chapm.	36	<1	NA	NA
OLUN	<i>Oldenlandia uniflora</i> L.	37	<1	NA	NA
HYCI	<i>Hypericum cistifolium</i> Lam.	38	<1	NA	NA
PRPE	<i>Proserpinaca pectinata</i> Lam.	39	<1	NA	NA
ERHI2	<i>Erechtites hieraciifolia</i> (L.) Raf. ex DC.	40	<1	NA	NA
AMMU2	<i>Amphicarpum muehlenbergianum</i> (Schult.) Hitchc.	41	<1	NA	NA
RHCH2	<i>Rhynchospora chalarocephala</i> Fernald & Gale	42	<1	NA	NA
ASRE7	<i>Asimina reticulata</i> Shuttlw. ex Chapm.	43	<1	NA	NA
LUVI2	<i>Ludwigia virgata</i> Michx.	44	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
CHNIN	<i>Chamaecrista nictitans</i> (L.) Moench ssp. <i>nictitans</i> (L.) Moench ssp. <i>nictitans</i>	45	<1	NA	NA
EREL	<i>Eragrostis elliottii</i> S. Watson	46	<1	NA	NA
JUDI	<i>Juncus dichotomus</i> Elliott	46	<1	NA	NA
CYPO	<i>Cyperus polystachyos</i> Rottb.	48	<1	NA	NA
DISTG	<i>Dichanthelium strigosum</i> (Muhl. ex Elliott) Freckmann var. <i>glabrescens</i> (Griseb.) Freckmann	48	<1	NA	NA
DIVI3	<i>Diiodia virginiana</i> L.	48	<1	NA	NA
ELEL3	<i>Elephantopus elatus</i> Bertol.	51	<1	NA	NA
DISE3	<i>Digitaria serotina</i> (Walter) Michx.	52	<1	NA	NA
BAHA	<i>Baccharis halimifolia</i> L.	53	<1	NA	NA
HYAL	<i>Hyptis alata</i> (Raf.) Shinners	54	<1	NA	NA
BUAM	<i>Buchnera americana</i> L.	55	<1	NA	NA
HYMY	<i>Hypericum myrtifolium</i> Lam.	56	<1	NA	NA
LACA5	<i>Lachnanthes caroliana</i> (Lam.) Dandy	57	<1	NA	NA
PASE5	<i>Paspalum setaceum</i> Michx.	57	<1	NA	NA
DIDIE	<i>Dichanthelium dichotomum</i> (L.) Gould var. <i>ensifolium</i> (Baldw. ex Elliott) Gould & C.A. Clark	59	<1	NA	NA
DISC2	<i>Dichanthelium scabriusculum</i> (Elliott) Gould & C.A. Clark	59	<1	NA	NA
ERAGR	<i>Eragrostis</i> sp.	59	<1	NA	NA
ARPU8	<i>Aristida purpurascens</i> Poir.	62	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
CTAR	<i>Ctenium aromaticum</i> (Walter) Alph. Wood	63	<1	NA	NA
ELBA2	<i>Eleocharis baldwinii</i> (Torr.) Chapm.	63	<1	NA	NA
PANO2	<i>Paspalum notatum</i>	63	<1	NA	NA
SCDU3	<i>Scoparia dulcis</i> L.	63	<1	NA	NA
RHPU3	<i>Rhynchospora pusilla</i> Chapm. ex M.A. Curtis	67	<1	NA	NA
VILA4	<i>Viola lanceolata</i> L.	67	<1	NA	NA
LAAN	<i>Lachnocaulon anceps</i> (Walter) Morong	69	<1	NA	NA
PIGR4	<i>Pityopsis graminifolia</i> (Michx.) Nutt.	69	<1	NA	NA
TAAS	<i>Taxodium ascendens</i> Brongn.	71	<1	NA	NA
HYTE4	<i>Hypericum tetrapetalum</i> Lam.	72	<1	NA	NA
HYFA	<i>Hypericum fasciculatum</i> Lam.	73	<1	NA	NA
CINU	<i>Cirsium nuttallii</i> DC.	74	<1	NA	NA
CRRO5	<i>Crotalaria rotundifolia</i> Walter ex J.F. Gmel.	74	<1	NA	NA
SAGR8	<i>Sabatia grandiflora</i> (A. Gray) Small	74	<1	NA	NA
SAST	<i>Sacciolepis striata</i> (L.) Nash	74	<1	NA	NA
URLO	<i>Urena lobata</i> L.	74	<1	NA	NA
FIPU	<i>Fimbristylis puberula</i> (Michx.) Vahl	79	<1	NA	NA
JUSC	<i>Juncus scirpoides</i> Lam.	79	<1	NA	NA
WOVI	<i>Woodwardia virginica</i> (L.) Sm.	79	<1	NA	NA
EURO4	<i>Eupatorium rotundifolium</i> L.	82	<1	NA	NA
FUSC	<i>Fuirena scirpoidea</i> Michx.	82	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
HYMU	<i>Hypericum mutilum</i> L.	82	<1	NA	NA
SAIN	<i>Sacciolepis indica</i> (L.) Chase	82	<1	NA	NA
SAPA	<i>Sabal palmetto</i> (Walter) Lodd. ex Schult. & Schult. f.	86	<1	NA	NA
HEAN2	<i>Helianthus angustifolius</i> L.	87	<1	NA	NA
JUEF	<i>Juncus effusus</i> L.	87	<1	NA	NA
PASPA2	<i>Paspalum</i> sp.	87	<1	NA	NA
RUAR2	<i>Rubus argutus</i> Link	87	<1	NA	NA
CHNI2	<i>Chamaecrista nictitans</i> (L.) Moench	91	<1	NA	NA
CHNIA	<i>Chamaecrista nictitans</i> (L.) Moench ssp. <i>nictitans</i> var. <i>aspera</i> (Muhl. ex Elliott) Irwin & Barneby	91	<1	NA	NA
COCA5	<i>Conyza canadensis</i> (L.) Cronquist	91	<1	NA	NA
COER	<i>Commelina erecta</i> L.	91	<1	NA	NA
FIAN	<i>Fimbristylis annua</i> (All.) Roem. & Schult.	91	<1	NA	NA
LUPA	<i>Ludwigia palustris</i> (L.) Elliott	91	<1	NA	NA
PARE3	<i>Panicum repens</i> L.	91	<1	NA	NA
PTPY2	<i>Pterocaulon pycnostachyum</i> (Michx.) Elliott	91	<1	NA	NA
RHFA	<i>Rhynchospora fascicularis</i> (Michx.) Vahl	91	<1	NA	NA
RHPL3	<i>Rhynchospora plumosa</i> Elliott	91	<1	NA	NA
RHNC3	<i>Rhynchospora</i> sp.	91	<1	NA	NA
VAMY3	<i>Vaccinium myrsinites</i> Lam.	91	<1	NA	NA
XYEL2	<i>Xyris elliottii</i> Chapm.	91	<1	NA	NA
QUVI	<i>Quercus virginiana</i> Mill.	104	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
CHNIN2	<i>Chamaecrista nictitans</i> (L.) Moench ssp. <i>nictitans</i> var. <i>nictitans</i>	105	<1	NA	NA
CYSU	<i>Cyperus surinamensis</i> Rottb.	105	<1	NA	NA
LACA	<i>Lactuca canadensis</i> L.	105	<1	NA	NA
LERE2	<i>Lespedeza repens</i> (L.) W.P.C. Barton	105	<1	NA	NA
LUDE4	<i>Ludwigia decurrens</i> Walter	105	<1	NA	NA
LYAP3	<i>Lygodesmia aphylla</i> (Nutt.) DC.	105	<1	NA	NA
MISE3	<i>Mitreola sessilifolia</i> (J.F. Gmel.) G. Don	105	<1	NA	NA
OXCO	<i>Oxalis corniculata</i> L.	105	<1	NA	NA
PHNO2	<i>Phyla nodiflora</i> (L.) Greene	105	<1	NA	NA
POLU	<i>Polygala lutea</i> L.	105	<1	NA	NA
PSOB3	<i>Pseudognaphalium obtusifolium</i> (L.) Hilliard & B.L. Burtt	105	<1	NA	NA
SCBA2	<i>Scleria baldwinii</i> (Torr.) Steud.	105	<1	NA	NA
TEHI2	<i>Tephrosia hispidula</i> (Michx.) Pers.	105	<1	NA	NA
MOCE2	<i>Morella cerifera</i> (L.) Small	118	<1	NA	NA
PIPA2	<i>Pinus palustris</i> Mill.	119	<1	NA	NA
LYFR3	<i>Lyonia fruticosa</i> (Michx.) G.S. Torr.	120	<1	NA	NA
RHCO	<i>Rhus copallina</i> L.	121	<1	NA	NA
HYTE11	<i>Hypericum tenuifolium</i> Pursh	122	<1	NA	NA
HYHY	<i>Hypericum hypericoides</i> (L.) Crantz	123	<1	NA	NA

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Note: Mean canopy area is collected for shrubs. Mean area at breast height (ABH) is collected for trees. Taxon IDs and scientific names are based on the USDA Plants database (plants.usda.gov).

Table 21: Per plot breakdown of species richness, diversity, and herbaceous cover at DSNY

Plot ID	Species Richness	Shannon Diversity Index	Percent Total Herbaceous Cover
DSNY_041	24	2.63	172
DSNY_044	26	2.55	194
DSNY_047	20	2.18	166
DSNY_048	20	2.07	150
DSNY_050	29	2.33	136
DSNY_051	30	2.76	201
DSNY_052	33	2.74	178
DSNY_053	13	2.15	70
DSNY_055	26	2.2	134
DSNY_056	23	2.28	218
DSNY_058	26	2.47	249
DSNY_059	26	2.63	184
DSNY_060	32	2.59	155
DSNY_061	20	2.27	166
DSNY_063	31	2.78	199
DSNY_065	29	2.45	151
DSNY_066	12	1.99	49
DSNY_067	23	2.52	189
DSNY_068	22	2.52	182
DSNY_070	27	2.34	356

Note: Percent herbaceous cover was measured by species and then added together to calculate the percent total herbaceous cover for each plot.

5.4 Beetles

5.4.1 Site-Specific Methods

Beetle site characterization was conducted in June and July 2012 by NEON staff following the standard methods outlined in TOS Site Characterization Methods (RD[6]). Beetle site characterization data was collected to start site level teaching collections. For DNA sequence data generated as a result of these efforts, visit the Barcode of Life Datasystems (BOLD) at <http://www.boldsystems.org>. For more information on this protocol and data product numbers see Appendix A.

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5.4.2 Results

Table 22: Beetle trap locations at DSNY

Trap ID	Lat	Long
1	28.125	-81.433
2	28.104	-81.43
3	28.073	-81.429
4	28.044	-81.422
5	28.064	-81.418
6	28.112	-81.415
7	28.047	-81.402
8	28.089	-81.397

Table 23: Beetle identification results at DSNY

BOLD Sample ID	Scientific Name	Collection Date	Trap Location
NEONTcarabid6097	<i>Tetragonoderus laevigatus</i>	8/20/2012	1
NEONTcarabid6044	<i>Tetragonoderus intersectus</i>	7/23/2012	1
NEONTcarabid6042	<i>Tetragonoderus intersectus</i>	8/6/2012	1
NEONTcarabid6128	<i>Selenophorus fossulatus</i>	8/20/2012	1
NEONTcarabid6129	<i>Selenophorus fossulatus</i>	8/20/2012	1
NEONTcarabid6096	<i>Tetragonoderus intersectus</i>	7/23/2012	1
NEONTcarabid6040	<i>Tetragonoderus intersectus</i>	8/20/2012	1
NEONTcarabid6121	<i>Amblygnathus iripennis</i>	7/16/2012	1
NEONTcarabid6134	<i>Selenophorus fossulatus</i>	7/23/2012	1
NEONTcarabid6108	<i>Selenophorus ellipticus</i>	8/20/2012	1
NEONTcarabid6045	<i>Tetragonoderus intersectus</i>	7/23/2012	1
NEONTcarabid6073	<i>Pasimachus sublaevis</i>	7/16/2012	1
NEONTcarabid6105	<i>Selenophorus ellipticus</i>	7/30/2012	1
NEONTcarabid6127	<i>Selenophorus fossulatus</i>	7/30/2012	1
NEONTcarabid6043	<i>Tetragonoderus intersectus</i>	8/6/2012	1
NEONTcarabid6126	<i>Selenophorus fossulatus</i>	7/23/2012	1
NEONTcarabid6100	<i>Tetragonoderus laevigatus</i>	8/6/2012	1
NEONTcarabid6114	<i>Selenophorus ellipticus</i>	8/20/2012	1
NEONTcarabid6101	<i>Tetragonoderus laevigatus</i>	8/6/2012	1

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BOLD Sample ID	Scientific Name	Collection Date	Trap Location
NEONTcarabid6102	<i>Tetragonoderus laevigatus</i>	8/13/2012	1
NEONTcarabid6133	<i>Selenophorus fossulatus</i>	7/23/2012	1
NEONTcarabid6130	<i>Selenophorus fossulatus</i>	7/16/2012	1
NEONTcarabid6132	<i>Selenophorus fossulatus</i>	7/16/2012	1
NEONTcarabid6103	<i>Tetragonoderus laevigatus</i>	8/20/2012	1
NEONTcarabid6098	<i>Tetragonoderus laevigatus</i>	8/20/2012	1
NEONTcarabid6099	<i>Tetragonoderus laevigatus</i>	8/20/2012	1
NEONTcarabid6131	<i>Selenophorus fossulatus</i>	7/16/2012	1
NEONTcarabid6124	<i>Selenophorus fossulatus</i>	7/30/2012	1
NEONTcarabid6072	<i>Pasimachus sublaevis</i>	8/6/2012	2
NEONTcarabid6074	<i>Pasimachus sublaevis</i>	7/16/2012	2
NEONTcarabid6085	<i>Scarites ocalensis</i>	8/6/2012	2
NEONTcarabid6078	<i>Scarites ocalensis</i>	7/23/2012	2
NEONTcarabid6146	<i>Cyclotrachelus faber</i>	8/13/2012	3
NEONTcarabid6145	<i>Cyclotrachelus faber</i>	7/16/2012	3
NEONTcarabid6118	<i>Semiardistomis puncticollis</i>	7/30/2012	4
NEONTcarabid6093	<i>Anisodactylus haplomus</i>	7/16/2012	4
NEONTcarabid6142	<i>Anisodactylus haplomus</i>	7/23/2012	4
NEONTcarabid6091	<i>Anisodactylus haplomus</i>	7/16/2012	4
NEONTcarabid6106	<i>Selenophorus ellipticus</i>	7/16/2012	4
NEONTcarabid6143	<i>Anisodactylus haplomus</i>	7/23/2012	4
NEONTcarabid6117	<i>Semiardistomis puncticollis</i>	7/23/2012	4
NEONTcarabid6092	<i>Anisodactylus haplomus</i>	7/16/2012	4
NEONTcarabid6150	<i>Dicaelus elongatus</i>	7/16/2012	4
NEONTcarabid6107	<i>Selenophorus ellipticus</i>	8/13/2012	4
NEONTcarabid6141	<i>Anisodactylus haplomus</i>	7/16/2012	4
NEONTcarabid6095	<i>Tetragonoderus intersectus</i>	7/23/2012	5
NEONTcarabid6041	<i>Tetragonoderus intersectus</i>	7/16/2012	5
NEONTcarabid6147	<i>Cyclotrachelus faber</i>	8/20/2012	5
NEONTcarabid6151	<i>Cicindela punctulata</i>	8/6/2012	5
NEONTcarabid6046	<i>Tetragonoderus intersectus</i>	7/23/2012	5
NEONTcarabid6094	<i>Tetragonoderus intersectus</i>	7/16/2012	5
NEONTcarabid6079	<i>Scarites ocalensis</i>	7/16/2012	6
NEONTcarabid6068	<i>Pasimachus sublaevis</i>	7/16/2012	6

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BOLD Sample ID	Scientific Name	Collection Date	Trap Location
NEONTcarabid6080	<i>Scarites ocalensis</i>	8/13/2012	6
NEONTcarabid6070	<i>Pasimachus sublaevis</i>	8/13/2012	6
NEONTcarabid6089	<i>Anisodactylus haplomus</i>	7/23/2012	6
NEONTcarabid6075	<i>Pasimachus sublaevis</i>	7/16/2012	6
NEONTcarabid6144	<i>Anisodactylus haplomus</i>	8/13/2012	6
NEONTcarabid6083	<i>Scarites ocalensis</i>	8/13/2012	7
NEONTcarabid6077	<i>Pasimachus sublaevis</i>	8/20/2012	7
NEONTcarabid6104	<i>Selenophorus ellipticus</i>	7/30/2012	7
NEONTcarabid6086	<i>Scarites ocalensis</i>	8/6/2012	7
NEONTcarabid6087	<i>Scarites ocalensis</i>	8/20/2012	7
NEONTcarabid6084	<i>Scarites ocalensis</i>	7/30/2012	7
NEONTcarabid6082	<i>Scarites ocalensis</i>	8/20/2012	7
NEONTcarabid6081	<i>Scarites ocalensis</i>	8/6/2012	7
NEONTcarabid6148	<i>Pasimachus strenuus</i>	8/6/2012	8
NEONTcarabid6149	<i>Pasimachus strenuus</i>	8/13/2012	8
NEONTcarabid6071	<i>Pasimachus sublaevis</i>	8/13/2012	8
NEONTcarabid6076	<i>Pasimachus sublaevis</i>	7/16/2012	8
NEONTcarabid6069	<i>Pasimachus sublaevis</i>	8/13/2012	8

5.5 Mosquitoes

5.5.1 Site-Specific Methods

Mosquito site characterization was conducted in June and July 2012 by NEON staff following the standard methods outlined in TOS Site Characterization Methods (RD[6]) to test protocol methods and start site level species lists. No pathogen testing was performed. For DNA sequence data generated as a result of these efforts, visit the Barcode of Life Datasystems (BOLD) at <http://www.boldsystems.org>. For more information on this protocol and data product numbers see Appendix A.

5.5.2 Results

Table 24: Mosquito trap locations at JERC

Trap ID	Lat	Long
1	28.104	-81.43
2	28.044	-81.422

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Trap ID	Lat	Long
3	28.1	-81.414
4	28.047	-81.402

Table 25: Mosquito identification results at DSNY

BOLD Sample ID	Scientific Name	Collection Date	Trap Location
NEONTculicid6225	<i>Aedes canadensis</i>	8/23/2012	1
NEONTculicid6294	<i>Psorophora ferox</i>	8/2/2012	1
NEONTculicid6569	<i>Aedes sollicitans</i>	7/11/2012	1
NEONTculicid6288	<i>Culex erraticus</i>	8/23/2012	2
NEONTculicid6292	<i>Psorophora columbiae</i>	8/23/2012	2
NEONTculicid6568	<i>Aedes taeniorhynchus</i>	7/11/2012	2
NEONTculicid6231	<i>Culex salinarius</i>	8/23/2012	2
NEONTculicid6291	<i>Psorophora columbiae</i>	8/23/2012	2
NEONTculicid6233	<i>Culex salinarius</i>	8/23/2012	2
NEONTculicid6284	<i>Anopheles quadrimaculatus</i>	8/23/2012	2
NEONTculicid6230	<i>Culex salinarius</i>	8/23/2012	2
NEONTculicid6285	<i>Culex nigripalpus</i>	8/23/2012	2
NEONTculicid6226	<i>Psorophora ciliata</i>	8/23/2012	2
NEONTculicid6293	<i>Mansonia titillans</i>	8/23/2012	2
NEONTculicid6616	<i>Culex erraticus</i>	8/23/2012	2
NEONTculicid6227	<i>Aedes infirmatus</i>	8/23/2012	2
NEONTculicid6232	<i>Culex salinarius</i>	8/23/2012	2
NEONTculicid6420	<i>Aedes taeniorhynchus</i>	7/11/2012	2
NEONTculicid6421	<i>Aedes taeniorhynchus</i>	7/11/2012	2
NEONTculicid6564	<i>Aedes taeniorhynchus</i>	7/11/2012	2
NEONTculicid6228	<i>Aedes infirmatus</i>	8/23/2012	2
NEONTculicid6566	<i>Aedes taeniorhynchus</i>	7/11/2012	2
NEONTculicid6565	<i>Aedes taeniorhynchus</i>	7/11/2012	2
NEONTculicid6290	<i>Mansonia dyari</i>	8/23/2012	2
NEONTculicid6286	<i>Coquillettidia perturbans</i>	8/23/2012	2
NEONTculicid6422	<i>Aedes taeniorhynchus</i>	7/11/2012	2
NEONTculicid6570	<i>Anopheles atropos</i>	7/11/2012	2
NEONTculicid6417	<i>Aedes taeniorhynchus</i>	7/11/2012	2

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BOLD Sample ID	Scientific Name	Collection Date	Trap Location
NEONTculicid6571	<i>Anopheles atropos</i>	7/12/2012	2
NEONTculicid6287	<i>Culex erraticus</i>	8/23/2012	2
NEONTculicid6418	<i>Aedes taeniorhynchus</i>	7/11/2012	2
NEONTculicid6282	<i>Anopheles crucians</i>	8/23/2012	2
NEONTculicid6419	<i>Aedes taeniorhynchus</i>	7/11/2012	2
NEONTculicid6289	<i>Culex erraticus</i>	8/23/2012	2
NEONTculicid6229	<i>Culex salinarius</i>	8/23/2012	2
NEONTculicid6224	<i>Aedes mitchellae</i>	8/23/2012	3
NEONTculicid6234	<i>Aedes vexans</i>	8/23/2012	3
NEONTculicid6223	<i>Aedes mitchellae</i>	8/23/2012	3
NEONTculicid6222	<i>Aedes mitchellae</i>	8/23/2012	3
NEONTculicid6220	<i>Aedes atlanticus</i>	8/23/2012	4
NEONTculicid6283	<i>Culiseta melanura</i>	8/23/2012	4
NEONTculicid6221	<i>Aedes atlanticus</i>	8/23/2012	4
NEONTculicid6219	<i>Aedes atlanticus</i>	8/23/2012	4
NEONTculicid6296	<i>Uranotaenia sapphirina</i>	8/23/2012	4
NEONTculicid6295	<i>Uranotaenia lowii</i>	8/1/2012	4

5.6 Ticks

5.6.1 Site-Specific Methods

Tick drags were conducted at DSNY in the spring and summer of 2012. For more information on this protocol and data product numbers see Appendix A.

5.6.2 Results

Table 26: Tick sampling results at DSNY

Vegetation Type	Number of Plots Sampled	Tick Abundance (Mean)	Tick Abundance (stDev)	Total Number of Ticks Collected	Max Number of Ticks Collected	Number of Plots With No Ticks	Total Area Sampled (m ³)
Evergreen open tree canopy	9	0.3	0.95	3	3	8	2700

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Vegetation Type	Number of Plots Sampled	Tick Abundance (Mean)	Tick Abundance (stDev)	Total Number of Ticks Collected	Max Number of Ticks Collected	Number of Plots With No Ticks	Total Area Sampled (m ³)
Mixed ever-green/deciduous open tree canopy	1	0	0	0	NA	1	300
Perennial graminoid grassland	7	0	0	0	NA	7	2100
Total	17	0.2	0.7	3	3	16	5100

Note: Vegetation types here match LANDFIRE (Landscape Fire and Resource Management Planning Tools; <http://www.landfire.gov/>) vegetation categories, rather than NLCD land cover types employed in current protocols.

5.7 Species Reference Lists

A review of the literature for taxonomic lists of interest for each site was conducted prior to field work. In the case of vertebrates that NEON may capture (e.g., reptiles, amphibians, small mammals), these lists were often required to secure permits. Key references identified in this effort are listed below. Species lists and associated references for small mammals and breeding landbirds can be found in the appendices of the respective protocols (RD[07], RD[08]).

Bousquet, Y. 2012. Catalogue of Geadephaga (Coleoptera, Adephaga) of America, north of Mexico. ZooKeys, (245), 1-1722.

Darsie Jr., R. F., and R. A. Ward. 2005. Identification and geographical distribution of the mosquitoes of North America, North of Mexico. University Press of Florida, Gainesville.

Farmer, Anna L., et al. 2014. "Survey of Winter-breeding Amphibian Species." Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute.

Hammer, Roger L. Central Florida Wildflowers: A Field Guide to Wildflowers of the Lake Wales Ridge, Ocala National Forest, Disney Wilderness Preserve, and More than 60 State Parks and Preserves. Rowman & Littlefield, 2016.

Ware, S., C. Frost, and P.D. Doerr. 1993. Southern Mixed Hardwood Forest: The Former Longleaf Pine Forest, Pages 447-493 in (W.H. Martin, et al. eds.) Biodiversity of the Southeastern United States, John Wiley & Sons, New York. 502pp.

6 CORE SITE- JONES ECOLOGICAL RESEARCH CENTER (JERC)

The Joseph Jones Ecological Research Center (JERC) is an 11,000-hectare (13 km²) reserve located within the Lower Coastal Plains and Flatwoods areas in southern Georgia.

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- Site host: Private Owner
- Located in: Baker County, Georgia
- Area: 13 km²
- Elevation: 30-60m
- Dominant vegetation type- The dominant vegetation cover at Joseph Jones is a mix of Longleaf Pine (*Pinus palustris* Mill.), Oaks (various) and wiregrass (*Aristida stricta* Michx.); numerous species of other perennial grasses and forbs are also present. In addition, this site is interspersed with several species of oaks that change the natural fire frequency and fuel quality.
- General management: The Jones site has been managed with low intensity, dormant-season prescribed fires for the past 75 years at a frequency of every 3-4 years.
- There is an aquatic array at the Jones site in a representative perennial, ground- and surface-water fed stream, called the Ichawaynochaway creek. See the AOS site characterization report for more details (RD[05]).
- Plot Selection: NEON TOS Plots were allocated across the site following NEON standard criteria and avoiding existing research.

6.1 TOS Spatial Sampling Design

TOS plots were allocated at JERC according to a spatially balanced and stratified-random design (RD[3]). The 2006 National Land Cover Database (NLCD) was selected for stratification because of the consistent and comparable data availability across the United States. Due to a misclassification between a stratum described by the NLCD (pasture hay) and existing ground cover (cultivated crops), all vegetation associated with agricultural was considered "cultivated crops". Similarly, due to a misclassification between a stratum described by the NLCD (grassland herbaceous) and existing ground cover (open mixed forest), TOS plots were not initially allocated to grassland herbaceous. The associated pixels will be reclassified with data from NEON's remote sensing platform such that this landscape component will be sampled early in NEON Operations. TOS plots that are distributed throughout the site according to the spatial design are hereafter referred to as 'Distributed Plots'. TOS plots that are randomly allocated within the airshed of the NEON Terrestrial Instrument System (TIS) tower to collect complementary data are not stratified by NLCD class; these plots are hereafter referred to as 'Tower Plots'. The maps below depict the plot locations for the first year of NEON sampling. Some plot locations may change over time due to logistics, safety, and science requirements. Please visit the NEON website (<http://www.neonscience.org>) for updated plot locations at each site.

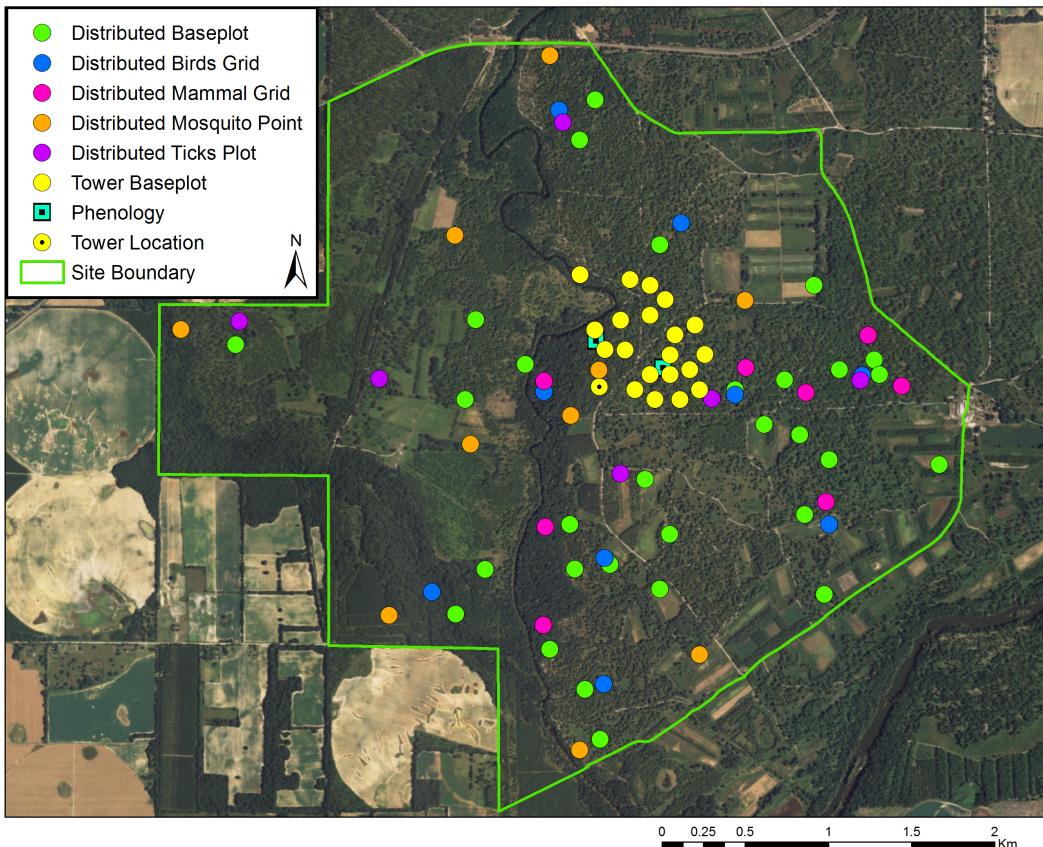


Figure 9: Map of TOS plot centroids within the NEON TOS sampling boundary at JERC

For a list of protocols associated with each plot see tables below; for additional spatial design information see RD[03].

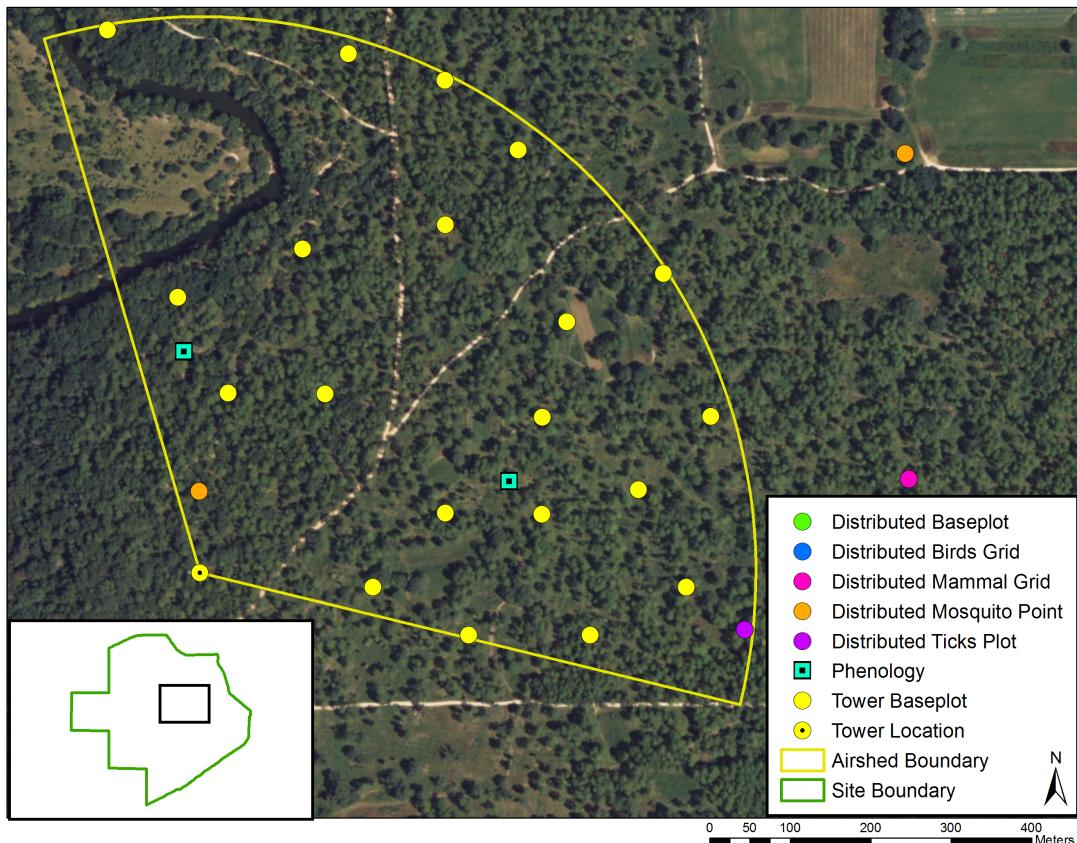


Figure 10: Map of the tower airshed at and TOS centroids JERC

More information about the tower airshed can be found in the FIU site characterization report (RD[04])

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Table 27: NLCD land cover classes and area within the TOS site boundary at JERC

NLCD Class	Site Area (km ²)	Percent (%)
Evergreen Forest	3.61	27.16
Deciduous Forest	3.06	23.04
Mixed Forest	1.57	11.77
Cultivated Crops	1.52	11.43
Pasture Hay	1.01	7.62
Grassland Herbaceous	0.97	7.32
Woody Wetlands	0.6	4.51
Developed Open Space	0.47	3.5
Shrub Scrub	0.46	3.48
Developed Low Intensity	0.01	0.1
Emergent Herbaceous Wetlands	0.01	0.07

Note: Any NLCD land cover classes less than 5% will not be sampled. Additionally, no sampling will take place in Water, Developed, or Barren Land NLCD classes.

Table 28: NLCD land cover classes and TOS plot numbers at JERC

Plot Type	Plot Subtype	NLCD Class	Number of Plots Established
Distributed	Base Plot	Cultivated Crops	5
Distributed	Base Plot	Deciduous Forest	10
Distributed	Base Plot	Evergreen Forest	10
Distributed	Base Plot	Grassland Herbaceous	0
Distributed	Base Plot	Mixed Forest	5
Distributed	Base Plot	Pasture Hay	0
Distributed	Bird Grid	Cultivated Crops	0
Distributed	Bird Grid	Deciduous Forest	2
Distributed	Bird Grid	Evergreen Forest	4
Distributed	Bird Grid	Grassland Herbaceous	0
Distributed	Bird Grid	Mixed Forest	3
Distributed	Bird Grid	Pasture Hay	0
Distributed	Mammal Grid	Cultivated Crops	0
Distributed	Mammal Grid	Deciduous Forest	3
Distributed	Mammal Grid	Evergreen Forest	3
Distributed	Mammal Grid	Grassland Herbaceous	0

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Plot Type	Plot Subtype	NLCD Class	Number of Plots Established
Distributed	Mammal Grid	Mixed Forest	2
Distributed	Mammal Grid	Pasture Hay	0
Distributed	Mosquito Point	Cultivated Crops	0
Distributed	Mosquito Point	Deciduous Forest	3
Distributed	Mosquito Point	Evergreen Forest	4
Distributed	Mosquito Point	Grassland Herbaceous	0
Distributed	Mosquito Point	Mixed Forest	3
Distributed	Mosquito Point	Pasture Hay	0
Distributed	Tick Plot	Cultivated Crops	1
Distributed	Tick Plot	Deciduous Forest	2
Distributed	Tick Plot	Evergreen Forest	2
Distributed	Tick Plot	Grassland Herbaceous	0
Distributed	Tick Plot	Mixed Forest	1
Distributed	Tick Plot	Pasture Hay	0
Tower	Base Plot	N/A	20
tower	Phenology Plot	N/A	2

Note: NLCD land cover classes are not used to stratify Tower Plots. Mammals and birds are only sampled in forested areas in JERC due to the small patch size of the other land cover types. Due to logistical constrictions beetle sampling does not occur in cultivated crops.

Table 29: Number of Distributed Base plots per NLCD land cover class per protocol at JERC

Plot Type	Plot Subtype	NLCD Class	Protocols	Number of Plots
Distributed	Base Plot	Deciduous Forest	Beetles	3
Distributed	Base Plot	Evergreen Forest	Beetles	4
Distributed	Base Plot	Mixed Forest	Beetles	3
Distributed	Base Plot	Cultivated Crops	Biogeochemistry	1
Distributed	Base Plot	Deciduous Forest	Biogeochemistry	2
Distributed	Base Plot	Evergreen Forest	Biogeochemistry	2
Distributed	Base Plot	Mixed Forest	Biogeochemistry	1
Distributed	Base Plot	Cultivated Crops	Canopy Foliage Chemistry	1
Distributed	Base Plot	Deciduous Forest	Canopy Foliage Chemistry	2
Distributed	Base Plot	Evergreen Forest	Canopy Foliage Chemistry	2
Distributed	Base Plot	Mixed Forest	Canopy Foliage Chemistry	1
Distributed	Base Plot	Cultivated Crops	Coarse Downed Debris	3

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Plot Type	Plot Subtype	NLCD Class	Protocols	Number of Plots
Distributed	Base Plot	Deciduous Forest	Coarse Downed Debris	7
Distributed	Base Plot	Evergreen Forest	Coarse Downed Debris	7
Distributed	Base Plot	Mixed Forest	Coarse Downed Debris	3
Distributed	Base Plot	Cultivated Crops	Digital Hemispherical Photos for Leaf Area Index	3
Distributed	Base Plot	Deciduous Forest	Digital Hemispherical Photos for Leaf Area Index	7
Distributed	Base Plot	Evergreen Forest	Digital Hemispherical Photos for Leaf Area Index	7
Distributed	Base Plot	Mixed Forest	Digital Hemispherical Photos for Leaf Area Index	3
Distributed	Base Plot	Cultivated Crops	Herbaceous Productivity	3
Distributed	Base Plot	Deciduous Forest	Herbaceous Productivity	7
Distributed	Base Plot	Evergreen Forest	Herbaceous Productivity	7
Distributed	Base Plot	Mixed Forest	Herbaceous Productivity	3
Distributed	Base Plot	Cultivated Crops	Plant Diversity	5
Distributed	Base Plot	Deciduous Forest	Plant Diversity	10
Distributed	Base Plot	Evergreen Forest	Plant Diversity	10
Distributed	Base Plot	Mixed Forest	Plant Diversity	5
Distributed	Base Plot	Cultivated Crops	Soil Microbes	1
Distributed	Base Plot	Deciduous Forest	Soil Microbes	2
Distributed	Base Plot	Evergreen Forest	Soil Microbes	2
Distributed	Base Plot	Mixed Forest	Soil Microbes	1
Distributed	Base Plot	Cultivated Crops	Vegetation Structure	3
Distributed	Base Plot	Deciduous Forest	Vegetation Structure	7
Distributed	Base Plot	Evergreen Forest	Vegetation Structure	7
Distributed	Base Plot	Mixed Forest	Vegetation Structure	3

Note: Distributed Base Plots typically support more than one TOS protocol; 'Number of Plots' cannot be added to get total TOS Distributed Base Plot number.

Table 30: Number of Tower Plots per protocol at JERC

Plot Type	Plot Subtype	Protocols	Number of Plots
Tower	Base Plot	Below Ground Biomass Coring	20
Tower	Base Plot	Biogeochemistry	4

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Plot Type	Plot Subtype	Protocols	Number of Plots
Tower	Base Plot	Canopy Foliage Chemistry	4
Tower	Base Plot	Coarse Downed Debris	20
Tower	Base Plot	Digital Hemispherical Photos for Leaf Area Index	20
Tower	Base Plot	Herbaceous Productivity	20
Tower	Base Plot	Litterfall and Fine Woody Debris	20
Tower	Base Plot	Mat-Forming Bryophyte Production	20
Tower	Base Plot	Plant Diversity	3
Tower	Base Plot	Soil Microbes	4
Tower	Base Plot	Vegetation Structure	20
Tower	Phenology	Plant Phenology	2

Note: Tower Base Plots typically support more than one TOS protocol; ‘Number of Plots’ cannot be added to get total TOS Tower Base Plot number.

6.2 Belowground Biomass

6.2.1 Site-Specific Methods

Belowground biomass characterization data were collected down to a depth of 180 cm by NEON staff in December 2012. Since the NEON protocol for long-term, operational sampling of belowground biomass only collects data to a depth of 30 cm, the belowground biomass site characterization data are critical for scaling belowground biomass measurements to greater depths; see the TOS Science Design for Plant Biomass, Productivity, and Leaf Area Index (AD[8]) for more information. Samples were collected following the standard methods outlined in TOS Site Characterization Methods (RD[6]).A bulk density soil corer and soil knife were used to extract soil to test out protocols methods. Roots were sorted by diameter size (less than or greater than two mm) and root status (live or dead). The tables below summarize the total belowground biomass; size class data and more information can be found by searching the NEON data portal for the data product numbers in Appendix A.

6.2.2 Results

Table 31: Fine root mass per depth increment (cm) at JERC

Upper Depth	Lower Depth	Mean mg per cm ³	Std Dev
0	10	1.22	0.42
10	20	0.67	0.46
20	30	0.51	0.37
30	40	0.38	0.2

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Upper Depth	Lower Depth	Mean mg per cm ³	Std Dev
40	50	0.25	0.08
50	60	0.39	0.27
60	70	1.14	0.56
70	80	0.06	0.02
80	90	0.32	0.42
90	100	0.19	0.17
100	120	0.28	0.08
120	140	0.22	0.18
140	160	0.5	0.18
160	180	0.18	0.1

Table 32: Cumulative fine root mass as a function of depth (cm) at JERC

Upper Depth	Lower Depth	Mean Cumulative g per m ²	Cumulative Std Dev
0	10	122.37	41.73
10	20	189.87	62.55
20	30	240.55	98.62
30	40	278.65	113.88
40	50	303.37	116.53
50	60	342.32	113.94
60	70	456.33	73.82
70	80	462.58	71.53
80	90	494.24	113.9
90	100	513.66	130.94
100	120	568.97	114.58
120	140	612.79	150.5
140	160	712.17	186.01
160	180	747.33	189.38

Figure 11: Cumulative root mass by pit depth at JERC



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Table 33: Fine root biomass sampling summary data at JERC

Total Pit Depth (cm)	180
Total Cumulative Mass at 30cm (g per m ²)	240.55
Total Cumulative Mass at 100cm (g per m ²)	513.66
Total Cumulative Mass (g per m ²)	747.33

6.3 Plant Characterization and Phenology Species Selection

6.3.1 Site-Specific Methods

Plant characterization data were collected by an external contractor during the summer of July 2013 following the standard methods outlined in TOS Site Characterization Methods (RD[6]). For more information on this protocol and data product numbers see Appendix A.

6.3.2 Results

Table 34: Site plant characterization and phenology species summary at JERC

Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
ARBE7	<i>Aristida beyrichiana</i> Trin. & Rupr.	1	16	NA	NA
PIPA2	<i>Pinus palustris</i> Mill.	2	<1	NA	9.6
QUFA	<i>Quercus falcata</i> Michx.	3	4	NA	NA
QUHE2	<i>Quercus hemisphaerica</i> W. Bartram ex Willd.	4	2	NA	0.79
QUIN	<i>Quercus incana</i> W. Bartram	5	3	NA	NA
CHNI2	<i>Chamaecrista nictitans</i> (L.) Moench	6	3	NA	NA
QUMA6	<i>Quercus margarettae</i> (Ashe) Small	7	2	NA	0.72
PTAQ	<i>Pteridium aquilinum</i> (L.) Kuhn	8	3	NA	NA
DYOB	<i>Dyschoriste oblongifolia</i> (Michx.) Kuntze	9	2	NA	NA
RHCO	<i>Rhus copallina</i> L.	10	2	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
TOPU2	<i>Toxicodendron pubescens</i> Mill.	11	2	NA	NA
RUCU	<i>Rubus cuneifolius</i> Pursh	12	1	NA	NA
SAAL5	<i>Sassafras albidum</i> (Nutt.) Nees	13	1	NA	0.02
CEVI2	<i>Centrosema virginianum</i> (L.) Benth.	14	1	NA	NA
SONU2	<i>Sorghastrum nutans</i> (L.) Nash	15	<1	NA	NA
VAAR	<i>Vaccinium arboreum</i> Marshall	16	<1	NA	NA
CHLA5	<i>Chasmanthium latifolium</i> (Michx.) Yates	17	<1	NA	NA
VAMY3	<i>Vaccinium myrsinites</i> Lam.	18	<1	NA	NA
LIMI5	<i>Licania michauxii</i> Prance	19	<1	NA	NA
SCSC	<i>Schizachyrium scoparium</i> (Michx.) Nash	20	<1	NA	NA
TIAM	<i>Tilia americana</i> L.	21	<1	NA	0.03
QUST	<i>Quercus stellata</i> Wangenb.	22	<1	NA	NA
ANGE	<i>Andropogon gerardii</i> Vitman	23	<1	NA	NA
DITE2	<i>Diodia teres</i> Walter	24	<1	NA	NA
SILA20	<i>Sideroxylon lanuginosum</i> Michx.	25	<1	NA	0.02
MIMI22	<i>Mimosa microphylla</i> Dryand.	26	<1	NA	NA
PIGR4	<i>Pityopsis graminifolia</i> (Michx.) Nutt.	27	<1	NA	NA
RHRE	<i>Rhynchosia reniformis</i> DC.	28	<1	NA	NA
TADI2	<i>Taxodium distichum</i> (L.) Rich.	29	NA	NA	0.37
PIAS2	<i>Pityopsis aspera</i> (Shuttlew. ex Small) Small	30	<1	NA	NA
AMPS	<i>Ambrosia psilostachya</i> DC.	31	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
COAS2	<i>Cornus asperifolia</i> Michx.	32	<1	NA	NA
CRRO5	<i>Crotalaria rotundifolia</i> Walter ex J.F. Gmel.	33	<1	NA	NA
SCTE5	<i>Schizachyrium tenerum</i> Nees	34	<1	NA	NA
ULAL	<i>Ulmus alata</i> Michx.	35	<1	NA	0.27
QUVE	<i>Quercus velutina</i> Lam.	36	<1	NA	NA
CETE	<i>Celtis tenuifolia</i> Nutt.	37	<1	NA	NA
QUNI	<i>Quercus nigra</i> L.	38	<1	NA	NA
DIVI5	<i>Diospyros virginiana</i> L.	39	<1	NA	NA
IPHE	<i>Ipomoea hederacea</i> Jacq.	40	<1	NA	NA
IOLI2	<i>Ionactis linariifolius</i> (L.) Greene	41	<1	NA	NA
SOOD	<i>Solidago odora</i> Aiton	41	<1	NA	NA
DELI2	<i>Desmodium lineatum</i> DC.	43	<1	NA	NA
DIOV	<i>Dichanthelium ovale</i> (Elliott) Gould & C.A. Clark	43	<1	NA	NA
VEAN	<i>Vernonia angustifolia</i> Michx.	43	<1	NA	NA
DEMA2	<i>Desmodium marilandicum</i> (L.) DC.	46	<1	NA	NA
EUPU7	<i>Euphorbia pubentissima</i> Michx.	47	<1	NA	NA
SYDU2	<i>Symphyotrichum dumosum</i> (L.) G.L. Nesom	47	<1	NA	NA
ASAN6	<i>Asimina angustifolia</i> Raf.	49	<1	NA	NA
CLMA4	<i>Clitoria mariana</i> L.	50	<1	NA	NA
SYCO3	<i>Symphyotrichum concolor</i> (L.) G.L. Nesom	50	<1	NA	NA
ELEL3	<i>Elephantopus elatus</i> Bertol.	52	<1	NA	NA
LERE2	<i>Lespedeza repens</i> (L.) W.P.C. Barton	53	<1	NA	NA
ANDRO2	<i>Andropogon</i> sp.	54	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
STUM2	<i>Strophostyles umbellata</i> (Muhl. ex Willd.) Britton	54	<1	NA	NA
VAST	<i>Vaccinium stamineum</i> L.	54	<1	NA	NA
RUFL	<i>Rubus flagellaris</i> Willd.	57	<1	NA	NA
SMAU	<i>Smilax auriculata</i> Walter	58	<1	NA	NA
DEPA6	<i>Desmodium paniculatum</i> (L.) DC.	59	<1	NA	NA
GESE	<i>Gelsemium sempervirens</i> (L.) W.T. Aiton	59	<1	NA	NA
IPHE2	<i>Ipomoea hederifolia</i> L.	59	<1	NA	NA
AEPA	<i>Aesculus pavia</i> L.	62	<1	NA	NA
SET07	<i>Sericocarpus tortifolius</i> (Michx.) Nees	63	<1	NA	NA
GALAC	<i>Galactia</i> sp.	64	<1	NA	NA
CRATA	<i>Crataegus</i> sp.	65	<1	NA	NA
PASE5	<i>Paspalum setaceum</i> Michx.	66	<1	NA	NA
STBI2	<i>Stylosanthes biflora</i> (L.) Britton, Sterns & Poggenb.	66	<1	NA	NA
CRAR2	<i>Croton argyranthemus</i> Michx.	68	<1	NA	NA
ACGR2	<i>Acalypha gracilens</i> A. Gray	69	<1	NA	NA
DEFL3	<i>Desmodium floridanum</i> Chapm.	70	<1	NA	NA
GAFI2	<i>Gaura filipes</i> Spach	70	<1	NA	NA
CAAL27	<i>Carya tomentosa</i> (Lam.) Nutt.	72	<1	NA	0.07
QULA2	<i>Quercus laevis</i> Walter	73	<1	NA	NA
VIRO3	<i>Vitis rotundifolia</i> Michx.	74	<1	NA	NA
GAPI2	<i>Galium pilosum</i> Aiton	75	<1	NA	NA
IPPA	<i>Ipomoea pandurata</i> (L.) G. Mey.	75	<1	NA	NA
ACBA3	<i>Acer barbatum</i> Michx.	77	<1	NA	0.04
EUAL2	<i>Eupatorium album</i> L.	78	<1	NA	NA
ILVO	<i>Ilex vomitoria</i> Aiton	79	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
ULRU	<i>Ulmus rubra</i> Muhl.	80	NA	NA	0.06
DEST2	<i>Desmodium strictum</i> (Pursh) DC.	81	<1	NA	NA
SOTO2	<i>Solidago tortifolia</i> Elliott	81	<1	NA	NA
CAGL8	<i>Carya glabra</i> (Mill.) Sweet	83	<1	NA	NA
DIAC	<i>Dichanthelium aciculare</i> (Desv. ex Poir.) Gould & C.A. Clark	84	<1	NA	NA
DIVI7	<i>Dichanthelium villosissimum</i> (Nash) Freckmann	84	<1	NA	NA
CHGO	<i>Chrysopsis gossypina</i> (Michx.) Elliott	86	<1	NA	NA
DACA8	<i>Dalea carnea</i> (Michx.) Poir.	86	<1	NA	NA
DECI	<i>Desmodium ciliare</i> (Muhl. ex Willd.) DC.	86	<1	NA	NA
SAAL21	<i>Saccharum alopecuroides</i> (L.) Nutt.	86	<1	NA	NA
SEPA10	<i>Setaria parviflora</i> (Poir.)	86	<1	NA	NA
SMSM	<i>Smilax smallii</i> Morong	86	<1	NA	NA
TRUR2	<i>Tragia urticifolia</i> Michx.	86	<1	NA	NA
CECA4	<i>Cercis canadensis</i> L.	93	<1	NA	NA
DIFR6	<i>Ditrysinia fruticosa</i> (W. Bartram) Govaerts & Frodin	94	<1	NA	NA
CARA2	<i>Campsis radicans</i> (L.) Seem. ex Bureau	95	<1	NA	NA
HYHY	<i>Hypericum hypericoides</i> (L.) Crantz	95	<1	NA	NA
MAGO	<i>Matelea gonocarpos</i> (Walter) Shinners	95	<1	NA	NA
TORA2	<i>Toxicodendron radicans</i> (L.) Kuntze	95	<1	NA	NA
ASPA18	<i>Asimina parviflora</i> (Michx.) Dunal	99	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
STSY	<i>Stillingia sylvatica</i> L.	100	<1	NA	NA
AGAR4	<i>Ageratina aromatica</i> (L.) Spach	101	<1	NA	NA
DICO2	<i>Dichanthelium commutatum</i> (Schult.) Gould	101	<1	NA	NA
STHU2	<i>Stylosma humistrata</i> (Walter) Chapm.	101	<1	NA	NA
TIUS	<i>Tillandsia usneoides</i> (L.) L.	101	<1	NA	NA
VIAE	<i>Vitis aestivalis</i> Michx.	101	<1	NA	NA
ZOBR	<i>Zornia bracteata</i> Walter ex J.F. Gmel.	101	<1	NA	NA
LIST2	<i>Liquidambar styraciflua</i> L.	107	<1	NA	NA
SERE2	<i>Serenoa repens</i> (W. Bartram) Small	108	<1	NA	NA
BICA	<i>Bignonia capreolata</i> L.	109	<1	NA	NA
LESE7	<i>Lechea sessiliflora</i> Raf.	109	<1	NA	NA
MUCA2	<i>Muhlenbergia capillaris</i> (Lam.) Trin.	109	<1	NA	NA
PAQU2	<i>Parthenocissus quinquefolia</i> (L.) Planch.	109	<1	NA	NA
COFL2	<i>Cornus florida</i> L.	113	<1	NA	NA
PRSE2	<i>Prunus serotina</i> Ehrh.	114	<1	NA	NA
AMAR2	<i>Ambrosia artemisiifolia</i> L.	115	<1	NA	NA
DEOB5	<i>Desmodium obtusum</i> (Muhl. ex Willd.) DC.	115	<1	NA	NA
ERSP	<i>Eragrostis spectabilis</i> (Pursh) Steud.	115	<1	NA	NA
LIGR9	<i>Liatis gracilis</i> Pursh	115	<1	NA	NA
RHTO3	<i>Rhynchosia tomentosa</i> (L.) Hook. & Arn.	115	<1	NA	NA
TRDI2	<i>Trichostema dichotomum</i> L.	115	<1	NA	NA
BIBI7	<i>Bidens bipinnata</i> L.	121	<1	NA	NA
CRFL2	<i>Crataegus flava</i> Aiton	121	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
LEVI7	<i>Lespedeza virginica</i> (L.) Britton	121	<1	NA	NA
MAV15	<i>Manfreda virginica</i> (L.) Salisb. ex Rose	121	<1	NA	NA
PHHE5	<i>Physalis heterophylla</i> Nees	121	<1	NA	NA
QUPH	<i>Quercus phellos</i> L.	121	<1	NA	NA
RUCA4	<i>Ruellia caroliniensis</i> (J.F. Gmel.) Steud.	121	<1	NA	NA
RUHI2	<i>Rudbeckia hirta</i> L.	121	<1	NA	NA
SMRO	<i>Smilax rotundifolia</i> L.	121	<1	NA	NA
STPA8	<i>Stylosma patens</i> (Desr.) Myint	121	<1	NA	NA
CELA	<i>Celtis laevigata</i> Willd.	131	<1	NA	NA
CAAM2	<i>Callicarpa americana</i> L.	132	<1	NA	NA
JUVI	<i>Juniperus virginiana</i> L.	133	<1	NA	NA
ARPU8	<i>Aristida purpurascens</i> Poir.	134	<1	NA	NA
CLEMA	<i>Clematis</i> sp.	134	<1	NA	NA
CNURS	<i>Cnidoscolus urens</i> (L.) Arthur var. <i>stimulosus</i> (Michx.) Govaerts	134	<1	NA	NA
COCA	<i>Cocculus carolinus</i> (L.) DC.	134	<1	NA	NA
EUFL3	<i>Eustachys floridana</i> Chapm.	134	<1	NA	NA
PABI3	<i>Paspalum bifidum</i> (Bertol.) Nash	134	<1	NA	NA
RHDI2	<i>Rhynchosia difformis</i> (Elliott) DC.	134	<1	NA	NA
SACA15	<i>Sanicula canadensis</i> L.	134	<1	NA	NA
SECO4	<i>Setaria corrugata</i> (Elliott) Schult.	134	<1	NA	NA
SOAL6	<i>Solidago altissima</i> L.	134	<1	NA	NA
SOAR	<i>Solidago arguta</i> Aiton	134	<1	NA	NA
TEVI	<i>Tephrosia virginiana</i> (L.) Pers.	134	<1	NA	NA
TRUR	<i>Tragia urens</i> L.	134	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
HYCR3	<i>Hypericum crux-andreae</i> (L.) Crantz	147	<1	NA	NA
ACRH	<i>Acalypha rhomboidea</i> Raf.	148	<1	NA	NA
BROV4	<i>Brunnichia ovata</i> (Walter) Shinners	148	<1	NA	NA
CACO15	<i>Carya cordiformis</i> (Wangenh.) K. Koch	148	<1	NA	NA
CANI3	<i>Carex nigromarginata</i> Schwein.	148	<1	NA	NA
CRGL2	<i>Croton glandulosus</i> L.	148	<1	NA	NA
CYEC2	<i>Cyperus echinatus</i> (L.) Alph. Wood	148	<1	NA	NA
CYPL3	<i>Cyperus plukenetii</i> Fernald	148	<1	NA	NA
DAPI2	<i>Dalea pinnata</i> (J.F. Gmel.) Barneby	148	<1	NA	NA
DILA9	<i>Dichanthelium laxiflorum</i> (Lam.) Gould	148	<1	NA	NA
DIOL	<i>Dichanthelium oligosanthes</i> (Schult.) Gould	148	<1	NA	NA
DISP2	<i>Dichanthelium sphaerocarpon</i> (Elliott) Gould	148	<1	NA	NA
ELTO2	<i>Elephantopus tomentosus</i> L.	148	<1	NA	NA
EUGL7	<i>Eupatorium glaucescens</i> Elliott	148	<1	NA	NA
EUHY	<i>Eupatorium hyssopifolium</i> L.	148	<1	NA	NA
GYBR	<i>Gymnopogon brevifolius</i> Trin.	148	<1	NA	NA
HEAN2	<i>Helianthus angustifolius</i> L.	148	<1	NA	NA
LEAN	<i>Lespedeza angustifolia</i> (Pursh) Elliott	148	<1	NA	NA
LESPE	<i>Lespedeza</i> sp.	148	<1	NA	NA
LEVI2	<i>Leersia virginica</i> Willd.	148	<1	NA	NA

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Taxon ID	Scientific Name	Rank	Mean Percent Cover	Mean Canopy Area per m ²	Mean ABH cm ² per m ²
MATEL	<i>Matelea</i> sp.	148	<1	NA	NA
PENST	<i>Penstemon</i> sp.	148	<1	NA	NA
PSOB3	<i>Pseudognaphalium obtusifolium</i> (L.) Hilliard & B.L. Burtt	148	<1	NA	NA
QUVI	<i>Quercus virginiana</i> Mill.	148	<1	NA	NA
RHMI10	<i>Rhynchosia michauxii</i> Vail	148	<1	NA	NA
RUTR	<i>Rubus trivialis</i> Michx.	148	<1	NA	NA
SCLER2	<i>Scleria</i> sp.	148	<1	NA	NA
SIAS2	<i>Silphium asteriscus</i> L.	148	<1	NA	NA
SILPH	<i>Silphium</i> sp.	148	<1	NA	NA
SMBO2	<i>Smilax bona-nox</i> L.	148	<1	NA	NA
SPGL2	<i>Spermacoce glabra</i> Michx.	148	<1	NA	NA
TEHI2	<i>Tephrosia hispidula</i> (Michx.) Pers.	148	<1	NA	NA
TRCA4	<i>Tridens carolinianus</i> (Steud.) Henr.	148	<1	NA	NA
TROH	<i>Tradescantia ohiensis</i> Raf.	148	<1	NA	NA
TRSE4	<i>Triumfetta semitriloba</i> Jacq.	148	<1	NA	NA
TRSE5	<i>Trichostema setaceum</i> Houtt.	148	<1	NA	NA
VIOLA	<i>Viola</i> sp.	148	<1	NA	NA
ILOP	<i>Ilex opaca</i> Aiton	184	<1	NA	NA

Note: Mean canopy area is collected for shrubs. Mean at breast height (ABH) diameter is collected for trees. Taxon IDs and scientific names are based on the USDA Plants database (plants.usda.gov).

Table 35: Per plot breakdown of species richness, diversity, and herbaceous cover at JERC

Plot ID	Species Richness	Shannon Diversity Index	Percent Total Herbaceous Cover
JERC_047	33	3.07	96
JERC_048	28	2.75	126
JERC_049	45	2.61	181
JERC_050	41	3.28	91

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Plot ID	Species Richness	Shannon Diversity Index	Percent Total Herbaceous Cover
JERC_051	34	3.22	80
JERC_052	33	2.72	96
JERC_053	35	3.05	122
JERC_054	32	3.25	51
JERC_055	45	3.29	163
JERC_056	38	3.02	128
JERC_057	24	2.38	76
JERC_058	42	3.35	164
JERC_059	31	2.54	151
JERC_060	25	2.33	188
JERC_061	37	3.25	117
JERC_062	38	3.14	135
JERC_063	32	2.68	138
JERC_064	29	2.7	129
JERC_065	32	2.61	137
JERC_066	34	3.01	110

Note: Percent herbaceous cover was measured by species and then added together to calculate the percent total herbaceous cover for each plot.

6.4 Beetles

6.4.1 Site-Specific Methods

Beetle site characterization was conducted in June and July 2012 by NEON staff following the standard methods outlined in TOS Site Characterization Methods (RD[6]). Beetle site characterization data was collected to start site level teaching collections. For DNA sequence data generated as a result of these efforts, visit the Barcode of Life Datasystems (BOLD) at <http://www.boldsystems.org>. For more information on this protocol and data product numbers see Appendix A.

6.4.2 Results

Table 36: Beetle trap locations at JERC

Trap ID	Lat	Long
1	31.183	-84.478
2	31.198	-84.477

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Trap ID	Lat	Long
3	31.198	-84.474
4	31.201	-84.473
5	31.207	-84.457

Table 37: Beetle identification results at JERC

BOLD Sample ID	Scientific Name	Collection Date	Trap Location
NEONTcarabid6008	<i>Dicaelus dilatatus dilatatus</i>	7/20/2012	1
NEONTcarabid6009	<i>Dicaelus dilatatus dilatatus</i>	7/20/2012	1
NEONTcarabid6034	<i>Selenophorus opalinus</i>	8/24/2012	1
NEONTcarabid6016	<i>Selenophorus ellipticus</i>	7/27/2012	2
NEONTcarabid6013	<i>Selenophorus ellipticus</i>	7/20/2012	2
NEONTcarabid6015	<i>Selenophorus ellipticus</i>	7/27/2012	2
NEONTcarabid6018	<i>Selenophorus ellipticus</i>	7/20/2012	2
NEONTcarabid6014	<i>Selenophorus ellipticus</i>	8/3/2012	2
NEONTcarabid6038	<i>Tetragonoderus intersectus</i>	8/3/2012	2
NEONTcarabid6032	<i>Tetracha carolina</i>	8/10/2012	2
NEONTcarabid6019	<i>Selenophorus ellipticus</i>	7/20/2012	2
NEONTcarabid6022	<i>Selenophorus ellipticus</i>	7/27/2012	2
NEONTcarabid6037	<i>Tetragonoderus intersectus</i>	8/24/2012	2
NEONTcarabid6020	<i>Selenophorus ellipticus</i>	7/20/2012	2
NEONTcarabid6017	<i>Selenophorus ellipticus</i>	8/3/2012	2
NEONTcarabid6006	<i>Pasimachus sublaevis</i>	7/20/2012	2
NEONTcarabid6021	<i>Selenophorus ellipticus</i>	7/27/2012	2
NEONTcarabid6011	<i>Anisodactylus haplomus</i>	8/10/2012	2
NEONTcarabid6036	<i>Tetragonoderus intersectus</i>	8/10/2012	2
NEONTcarabid6028	<i>Anisodactylus haplomus</i>	8/17/2012	2
NEONTcarabid6007	<i>Pasimachus sublaevis</i>	7/27/2012	3
NEONTcarabid6001	<i>Pasimachus sublaevis</i>	8/17/2012	3
NEONTcarabid6003	<i>Pasimachus sublaevis</i>	8/10/2012	3
NEONTcarabid6004	<i>Pasimachus sublaevis</i>	8/10/2012	3
NEONTcarabid6005	<i>Pasimachus sublaevis</i>	8/24/2012	4
NEONTcarabid6002	<i>Pasimachus sublaevis</i>	7/27/2012	4
NEONTcarabid6000	<i>Pasimachus sublaevis</i>	8/10/2012	4
NEONTcarabid6035	<i>Apenes sinuatus</i>	7/20/2012	4

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BOLD Sample ID	Scientific Name	Collection Date	Trap Location
NEONTcarabid6033	<i>Tetracha carolina</i>	8/24/2012	5
NEONTcarabid6039	<i>Tetragonoderus intersectus</i>	8/3/2012	5

6.5 Mosquitoes

6.5.1 Site-Specific Methods

Mosquito site characterization was conducted in June and July 2012 by NEON staff following the standard methods outlined in TOS Site Characterization Methods (RD[6]) to test protocol methods and start site level species lists. No pathogen testing was performed. For DNA sequence data generated as a result of these efforts, visit the Barcode of Life Datasystems (BOLD) at <http://www.boldsystems.org>. For more information on this protocol and data product numbers see Appendix A.

6.5.2 Results

Table 38: Mosquito trap locations at JERC

Trap ID	Lat	Long
1	31.186	-84.482
2	31.183	-84.478
3	31.201	-84.473
4	31.187	-84.471
5	31.203	-84.463
6	31.207	-84.457

Table 39: Mosquito identification results at JERC

BOLD Sample ID	Scientific Name	Collection Date	Trap Location
NEONTculicid6201	<i>Aedes atlanticus</i>	7/18/2012	1
NEONTculicid6188	<i>Aedes albopictus</i>	8/29/2012	1
NEONTculicid6278	<i>Psorophora ferox</i>	7/18/2012	1
NEONTculicid6189	<i>Culex erraticus</i>	7/18/2012	1
NEONTculicid6203	<i>Aedes atlanticus</i>	7/18/2012	1
NEONTculicid6191	<i>Aedes albopictus</i>	8/9/2012	1
NEONTculicid6277	<i>Psorophora ferox</i>	7/18/2012	1
NEONTculicid6202	<i>Aedes atlanticus</i>	7/18/2012	1
NEONTculicid6195	<i>Aedes fulvus pallens</i>	7/18/2012	2

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BOLD Sample ID	Scientific Name	Collection Date	Trap Location
NEONTculicid6622	<i>Aedes fulvus pallens</i>	7/19/2012	2
NEONTculicid6192	<i>Aedes fulvus pallens</i>	7/18/2012	2
NEONTculicid6193	<i>Aedes fulvus pallens</i>	7/18/2012	2
NEONTculicid6196	<i>Aedes fulvus pallens</i>	7/18/2012	2
NEONTculicid6194	<i>Aedes fulvus pallens</i>	7/18/2012	2
NEONTculicid6621	<i>Aedes fulvus pallens</i>	7/19/2012	2
NEONTculicid6204	<i>Aedes infirmatus</i>	7/19/2012	3
NEONTculicid6208	<i>Aedes mitchellae</i>	7/19/2012	3
NEONTculicid6206	<i>Aedes infirmatus</i>	7/19/2012	3
NEONTculicid6199	<i>Psorophora columbiae</i>	7/19/2012	3
NEONTculicid6619	<i>Aedes fulvus pallens</i>	7/19/2012	3
NEONTculicid6198	<i>Psorophora columbiae</i>	7/19/2012	3
NEONTculicid6197	<i>Anopheles perplexens</i>	8/8/2012	3
NEONTculicid6213	<i>Anopheles punctipennis</i>	7/19/2012	3
NEONTculicid6205	<i>Aedes infirmatus</i>	7/19/2012	3
NEONTculicid6207	<i>Aedes mitchellae</i>	7/19/2012	3
NEONTculicid6209	<i>Aedes mitchellae</i>	7/19/2012	3
NEONTculicid6210	<i>Aedes mitchellae</i>	7/19/2012	3
NEONTculicid6623	<i>Aedes atlanticus</i>	7/19/2012	4
NEONTculicid6624	<i>Aedes atlanticus</i>	7/19/2012	4
NEONTculicid6212	<i>Culex coronator</i>	8/8/2012	5
NEONTculicid6211	<i>Culex coronator</i>	8/8/2012	5
NEONTculicid6190	<i>Culex erraticus</i>	7/19/2012	5
NEONTculicid6625	<i>Culex coronator</i>	8/9/2012	6

6.6 Ticks

6.6.1 Site-Specific Methods

Tick drags were conducted at JERC in the spring and summer of 2012. For more information on this protocol and data product numbers see Appendix A.

6.6.2 Results

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Table 40: Tick sampling results at DSNY

Vegetation Type	Number of Plots Sampled	Tick Abundance (Mean)	Tick Abundance (stDev)	Total Number of Ticks Collected	Max Number of Ticks Collected	Number of Plots With No Ticks	Total Area Sampled (m ³)
Annual gaminoid or forb	6	0	0	0	NA	6	1958
Evergreen open tree canopy	5	0.4	0.89	2	2	4	5973
Mixed ever-green/deciduous open tree canopy	4	0	0	0	NA	4	1481
Perennial graminoid grassland	4	0	0	0	NA	4	1401
Total	19	0.1	0.5	2	2	18	10813

Note: Land cover classes here match LANDFIRE (Landscape Fire and Resource Management Planning Tools; <http://www.landfire.gov/>) vegetation categories, rather than the NLCD land cover types employed in current protocols.

6.7 Species Reference Lists

A review of the literature for taxonomic lists of interest for each site was conducted prior to field work. In the case of vertebrates that NEON may capture (e.g., reptiles, amphibians, small mammals), these lists were often required to secure permits. Key references identified in this effort are listed below. Species lists and associated references for small mammals and breeding landbirds can be found in the appendices of the respective protocols (RD[07], RD[08]).

Bousquet, Y. 2012. Catalogue of Geadephaga (Coleoptera, Adephaga) of America, north of Mexico. ZooKeys, (245), 1-1722.

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Goebel, P. C., B. J. Palik, L. K. Kirkman, M. B. Drew, L. West, and D. C. Pederson. 2001. Forest ecosystems of a Lower Gulf Coastal Plain landscape: multifactor classification and analysis. Journal of the Torrey Botanical Society 128:47-75.

Liner, A. E., L. L. Smith, S. W. Golladay, S. B. Castleberry, and J. W. Gibbons. 2008. Amphibian distributions within three types of isolated wetlands in southwest Georgia. American Midland Naturalist 160:69-81.

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7 REFERENCES

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- USDA, NRCS. 2016. The PLANTS Database (<http://plants.usda.gov>, 1 August 2016). National Plant Data Team, Greensboro, NC 27401-4901 USA.
- LANDFIRE, 2008, Existing Vegetation Type Layer, LANDFIRE 1.1.0, U.S. Department of the Interior, Geological Survey. Accessed October 2012 at <http://www.landfire.gov/viewer/>.

8 APPENDIX A: DATA PRODUCT NUMBERS

For more information on the sampling protocols and the latest observatory data visit <http://data.neonscience.org/data-product-catalog> and search by name or code number.

Table 41: NEON data product names and descriptions

Name	Description	Identification Code
Root sampling (megapit)	Fine root biomass in 10cm increments (first 1m depth) and 20cm increments (from 1m to 2m depth) from soil pit sampling	NEON.DOM.SITE.DP1.10066
Soil physical properties (Megapit)	Soil taxonomy, horizon names, horizon depths, as well as soil bulk density, porosity, texture (sand, silt, and clay content) in the <= 2 mm soil fraction for each soil horizon. Data were derived from a sampling location expected to be representative of the area where the Instrumented Soil Plots per site are located and were collected once during site construction. Also see distributed soil data products.	NEON.DOM.SITE.DP1.00096
Soil chemical properties (Megapit)	Total content of a range of chemical elements, pH, and electrical conductivity in the <= 2 mm soil fraction for each soil horizon. Data were derived from a sampling location expected to be representative of the area where the Instrumented Soil Plots per site are located and were collected once during site construction. Also see distributed soil data products.	NEON.DOM.SITE.DP1.00097
Woody plant vegetation structure	Structure measurements, including height, canopy diameter, and stem diameter, as well as mapped position of individual woody plants	NEON.DOM.SITE.DP1.10098
Plant presence and percent cover	Plant species presence as observed in multi-scale plots: species and associated percent cover at 1-m ² and plant species presence at 10-m ² , 100-m ² and 400-m ²	NEON.DOM.SITE.DP1.10058

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Name	Description	Identification Code
Plant phenology observations	Phenophase status and intensity of tagged plants	NEON.DOM.SITE.DP1.10055
Plant foliar stable isotopes	Field collection metadata describing the sampling of sun-lit canopy foliar tissues for stable isotope compositions. Also includes raw data returned from the laboratory.	NEON.DOM.SITE.DP1.10053
Plant foliar physical and chemical properties	Plant sun-lit canopy foliar physical (e.g., leaf mass per area) and chemical properties reported at the level of the individual.	NEON.DOM.SITE.DP1.10026
Non-herbaceous perennial vegetation structure	Field measurements of individual non-herbaceous perennial plants (e.g. cacti, ferns)	NEON.DOM.SITE.DP1.10045
Ground beetles sampled from pitfall traps	Taxonomically identified ground beetles and the plots and times from which they were collected.	NEON.DOM.SITE.DP1.10022
Ground beetle sequences DNA barcode	CO1 DNA sequences from select ground beetles	NEON.DOM.SITE.DP1.10020
Mosquitoes sampled from CO2traps	Taxonomically identified mosquitoes and the plots and times from which they were collected	NEON.DOM.SITE.DP1.10043
Mosquito-borne pathogen status	Presence/absence of a pathogen in a single mosquito sample (pool)	NEON.DOM.SITE.DP1.10041
Mosquito sequences DNA barcode	CO1 DNA sequences from select mosquitoes	NEON.DOM.SITE.DP1.10038
Ticks sampled using drag cloths	Abundance and density of ticks collected by drag and/or flag sampling (by species and/or lifestage)	NEON.DOM.SITE.DP1.10093
Tick-borne pathogen status	Presence/absence of a pathogen in each single tick sample	NEON.DOM.SITE.DP1.10092