

PROJECT DESCRIPTION

This project procured data loggers for use throughout the Southeast Region by refuge forestry staff conducting strike team inventory and monitoring of forest habitats. Many refuges lacked adequate staff to conduct forest inventory and monitoring to make credible science based decisions on forest management actions. Inventory data is used to effectively plan for priority and trust wildlife habitat needs and to monitor impacts of forest management decisions.

The region used strike teams consisting of existing staff (foresters, biologists, technicians and others) along with student interns to conduct forest habitat inventories to assess current conditions and allow managers to make necessary decisions to create desired forest habitat conditions. A wide variety of inventory data relating to forest structure and composition (ex. tree species diversity, stocking, crown closure, midstory development, herbaceous communities, tree size) was measured. This data is used by managers for habitat planning purposes, to identify priority habitat needs and make forest management recommendations for habitat enhancement. This equipment helps standardize forest inventory data collection.

OBJECTIVES AND ALTERNATIVES

The specific forest inventory objectives varied slightly by refuge and habitat type but included collecting forest vegetation composition and structure to adequately measure variables that relate to desired future conditions for a wide range of priority wildlife species. For example, in bottomland hardwood forests basal area, canopy closure, midstory and shrub development are important variables related to DFC's while in upland pine systems canopy closure, species composition, herbaceous and shrub composition and development, and response to fire are critical variables. Inventories on refuges varied from entire forested area to specific stands or compartments depending upon refuge needs and objectives. Some inventories measured responses to prior management practices while other

inventories provided baseline data to initiate habitat improvement recommendations.

METHODS AND PROTOCOLS

The specific protocol may vary by habitat type but were be standardized between refuges when possible to insure that basic data is scalable. For examples in Bottomland Hardwoods minimum inventory data collected followed the recommendations for the Restoration, Management and Monitoring of Forest Resources in the Mississippi Alluvial Valley: Recommendations for Enhancing Wildlife Habitat (LMVJV Forest Resources Conservation Working Group, 2007 edited by R. Wilson, K. Ribbeck, S. King and D. Twedt). This included measuring individual tree parameters including: species, DHB, Useable length (dead or alive), crown class and tree condition and plot level data including overstory cover, midstory cover, understory cover, shade-intolerant regeneration, vines, cane, and forest type. Similar recommendations for southern pine DFC's are currently being developed by a FWS working group. Additional specific data may be collected to meet specific refuge needs and objectives. Other protocols evolved from standardized continuous forest inventory monitoring (see USDA Forest Inventory and Analysis protocol at: <http://fia.fs.fed.us/library/field-guides-methods-proc/> for example of scalable CFI protocol that provides usable data from a local up to a national scale.

DATA MANAGEMENT

Each refuge retains an electronic copy of the inventory data. Additionally, the Assistant Regional Forester has a copy. The long-term objective is to link inventory data to GIS database to allow for both local and landscape level analysis.

DATA ANALYSIS / MODELS

Data collection occurred from May – September, 2012 and analysis is ongoing thru the fall and winter. Data was collected using TCruise software

and each inventory plot and data is geospatially referenced.

ACCOMPLISHMENTS AND MANGEMENT IMPLICATIONS

Santee NWR - Cuddo Unit (Pine, Pine-hardwood and Hardwood stands) was inventoried using a plot sampling design. The inventory required 340 man-hours and totaled 2,517 acres. Only stands over 4 acres in size were inventoried and sampling intensity was one plot per four acres up to 24 acres for small stands and 1 plot per 8 acres in stands over 24 acres. Within the 1/10 acre sample, all trees were identified to species and DBH's measured. Additionally, total tree height of the first and fifth pines and merchantable height of all hardwoods was measured. Canopy cover, midstory cover and shrub abundance was estimated. Within a 1/100 acre subplot around plot center, herbaceous vegetation, bare ground and leaf cover was estimated. Herbaceous cover was further delineated into grass, forb, vine or woody components based upon % coverage. Additionally, all woody regeneration was identified and measured within the 1/100 acre subplot. Invasives were identified and recorded where present. Abundance of cane and vines in canopy were estimated at each plot.

St. Marks NWR Port Leon Tract – 1930 acres and SO-1 tract 425 acres at a total of 800 man-hours. The inventory methodology was point sampling (10BAF prism cruise). Sampling Intensity was one plot per acre up to 25, 25 plus 1 plot per 5 acres for stands from 25-250 acres and one plot per 10 acres for stands > 250 acres. Tree species were identified for all in trees per point, dbh measured on all trees and heights measured on two pines per plot. Additionally, canopy, midstory and shrub coverage was estimated for each point. Herbaceous vegetation was classified (grass, forb, vine or woody) and coverage estimated, along with coverage of leaf litter and bare ground. Invasives were identified and recorded across the entire site. Down woody material was also estimated.

Carolina Sandhills - Approximately 1,357 acres of upland longleaf was cruised over 280 man-hours. The same techniques and variables were measured for the NWR as was for St. Marks (above).

Roanoke River NWR 8,982 acres in bottomland hardwoods were inventoried (10% cruise using point sampling) measuring variables covered in the LMJV Bottomland Hardwood Guidelines. Over 20 regional staff assisted with this inventory completed over the course of a week in late July.

Cahaba River NWR – 40 acres was cruised to estimate volumes for a timber sale as part of a proposed strip mine reclamation project.

PARTNERS

Santee NWR, St. Marks NWR, Carolina Sandhills NWR, Roanoke River NWR and Cahaba River NWR were involved in this project. Additionally, staff from many refuges and CESU interns from UGA and MSU participated in these projects.

SOURCES OF SUPPORT

I would estimate that approximately \$100,000 in labor support from regional and refuge staff and CESU agreements helped make this project possible.

Forest Habitat Inventory Equipment for Refuges: Inventory and Monitoring R4 Award - \$40,000
Expenditures - \$37,597

MORE INFORMATION

Haven Barnhill
Assistant Regional Forester

USFWS
105 Westpark Dr
Westpark Center, Suite D
Athens, GA 30606-3175
706-613-9493 ext. 241
404-855-9565 Cell Phone
706-613-6059 Fax