



NEON Site-Level Plot Summary

Jones Ecological Research Center at Ichauway (JERC)

Document Information

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Site Background

The Jones Ecological Research Center (JERC) site is about 10 miles southwest of the City of Newton in Baker County Georgia. The Flint River forms 13 miles of the property's eastern boundary and Ichawaynochaway Creek flows through this site. The JERC is in Major Land Resource Area (MLRA) 133A-Southern coastal Plains. The 29,000 acres that comprise the JERC include a range of ecological communities that include longleaf pine forests, slash pine forests, oldfield loblolly pine stands, mixed pine hardwoods, riparian hardwood forests, isolated depressional wetlands, riparian wetlands, agricultural fields, shrub-scrub uplands, and human cultural zones. The NEON JERC site is located within the area encompassing the Jones Ecological Research Center.

Site Information

The JERC is on the Dougherty Plain, which demonstrates a karst topography. The site elevations range from about 100 to 200 feet above mean sea level and local hillslope relief ranges up to 65 feet. The parent materials are dominantly sandy coastal plain deposits that include clay lenses. Thus soils range from sandy to coarse loamy to clayey. The drainage classes range from excessively drained sands to very poorly drained clays.

The NEON JERC site contains approximately 18,000 acres of upland pine grassland habitats with the remainder consisting of agricultural fields, wetlands, and riparian hardwood hammocks. Virgin longleaf forests on JERC were harvested in the early 20th century, with today's second generation longleaf stands dominated by 80-100 year-old trees. The longleaf forests found on JERC today represent the results of over 80 years of ecologically-sound management with frequent prescribed fire and single tree selection silviculture. Upland pine habitats at JERC are dominated by longleaf pine and either a wiregrass (native ground cover) or broom sedge (old field) understory. Basal area ranges from 40-60 sq. ft./acre with most stands characterized by mature, widely spaced pines. Most of the sample points had a tree cover of intermixed conifers and hardwoods.

The fire-maintained longleaf pine ecosystem is a remnant of the forest type that once dominated the southeastern Coastal Plain and is perhaps the most significant ecological attribute of

Ichauway (Landers et al. 1995). Much of the ground cover of the 18,000 acres of this forest at Ichauway has not been disturbed by previous agricultural tillage and consequently harbors some of the most species-rich habitats in North America. More than 1,100 vascular plant species have been documented on Ichauway (Drew et al. 1998, Kirkman et al. 2001). The ground cover under longleaf pines is extremely diverse with more than 50 different species sometimes found in an area of approximately a square yard. Additional information can be found on the following website:

<http://www.jonesctr.org/about/ichauway.php>

Plot Analysis for Sampling

This NEON site is an area with moderate relief hillslopes and fairly uniform geology; Soils were fairly homogenous within the site and representative of soils within MLRA 133A (Southern Coastal Plains) and the soil map units defined by the soil survey.

At this site, the number and locations of plots sampled was based on the percentage of the soil map units within the site. For example, if a soil map unit acreage occupied 40 percent of the site, then roughly 40 percent of the plots sampled occurred on that map unit.

Plot locations were generally chosen to be representative of map unit delineations and to ensure relatively even plot distribution across the site. To accomplish this, spatial analysis of plot distribution was conducted. This analysis improves the likelihood of sampling soils that are more representative of the map unit delineations.

The number of plots selected for sampling was chosen in order to adequately represent the map units or map unit components that were included in the pre-selected plot locations. Also, if map units of moderate or large extent were not included in the pre-selected plots, then plots representing the same component, or similar component, were preferred in the sampling plan. Plots that were not sampled were either represented in plots that were selected for sampling, or the plot occurred in a transition between soils. Some plots are in or near food planting that disturbed surface horizons by cultural practices. The plots selected for sampling were under forest management and/or next to stream bottoms, which matches the natural state. The sampled area is being managed for longleaf pine and hunting.

There are 19 soil series that occur on site that are recognized in 27 soil map units. The soil map units are summarized in Table 1, which includes soil series name and slope class.

Map Unit Symbol	Map Unit Name	% Total site area
AdA	Albany sand, 0 to 2 percent slopes	1
BgA	Bigbee sand 0 to 2 percent slopes	2.6
BoA	Bonneau loamy sand, 0 to 2 percent slopes	1.6
DpA	Duplin fine sandy loam, 0 to 2 percent slopes	0.3
EnC	Esto-Norfolk complex, 5 to 8 percent slopes	1.1
E0D	Esto-Orangeburg complex 8 to 15 percent slopes	0.2
FeA or B	Faceville sandy loam 0 to 2 or 2 to 5 percent slopes	1.2
Gr	Grady fine sandy loam	0.6

HvA	Hornsville fine sandy loam, 0 to 2 percent slopes	8
KeC	Kershaw sand, 2 to 12 percent slopes	2.9
LkB	Lakeland sand, 2 to 5 percent slopes	0.5
LmB	Lucy loamy sand, 0 to 5 percent slopes	4
MaA	Maxton loamy sand, 0 to 2 percent slopes	0.4
NoA or B	Norfolk loamy sand, 2 to 5 or 2 to 5 percent slopes	2
OeA, B or C	Orangeburg loamy sand 0 to 2, 2 to 5 or 5 to 8 percent slopes	17.4
Pe	Pelham loamy sand percent slopes	0.3
SuA	Suffolk loamy fine sand, 0 to 2 percent slopes	0.2
TwB or C	Troup sand, 0 to 5 or 5 to 8 percent slopes	31
W	Water	2.1
WaB or C	Wagram loamy sand, 0 to 5 or 5 to 8 percent slopes	19.7
WeA	Wahee fine sandy loam, 0 to 2 percent slopes	2.9
	Total Percent	100.0

Table 1. Soil map units and areal percent coverages at the JERC site.

Plot Findings

A total of 33 plots - including plots located within the tower airshed - were available for sampling, and twenty-three plots were sampled to characterize the site. Of the twenty-three plots sampled, nine soils were identified that correspond to a soil series identified in the soil map units on site (Table 2). In addition, three soil series not included as named components of the soil map units - Benevolence, Nankin and Wicksburg series - occurred in the sampled plots.

Map Unit Symbol	Soils Series Identified On Plot	Plot ID
	Benevolence	
OeB		JERC_008
TwB		JERC_022
	Bigbee	
BgA		JERC_016
TwC		JERC_047
	Bonneau	
OeB		JERC_005
	Faceville	
HvA		JERC_021
	Hornsville	
HvA		JERC_019
	Nankin	
EnC		JERC_013
KeC		JERC_028
	Norfolk	
WaB		JERC_015

TwB		JERC_030
WaB		JERC_034
	Orangeburg	
WaB		JERC_002
WaB		JERC_009
OeB		JERC_033
TwB		JERC_048
	Troup	
TwB		JERC_006
TwC		JERC_010
WaB		JERC_031
TwB		JERC_049
	Wagram	
BoA		JERC_035
WaB		JERC_029
	Wicksburg	
TwB		JERC_003

Table 2. Soil Series identified at each plot during sampling and the original map unit associated with that plot.

Summary of Soils

The pedons sampled on the NEON plots are representative of the soil series named in the soil map units of the site and are common in the Southern Coastal Plain. The three additional series represented by the Benevolence, Nankin and Wicksburg pedons are often associated with soils of the Bonneau, Esto, Norfolk, Kershaw, Troup, Orangeburg or Wagram series. Occurrence of these additional soil series is within the range of soils expected in the named map units. The NEON plots sampled had 3 Norfolk, 4 Orangeburg and 4 Troup pedons (Table 2). The remainder of the pedons and soils occurred on two or fewer plots.

References

Landers, J. Larry, David H. Van Lear, and William D. Boyer. The longleaf pine forests of the Southeast: requiem or renaissance? (1995). *Journal of Forestry*, Vol. 93, No. 11.

Drew, M. B., Kirkman, L. K., & Gholson Jr, A. K. (1998). The vascular flora of Ichauway, Baker County, Georgia: a remnant longleaf pine/wiregrass ecosystem. *Castanea*, 1-24.

Kirkman, L. K., Mitchell, R. J., Helton, R. C., & Drew, M. B. (2001). Productivity and species richness across an environmental gradient in a fire-dependent ecosystem. *American Journal of Botany*, 88(11), 2119-2128.R