

SoLo-ACE Longleaf Partnership Conservation Plan 2018-2022



Photo: Bobby Franklin

May 2018



Prepared by:
Lisa Lord, The Longleaf Alliance
Rob Sutter, Enduring Conservation Outcomes
Ryan Bollinger, The Longleaf Alliance

Contents

Executive Summary	1
Introduction to the SoLo-ACE Conservation Plan	2
Conservation Planning Approach	6
Targets	7
SoLo-ACE Landscape Priority Map	9
Threats	11
Strategies	12
Implementation and Evaluation	15
References	17
Appendices	18
Appendix 1: List of Contributors to the Conservation Plan	
Appendix 2: Situation Diagrams	
Appendix 3: Goal Setting feedback	

Executive Summary

The longleaf pine (*Pinus palustris*) forests in South Carolina are a fraction of what once occurred of this unique ecosystem. Restoration of the ecosystem has become a regional conservation priority over the last two decades, with restoration taking place on public and private lands throughout the southeastern United States. The SoLo-Ace Longleaf Partnership, a Longleaf Implementation Team (LIT) formed in 2013, is one of 17 focal areas for the landscape scale conservation of longleaf pine and includes partners from state, federal, and private organizations. Currently, The Longleaf Alliance facilitates and staffs the SoLo-ACE Longleaf Partnership.

The primary purpose of this conservation plan is to identify the key strategies that will most effectively and efficiently maintain, improve and restore longleaf pine to the SoLo-ACE landscape. These strategies implement priorities outline in America's Longleaf Restoration Initiative's 2016 Range-wide Accomplishment Report with actions that are specific to the SoLo-Ace project area. The overall goal of the SoLo-Ace Longleaf Partnership is to increase the acreage of longleaf pine within the project area, with priorities that expand and connect existing natural stands on both private and public land and further management that enhances ecosystem functions, restores habitat, and promotes the recovery of at-risk, threatened, and/or endangered species.

The conservation plan for the SoLo-ACE landscape used the Open Standards for the Practice of Conservation (Open Standards), a structured, scientifically sound, and transparent planning process that guides project teams in the identification of effective conservation strategies, as the planning approach. In November 2017 and February 2018, facilitated charrettes were used to lead the SoLo-ACE partnership team through the planning process and included presentations, discussion, brainstorm sessions, and breakout groups developing situation diagrams and strategies.

The Partnership identified targets on both private and public land to maintain and improve and restore longleaf pine sites. Also, the Partnership set 1-Year (2018) and 5-Year (2022) restoration goals addressing the conservation targets which will continue to be refined. Four threats were identified as the key to degradation of existing longleaf stands and the establishment of new longleaf forests including lack of appropriate fire management, uncertainties in restoring longleaf pine, land use conversion, and invasive species. Key strategies were then developed that focus on reducing the primary threats to the maintenance, improvement, and restoration of longleaf pine. These included providing education and outreach, providing landowner incentives and cost-share, maintaining and increasing landowners implementing prescribed burning, supporting human health and wellbeing through longleaf ecosystem management, and improving knowledge about the condition of longleaf in the focal area, including private lands.

The SoLo-ACE Partners will collaborate and bring resources to implementing the strategies over the next five years to achieve success. The strategies and mapped priorities will continue to be refined with the evaluation of the strategic actions and current conditions.

This project would not have been possible without generous support from the Gaylord and Dorothy Donnelley Foundation.

Introduction to the SoLo-Ace Longleaf Partnership Conservation Plan

Restoration of the longleaf pine (*Pinus palustris*) ecosystem has become a regional conservation priority over the last two decades, with restoration taking place on public and private lands throughout the southeastern United States. The regional focus on longleaf restoration was first generated through the efforts of The Longleaf Alliance (LLA) (formed in 1995), The Nature Conservancy, and many federal and state land management agencies. It was then expanded by the development of a range-wide conservation plan in 2007, America's Longleaf Restoration Initiative (ARLI)¹. The 15-year goal of the Initiative is to expand the acreage of longleaf pine from 3.4 to 8.0 million acres. In 2016, 2,023,214 acres of restoration activities were reported with increases in prescribed fire on private lands (88,000 more acres reported than 2015)².

The South Lowcountry and ACE Basin of South Carolina (SoLo-ACE) is one of 17 focal areas for the landscape scale conservation of longleaf pine (Figure 1).

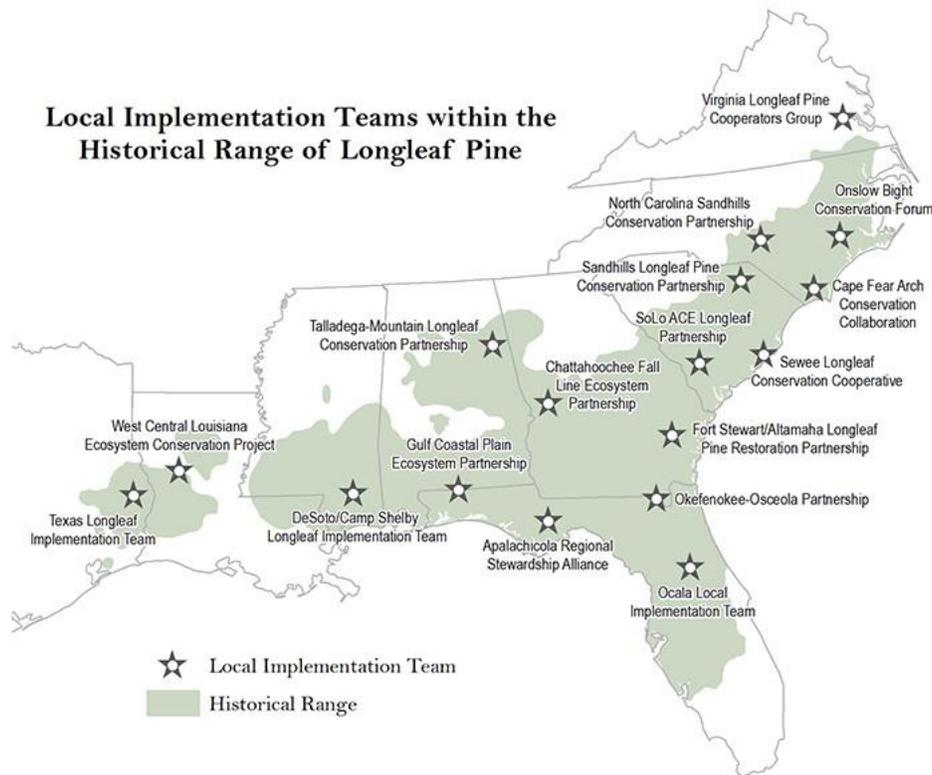


Figure 1 Range-wide Longleaf Implementation Teams (www.americaslongleaf.org)

¹ Range-Wide Conservation Plan for Longleaf Pine, http://www.americaslongleaf.org/media/86/conservation_plan.pdf

² 2016 Range-wide Accomplishment Report, http://www.americaslongleaf.org/media/23979/fy16_llp_rangewideaccompreport_final_web.pdf

The SoLo-ACE focal area consists of approximately 4.1 million acres and includes all or parts of eleven counties (McCormick, Edgefield, Aiken, Orangeburg, Barnwell, Bamberg, Allendale, Hampton, Colleton, Beaufort and Jasper) and is one of three focal areas in South Carolina (Figure 2). The focal area is anchored by the 200,000 acre Savannah River Site, a Department of Energy property managed by the USDA Forest Service³, in the northern part of the focal area and another 150,000 acres of state and other public conservation lands including a significant hub of South Carolina Department of Natural Resources properties (Webb, Tillman, and Palachuacola Wildlife Management Areas) in the southern portion. Privately conserved lands make up a significant portion, and landowners in the focal area have permanently protected over 250,000 acres of land from development through conservation easements and have consistently demonstrated an interest in making habitat stewardship their number one priority.

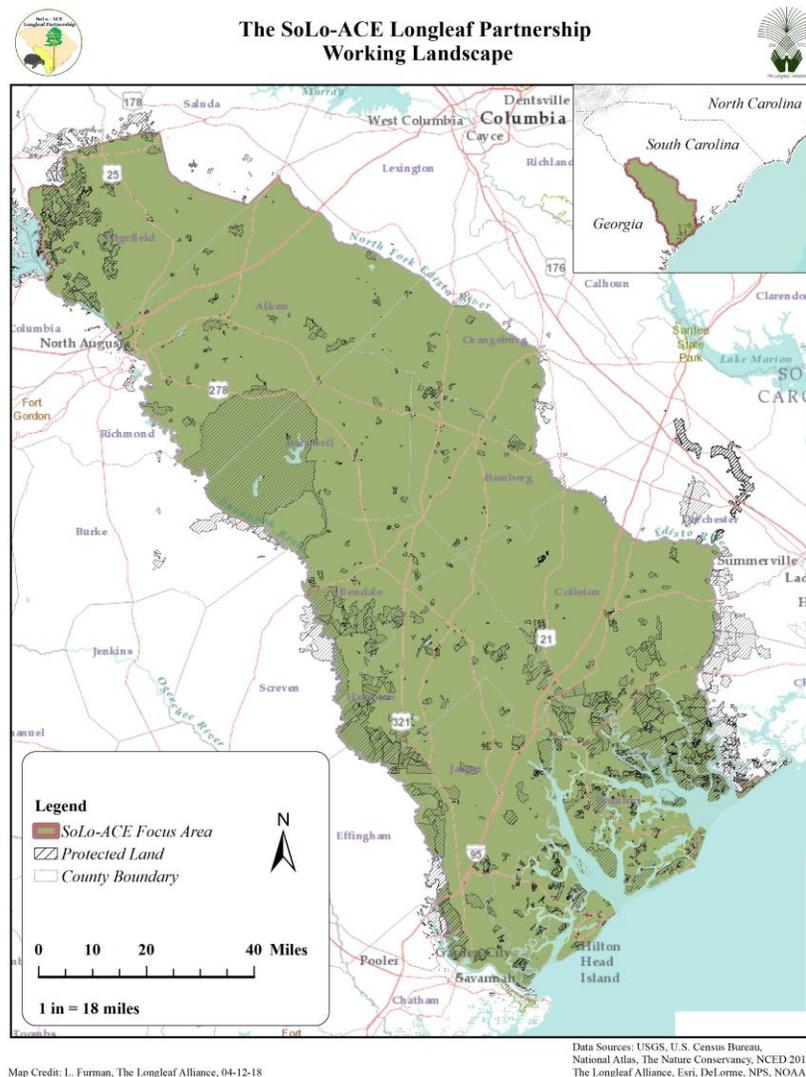


Figure 2 SoLo-ACE Longleaf Partnership Project Area

³ Savannah River Site, Department of Energy, www.energy.gov/em/savannah-river-site

The longleaf pine forests in South Carolina are a small part of what remains of this unique ecosystem. Longleaf pine forests once covered a vast range from the Atlantic Coastal Plain of southeastern Virginia to the West Gulf Coastal Plain of Texas, encompassing more than 90 million acres of the North American landscape. These forests represented an extraordinary diversity of ecological, cultural and socio-economic values, making them one of the great coniferous forests of the world. The ecosystem has numerous rare species and high plant species diversity, some of the richest in North America. Today, longleaf pine forests are a mere remnant of their former distribution, with less than three percent of the original acreage remaining.

Table 1: SoLo-ACE Partners

The SoLo-Ace Longleaf Partnership, a Longleaf Implementation Team (LIT) formed in 2013, includes state, federal, and private organizations (Table 1). There is a strong collaborative tradition among state, federal, and private conservation organizations and private landowners in this region of South Carolina. The substantial array of publicly and privately managed protected lands and engaged partners creates a rich opportunity for increasing the acreage of restored, enhanced, and maintained acres in longleaf pine with an ambitious goal of longleaf pine ecosystem restoration with long-term sustained management.

Natural Resources Conservation Service
US Fish and Wildlife Service
US Forest Service
South Carolina Forestry Commission
Clemson University and Extension
SC Department of Natural Resources
SC State Parks
The Longleaf Alliance
Ducks Unlimited
Lowcountry Land Trust
The Nature Conservancy
National Wild Turkey Federation
Nemours Wildlife Foundation
Audubon South Carolina
Folk Land Management
Numerous Private Landowners

Currently, The Longleaf Alliance facilitates and staffs the SoLo-ACE Longleaf Partnership⁴.



Photo: Brady Beck

SoLo-ACE Partnership Vision

The vision of the SoLo-Ace Partnership is a South Carolina landscape having functional and viable longleaf pine ecosystems, providing a full spectrum of ecological, economic, and social values, restored and maintained through a voluntary partnership of concerned and motivated landowners and organizations.

The mission of the Partnership is to promote the maintenance and restoration of the longleaf pine ecosystem on private and public lands, with priorities to expand and connect existing natural stands through landowner outreach and engagement via education and outreach with a focus on prescribed fire, cost-share distribution for state and private landowners for longleaf restoration and management, and supporting the restoration of key imperiled species, such as the federally

⁴ The Longleaf Alliance, www.longleafalliance.org

endangered Red-cockaded woodpecker (*Picoides borealis*) and gopher tortoise (*Gopherus polyphemus*), a candidate species, through special projects⁵. The National Fish and Wildlife Foundation has provided funding for the partnership by funding the Partnership coordinator, landowner cost-share, education and outreach, and other Partnership species projects. American Forests, NRCS, and the USFWS have provided additional funding. This plan is the first comprehensive strategic conservation plan compiled by the Partnership.

The primary purpose of the conservation plan is to identify the key strategies that will most effectively and efficiently maintain, improve and restore longleaf pine to the SoLo-ACE landscape. These strategies implement the game changers outline in America's Longleaf Restoration Initiative's 2016 Range-wide Accomplishment Report with actions that are specific to the SoLo-Ace project area.

Conservation Planning Approach

The conservation plan for the SoLo-ACE landscape used the Open Standards for the Practice of Conservation (Open Standards)⁶ as the planning approach (FOS 2008). The Open Standards is a structured, scientifically sound, and transparent planning process that guides project teams in the identification of effective conservation strategies. The process, through its software, Miradi, incorporates tools that prioritize threats and strategies; models the institutional, political, economic, social and ecological drivers of threats; and tests the logic of the expected outcomes of strategies. The process uses an adaptive management approach to planning.

The planning process includes the following steps:

- **Conceptualize:** determines the purpose, spatial and/or programmatic scope of the project, the appropriate team to undertake the planning, and a vision of the desired future condition
- **Targets:** identifies the ecological (species and ecological systems) targets, environmental benefits, and human wellbeing targets and benefits that is the focus of planning, including an understanding of how each target functions, what is considered a viable or sustainable condition, and the development of target goals
- **Threats:** identifies and ranks the factors that degrade the condition of the ecological targets
- **Context:** assesses the institutional, political, economic, social and ecological drivers of the threats through a situation analysis
- **Strategy:** uses the situation analysis to determine what actions would maintain, improve or restore the targets
- **Theory of Change:** assesses the logic and probability of the strategy resulting in the desired condition
- **Implementation:** generates a short-term work plan and a project budget to initiate implementation of the plan
- **Evaluate and Adapt:** incorporates monitoring, evaluation, and adaptive management into the planning process, adapting the plan based on the knowledge gained throughout the entire process

⁵ USFWS Environmental Conservation Online System, ecos.fws.gov/ecp/

⁶ Open Standards for the Practice of Conservation: <http://cmp-openstandards.org/>

- **Capture and Share Learning:** encourages the documentation of data and results, sharing results, and creating a learning environment

Equally important to the implementation of the Open Standards is the facilitation techniques used to lead a team through the process. This includes presentations, discussion, brainstorm sessions, and breakout groups developing situation diagrams and strategies.

Targets

The management of longleaf pine, for the maintenance, improving and establishing stands, is well understood (Kirkman and Jack 2017, Jose et al 2006). Longleaf pine forests have high biodiversity, with the groundcover having the highest levels of plant species richness in North America (Walker and Peet 1983, Peet and Allard 1993) and harbor many rare and endangered species (Sorrie and Weakley 2001). The forests are also important for wildlife and game species (white-tailed deer, wild turkey, bobwhite quail) (Smith et al. 2017). Managed longleaf pine forests also increase the wildfire resilience of landscapes (Mitchell et al 2014, Vose 2012).

The overall goal of the SoLo-Ace Longleaf Partnership then, is to increase the acreage of longleaf pine within the project area, with priorities that expand and connect existing natural stands on both private and public land and further management that enhances ecosystem functions, restores habitat, and promotes the recovery of at-risk, threatened, and/or endangered species. Therefore, the Partnership identified four targets divided into two sets as the most effective structure to prioritize threats and develop strategies. Targets are the ecological features that are the focus of the project. Targets are an essential starting point for planning because they:

- Focus planning
- Define the specific geographic scope (where the target occurs)
- Determines what data and information are needed to develop the plan
- Determines which individuals and organizations should be involved in the planning
- Identifies what will be measured to assess the success of the project

The two sets were private versus public lands. The two targets in each of these sets were 1) to maintain and improve and 2) restore longleaf pine sites (Table 2). Each of these targets has common threats (fire, invasive species) but different contributing factors, strategic actions, and funding sources.

Table 2: Conservation Targets

Private Lands	Public Lands
Maintain and Improve Existing Longleaf Stands	Maintain and Improve Existing Longleaf Stands
Restore (establish) Longleaf	Restore (establish) Longleaf

Current estimates and future goals have been grouped in the following categories⁷:

- Maintained longleaf pine (existing sites with the desired structure and composition that are being managed by fire and for biodiversity)
- Improved longleaf pine (existing sites having longleaf pine canopies with a degraded understory and/or groundcover or sites having native groundcover without a longleaf canopy that need extensive management to reach the desired structure and composition)
- Restored longleaf pine (existing sites that have been planted within the last 15 years and will require continues management to reach the desired structure and composition)

The identification of targets also includes assessing the benefits of conservation. Both environmental benefits, benefits to non-targeted species, communities, and ecological processes, and human well-being benefits, benefits to the local and regional human communities, arise directly or indirectly from protecting and conserving a longleaf pine ecosystem. The planning team developed the following list of benefits (Table 3).

Table 3: Environmental and Human Wellbeing Benefits of Longleaf Pine Conservation

Environmental Benefits	Human Wellbeing Benefits
Maintain and Increase Biodiversity	Reduced Occurrence of Catastrophic Fire
Conserve Rare and Endangered Species	Water Quality
Protect Pollinator Populations	Air Quality
Maintain and Increase Landscape Diversity	Carbon Sequestration
Maintain and Increase Landscape Connectivity	Recreation and Hunting
Climate Resiliency	Reduced Populations of Ticks and Disease
	Economic Opportunities for Landowners
	Forest Products
	Landscape Aesthetics
	Cultural Heritage



Photo: Brady Beck

Target Goal Setting

The Partnership set 1-Year (2018) and 5-Year (2022) restoration goals addressing the conservation targets (Table 2) in alignment with ALRI (See Appendix 3). The Partnership will continue to refine and assess the target goals as more is learned about the extent and condition of the SoLo-ACE longleaf ecosystem.

⁷ Categories consistent with goals from America’s Longleaf Restoration Initiative (ALRI)

Land conservation in general has not emphasized the human wellbeing benefits from protecting and management native ecosystems. While not the focus of the project, these benefits should be communicated to partners and the public.

SoLo-ACE Landscape Priority Map

In support of America's Longleaf Restoration Initiative, and early in the formation of the SoLo-ACE Longleaf Partnership, the South Carolina Department of Natural Resources (SCDNR) developed an initial longleaf priority map.

In July 2017, The Longleaf Alliance supported the development of an improved map for the SoLo-ACE Partnership with a goal of refining the priority areas and achieving compatibility with other range-wide planning initiatives. The baseline data included protected lands data from PADUS/NCED/TNC, the South Atlantic Landscape Conservation Cooperative (SALCC) Draft Blueprint 2.2⁸, The Nature Conservancy's (TNC) Resilient and Connected Landscapes Project⁹ and the North Carolina Forest Service's Longleaf Interactive Decision Support Tool (LIDST)¹⁰. The objective of this mapping process was to delineate the highest priority longleaf restoration areas utilizing regional spatial data, condition models, and partner input as guides.

While landscape-scale data models were extremely helpful in visualizing likely conditions and potential historical context, expert, SoLo-ACE Partners provided critical local knowledge to ensure realistic, appropriate restoration areas were highlighted. Two mapping charrettes were held to obtain partner input. During this process it was determined that the project area between Clarks Hill and Plum Branch, SC, should be considered as a possible addition of 47,829 acres which would bring the total LIT acreage to 4,140,119 acres.

Priority areas are anchored by the large publicly owned conservation lands in the project area. The northern priority areas are anchored by the Savannah River Site, Hitchcock Woods, Aiken Gopher Tortoise Heritage Preserve, and the Silver Bluff Audubon Center and Sanctuary. Also, major counties of Aiken and Barnwell identified by FIA and ALRI as having significant acreages of existing longleaf (30,000-100,000 acres each).

The southern priority areas are anchored by a complex of SCDNR properties with substantial acreages of maintenance class longleaf. This area also contains a significant acreage of protected lands (over 215,000) in the ACE Basin alone, of which more than two-thirds is in private lands conservation.

The priority map will continue to be refined as the ground conditions are assessed and the targets for longleaf ecosystem restoration within the project area are further refined.

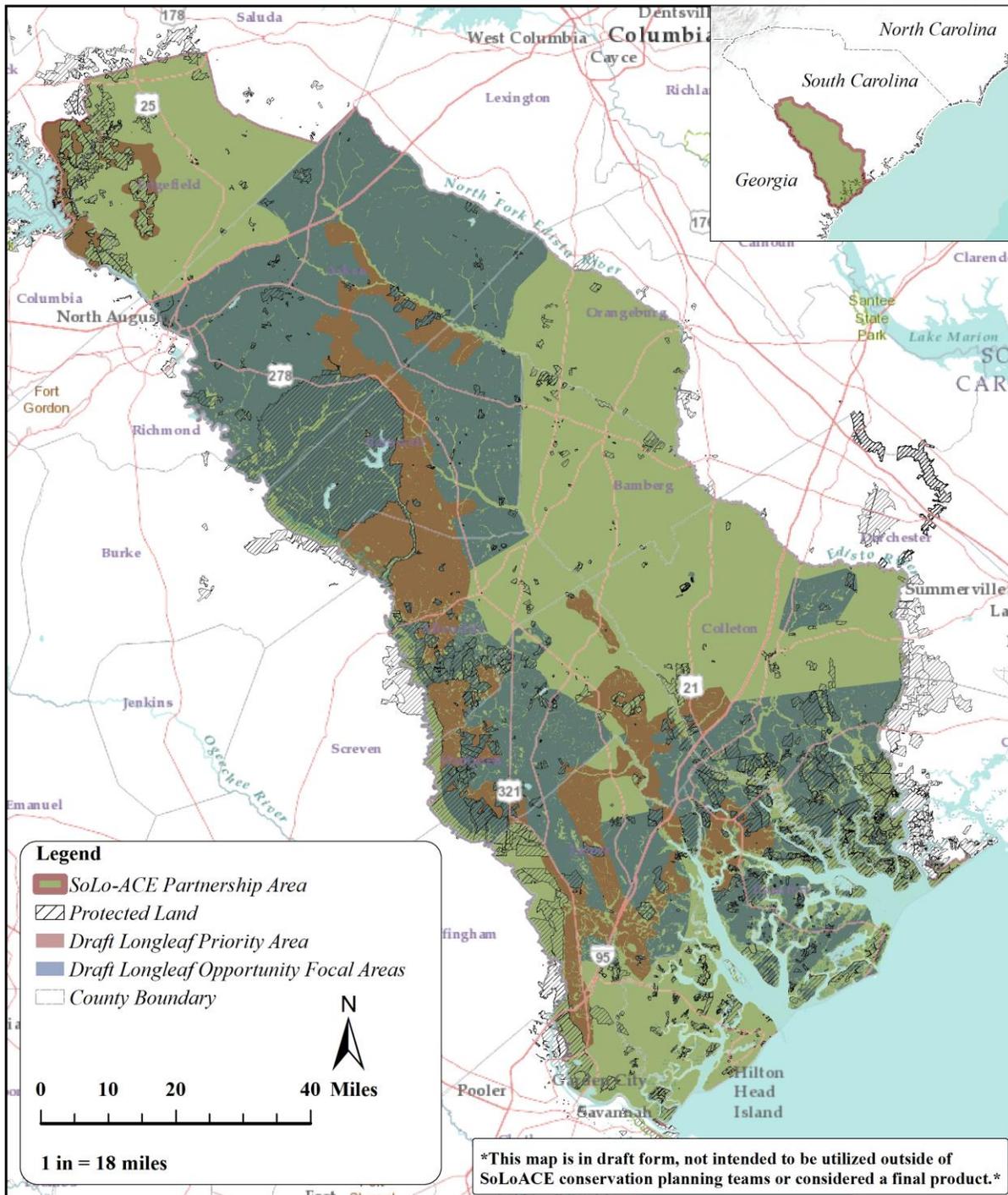
⁸ South Atlantic LCC Blueprint, www.southatlanticlcc.org/blueprint/

⁹ The Nature Conservancy's (TNC) Resilient and Connected Landscapes Project, www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/reportsdata/terrestrial/resilience/Pages/default.aspx

¹⁰ North Carolina Forest Service's Longleaf Interactive Decision Support Tool, www.ncforestatlas.com/longleaf/



The SoLo-ACE Longleaf Partnership 2018 Draft Longleaf Priority Landscapes



Map Credit: L. Furman, The Longleaf Alliance, 04-12-18

Data Sources: USGS, U.S. Census Bureau, National Atlas, The Nature Conservancy, NCED 2016, The Longleaf Alliance, Esri, DeLorme, NPS, NOAA

Figure 3 SoLo-ACE Conservation Priority Map

Threats

Four threats were identified as the key to degradation of existing longleaf stands and the establishment of new longleaf forests. These include:

Lack of Appropriate Fire Management

Fire is essential for the growth of longleaf pine and the maintenance, improvement and restoration of the understory and ground cover, but funding and expertise in burning limit implementation. The contributing factors to this threat include lack of knowledge about benefits of prescribed fire, trained burning teams, consultants and/or landowners, and public knowledge of the longleaf system, and also, liability issues, and development (wildland-urban interface issues).



Photo: Lisa Lord

Uncertainties in Restoring Longleaf Pine

There are many real and perceived barriers in establishing longleaf pine by private landowners, including restoration and management costs, lack of appropriate site preparation, implementing prescribed burning, and economic value compared to other species (i.e. loblolly pine). The assumption of the plan is that reducing the uncertainties related to restoring longleaf pine will increase landowner participation.

Land Use Conversion

Conversion of forest land to hard uses (buildings, roads, parking lots) and agriculture as well as parcelization and an increase in the wildland-urban interface makes it harder to restore these lands to longleaf pine and fire management increasingly difficult. Spatially, this is more significant in areas with existing longleaf stands where expanding the stands and connecting stands is of ecological and management importance.

Invasive Species

Invasive species limit the restoration of longleaf pine and alter the composition and ecological processes (fire) of longleaf pine ecosystems. Primary threats to longleaf forests and associated wildlife species in South Carolina include feral hogs, coyotes, armadillos, Japanese climbing fern (*Lygopodium japonicum*), Chinese Tallow Tree (*Sepium sebiferum*), and Chinese Wisteria (*Wisteria sinensis*). Cogongrass (*Imperata cylindrica*) also has been found in South Carolina and is well-established in neighboring states.

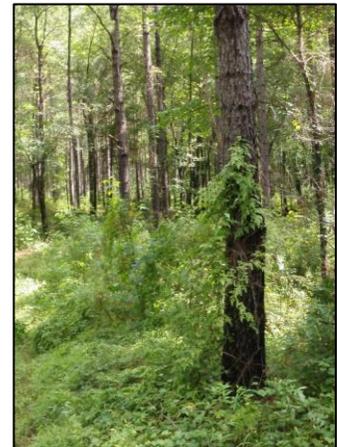


Photo: Lisa Lord

Strategies

The following key strategies focus on reducing the primary threats to the maintenance, improvement, and restoration of longleaf pine. They address the threats of landowner uncertainty around longleaf management and restoration, lack of prescribed fire, conversion of land from forestry to alternative uses including agriculture and development, and invasive species.

The strategies were developed through analyzing the factors that limit the management and restoration of longleaf pine. The process is called a situation analysis, which produces a situation diagram of the contributing factors to the threats. A situation analysis is a process for analyzing and establishing a common understanding of the context of a project and includes the ecological environment and the social, economic, cultural, political and institutional systems that affect the project's conservation targets.

Situation analysis helps develop more robust conservation strategies by:

- Evaluating factors that are driving the threats
- Articulating and making explicit the understanding of the situation
- Identifying key individuals/groups (supporters as well as non-supporters)
- Highlighting points of intervention

Situation diagrams were developed at a Partnership workshop, with two teams, one focusing on the key threats of fire and invasive species and the other on longleaf restoration (planting longleaf pine) and development.

1.0 Provide Education and Outreach

Educational materials and resources for longleaf pine restoration, improvement, and maintenance and conserving the region's longleaf forests as well as direct and indirect landowner outreach are critical for engaging public land managers, private landowners and managers, and natural resource professionals. Strategies are designed to motivate landowners and managers to action to restore or manage longleaf pine and provide technical and financial resources to achieve success.

1.1 By June 2019, determine 1) the target audience/s and their educational needs to obtain tools to improve, restore, or manage longleaf and further the Partnerships goals and 2) the methods for communicating to those audiences and disseminating information.

- 1.1.1 Assess the current education and outreach efforts by the partners
- 1.1.2 Designate a Partnership Committee to lead the Partnership towards its education and outreach goals and keep the Partnership on track
- 1.1.3 Define the target audiences and determine educational and resource needs to address their challenges to restoring and/or managing longleaf
- 1.1.4 Determine the delivery methods and media needs to reach the target audiences including, but not limited to: print material, web-based material, social media, field days, and/or workshops
- 1.1.5 Establish an informational web-based site for longleaf related outreach
- 1.1.6 Develop educational material for invasive species threats, prevention, and treatment for longleaf forests in the SoLo-ACE project area

- 1.2 By August 2019, determine capacity needs for meeting the Partnership goals for education and outreach.
 - 1.2.1 Determine Partner availability and capacity needed to meet the programmatic objectives
 - 1.2.2 Continue to support the funding of the Partnership coordinator position through The Longleaf Alliance to provide ongoing leadership
- 1.3 By August 2019, determine the funding needs for education and outreach to meet the programmatic objectives including personnel, media and materials, and other related expenses
 - 1.3.1 Outline strategies and potential funding sources for building capacity to meet the Partnership goals for education and outreach
 - 1.3.2 Support the continuation of current funding mechanisms and develop new sources of funding through both public and private funding sources (includes NFWF, NRCS, and other federal, state, and private grant sources)

2.0 Provide Landowner Incentives and Cost-Share

Landowner incentives and cost-share are critical for reducing the technical and financial barriers associated with planting and managing longleaf pine. Continuing to support and focus incentives programs and ensuring landowners receive needed resources will result in an improved rate of return for landowners and more acres restored to longleaf pine.

- 2.1 On an ongoing basis, support agencies that are providing cost-share funding to landowners and ensure that policy makers are aware of the importance of these programs for achieving success
 - 2.1.1 Assist NRCS and other agencies with cost-share outreach and distribution
 - 2.1.2 Increase collaboration and communication among state and federal cost-share providers
 - 2.1.3 Support the Farm Bill and other cost-share incentive programs through advocacy
 - 2.1.4 Promote successes by sharing success stories with the general public, landowners, natural resource professionals, legislators, and other key decision makers
 - 2.1.5 Continue to support and build innovative partnerships with the private and business sectors that support forestry and longleaf conservation (i.e. Savannah River Clean Water Fund/Savannah River Watershed Initiative)
- 2.2 On an ongoing basis, improve landowner understanding and access to cost-share and other incentive programs for long-term forest protection and restoration.
 - 2.2.1 Provide technical assistance and information to landowners about cost-share programs and enrollment
 - 2.2.2 Provide information to landowners about long-term and permanent land protection programs and available incentive through the SC Conservation Bank, NRCS, and the Savannah River Clean Water Fund
- 2.3 Communicate and collaborate with state and federal cost-share agencies and landowners.

- 2.3.1 By June 2019, design a framework for communication and collaboration among partners about cost-share programs and incentives that will facilitate better understanding of available resources for longleaf forests by all sectors managing or stewarding longleaf forests
- 2.3.2 By June 2020, build additional on-the-ground technical assistance capacity to work with landowners

3.0 Maintain and Increase Landowners Implementing Prescribed Burning

Prescribed burning is a key part of managing and restoring the longleaf ecosystem. This includes increasing the amount of prescribed burning across the focal area to improve and/or maintain longleaf pine by teaching new landowners to burn and reducing challenges to prescribed burning.

- 3.1 On an ongoing basis, keep landowners burning by improving their skills, reducing or removing barriers, and meeting other needs for technical or financial assistance; Expand the number of landowners that burn.
 - 3.1.1 By June 2020, develop a landowner list for outreach (from agency, meetings, classes, trainings) for follow-up and confirm they have resources needed to implement what they have learned
 - 3.1.2 Beginning in September 2020, follow-up with landowners that participate in SCFC Prescribed Fire Certification course and ensure that trained landowners continue on to achieve certification
 - 3.1.3 Establish mentorships to support landowners and provide technical assistance
- 3.2 By June 2019, identify funding and capacity for achieving prescribed burning goals and support agencies and private consultants that burn.
 - 3.2.1 Collaborate with consulting foresters to determine how to remove challenges they may have to burning or helping landowners burn.
 - 3.2.2 Support formation of Prescribed Burn Associations across the landscape in appropriate neighborhoods
 - 3.2.3 Support the SC Forestry Commission’s effort to burn on private lands
 - 3.2.4 Build capacity and support the private sector by helping to facilitate the connection between private consultants that burn and landowners
- 3.3 Remove financial challenges to continuing prescribed burning (ongoing)
 - 3.3.1 Connect landowners with cost-share and incentive programs for prescribed burning
 - 3.3.1 Continue to apply for funding through various grant sources for The Longleaf Alliance to continue providing prescribed burning cost-share in addition to what is available through federal and state agencies.

4.0 Support Human Health and Wellbeing through longleaf ecosystem management

Increase the understanding of the ecologic, economic, and ecosystem service value of longleaf pine resulting in broad support for longleaf conservation and management and prescribed fire.

- 4.1 By June 2019, develop a concise summary document stating the relationship between the protection and conservation of longleaf pine, and its many benefits to human wellbeing in the SoLo-Ace project area.
- 4.2 Annually, support agency and private programs as needed that increase awareness about the importance of longleaf pine forests
 - 4.2.1 Increase support of existing education and outreach programs for all ages and audiences (i.e. Firewise, Burner Bob, Wood Magic)
 - 4.2.2 Support other programs with common goals (i.e. Savannah River Watershed Initiative, South Carolina Bobwhite Quail Initiative, annual Cogongrass survey)
- 4.3 Create documents for landowners about reduced risk of longleaf forests from common threats (wind, disease, etc.) and resiliency of longleaf pine.

5.0 Improve knowledge about the condition of longleaf in the focal area, including private lands

Improve knowledge and GIS data layers, with increased accuracy and more information about individual forest stands to determine the current condition of longleaf pine forests in the focal area.

- 5.1 By January 2021, improve data specific to the condition class of the longleaf stands within the focal area.
 - 5.1.1 By January 2019, develop a rapid assessment methodology for longleaf stands
 - 5.1.2 During 2020 and 2021, ground truth and assess known longleaf stands across the range to include both public and private lands
 - 5.1.3 Develop, on an ongoing basis, accurate GIS layers that are updated periodically to reflect what’s happening on the ground
 - 5.1.4 Continue updating/improving the draft priority map as improved data and resources come available

Implementation and Evaluation

A strategic plan is not complete without the steps to implement and evaluate the strategic actions developed in the plan.

Attached separately is an Implementation Work Plan, providing the structure to develop and track the actions identified in the strategies section (above) of this plan. The Work Plan will be a dynamic document that will be updated annually and adjusted throughout the duration of the conservation plan as strategies are completed and new opportunities arise. The Partnership will develop and complete the Implementation Work Plan by November 2018 to guide decisions about tasks, timeframe, personnel and funding.

An implementation work plan is only part of the successful execution of a strategic plan. An organization also needs to assess and evaluate the strategies and actions it undertakes. The Partnership will utilize an evaluation plan to measure the progress or success of implemented strategies biennially, and to course correct as appropriate based on measured results. Only through active evaluation can the Partnership assess and adjust the strategic plan to best meet its goals.

Sharing Lessons Learned

As a LIT of the America's Longleaf Restoration Initiative, the SoLo-ACE Longleaf Partnership is well situated for sharing lessons learned and learning from other partnerships working to restore longleaf. The Partnership (LIT) Coordinator and representatives from the Partnership will regularly seek out opportunities to provide updates on challenges and progress in the quarterly Longleaf Leader magazine published by The Longleaf Alliance, at regional conservation gatherings such as the Biennial Longleaf Conference, at National Fish and Wildlife Foundation sponsored meetings, at gatherings of LIT Coordinators such as the 2017 LIT Summit, and at bi-annual Longleaf Partnership Council meetings.

The Partnership will meet regularly to share updates among partners and identify opportunities for increased collaboration. SoLo-ACE partnership meetings will also be used as a venue for partners to highlight timely information. The Partnership will also seek to educate the public and private landowners at outreach events, field days, workshops, trainings and direct technical assistance.

References

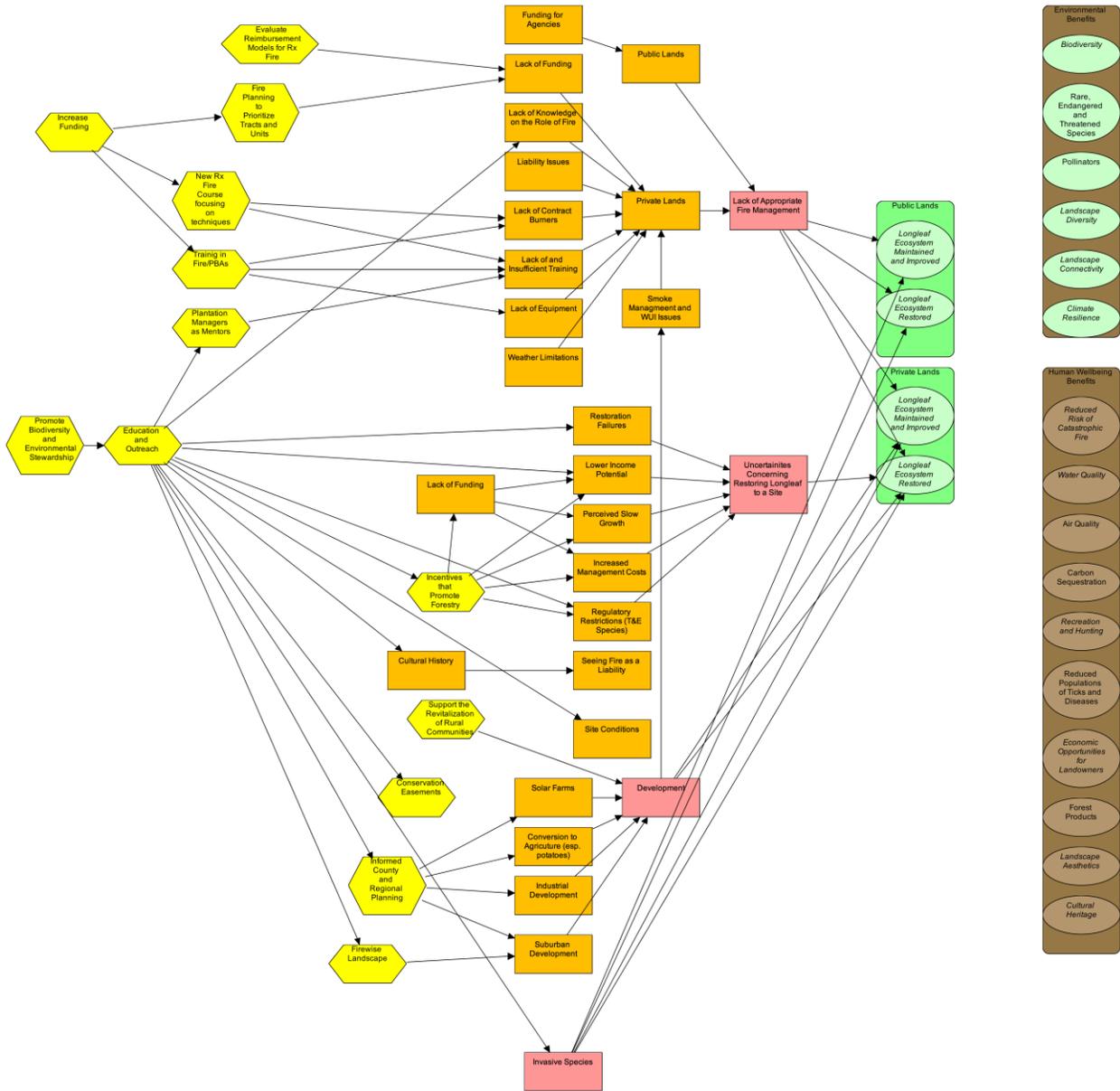
- Jose, S., Jokela, E. J., & Miller, D. L. (2006). Longleaf pine ecosystems: ecology, management, and restoration.
- Kirkman, L. K., & Jack, S. B. (2017). Ecological Restoration and Management of Longleaf Pine Forests.
- Hiers, J. K., Walters, J. R., Mitchell, R. J., Varner, J. M., Conner, L. M., Blanc, L. A., & Stowe, J. (2014). Ecological value of retaining pyrophytic oaks in longleaf pine ecosystems. *The Journal of Wildlife Management*, 78(3), 383-393.
- Mitchell RJ, Liu Y, O'Brien JJ, Elliott KJ, Starr G, Miniati CF, Hiers JK (2014) Future climate and fire interactions in the southeastern region of the United States. *Forest Ecology and Management* 327:316-326
- Peet, R. K., & Allard, D. J. (1993). Longleaf pine vegetation of the southern Atlantic and eastern Gulf Coast regions: a preliminary classification. In *Proceedings of the Tall Timbers fire ecology conference* (Vol. 18, pp. 45-81).
- Smith, L. L. et al. (2017). Management and Restoration for Wildlife in Kirkman, L. K., & Jack, S. B. (2017). Ecological Restoration and Management of Longleaf Pine Forests.
- Sorrie, B. A., & Weakley, A. S. (2001). Coastal plain vascular plant endemics: phytogeographic patterns. *Castanea*, 50-82.
- Vose JM, Peterson DL, Patel-Weynand T (2012) Effects of climatic variability and change on forest ecosystems: a comprehensive science synthesis for the U.S. forest sector. Gen. Tech. Rep. PNW-870. U.S. Department of Agriculture Forest Service, Pacific Northwest Research Station, Portland, Oregon
- Walker, J., & Peet, R. K. (1984). Composition and species diversity of pine-wiregrass savannas of the Green Swamp, North Carolina. *Vegetatio*, 55(3), 163-179.

Appendices

Appendix 1: Conservation Planning Contributors

Jason Ayers	USFWS	Jason_ayers@fws.gov
Bret Beasley	USFWS	Bret_beasley@fws.gov
Joe Cockrell	USFWS	Joe_cockrell@fws.gov
Robert Chambers	NRCS	Robert.chambers2@sc.usda.gov
Kamara Holmes	NRCS	Kamara.holmes@sc.usda.gov
Jennie Haskell	US Forest Service	jenniehaskell@fs.fed.us
David Malone	US Forest Service	dmalone@fs.fed.us
April Atkinson	SC Department of Natural Resources	atkinsona@dnr.sc.gov
Gary Burger	SC Department of Natural Resources	burgerg@dnr.sc.gov
Caity Homan	SC State Parks	choman@scprt.com
Terry Hurley	SC State Parks	thurley@scprt.com
Joe Lemeris	SC State Parks	jlemeris@scprt.com
Robert Abernethy	The Longleaf Alliance	robert@longleafalliance.org
Bobby Franklin	The Longleaf Alliance	bobby@longleafalliance.org
Lucas Furman	The Longleaf Alliance	lucas@longleafalliance.org
Ryan Bollinger	The Longleaf Alliance	ryan_b@longleafalliance.org
Lisa Lord	The Longleaf Alliance	lisa@longleafalliance.org
Diane Iriarte	Ducks Unlimited	diriarte@ducks.org
Paul Koehler	Audubon South Carolina	pkoehler@audubon.org
Brandon Heitkamp	Audubon South Carolina	bheitkamp@audubon.org
Mark Musselman	Audubon South Carolina	mmusselman@audubon.org
Patrick Ma	The Nature Conservancy	Patrick.ma@tnc.org
David Bishop	The Nature Conservancy	dbishop@tnc.org
Stephen Pohlman	Clemson University Extension	spohlman@clemson.edu
Chris Vaughn	Compass South	chris@compasssouth.com
Ernie Wiggers	Nemours Wildlife Foundation	ewiggers@nemourswildlife.org
Clay Folk	Folk Land Management, Inc	clay@folkmanagement.com
Rob Sutter	Enduring Conservation Outcomes	rsutter@enduringconservation.com

Appendix 2: Situation Diagrams



Appendix 3: Responses from SoLo-ACE Partners highlighting needs, challenges and opportunities for accelerating longleaf restoration to achieve the 5-year stretch goal:

INDICATOR	METRIC	ANNUAL GOAL Year 2018	Calendar	2022 STRETCH GOAL (total for next 5 years) Calendar Year 2018-2022**	
Longleaf Pine Established	Acres of longleaf pine established (planted)	X acres (public, USFS SRS)	500	X acres (public, USFS SRS)	3000
		X acres (public&priv,USFWS)	125	X acres (public&priv,USFWS)	750
		X acres (public, DNR)	150	X acres (public, DNR)	750
		X acres (public, SC State Parks)	70	X acres (public, SC State Parks)	?
		X acres (???)	68	X acres (???)	600
		X acres (folk land mgmt)	95	X acres (folk land mgmt)	
		X acres (private, TNC)	0	X acres (private, TNC)	0
		X acres (private, Audubon)	0	X acres (private, Audubon)	100
		X acres (NRCS)	18,200	X acres (NRCS)	
Stands Converted to Longleaf Dominant (>50%)	Acres of longleaf pine established through conversion (i.e. thinning/burning)	X acres (public, USFS SRS)	100	X acres (public, USFS SRS)	600
		X acres (public&priv,USFWS)	75	X acres (public&priv,USFWS)	375
		X acres (public, DNR)	100	X acres (public, DNR)	500
		X acres (public, SC State Parks)	85	X acres (public, SC State Parks)	300
		X acres (???)	0	X acres (???)	0
		X acres (folk land mgmt)	40	X acres (folk land mgmt)	
		X acres (private, TNC)	0	X acres (private, TNC)	0
		X acres (private, Audubon)	110	X acres (private, Audubon)	250
		X acres (NRCS)	5375	X acres (NRCS)	
Longleaf Pine Conserved in fee or easement	Acres of longleaf pine conserved	X acres Fee	700	X acres Fee	950
		X acres Easement	16,100	X acres Easement	33200
Prescribed Burning at 2-3yr intervals	Acres of prescribed burning	X acres (public, USFS SRS)	10,000	X acres (public, USFS SRS)	125,000
		X acres (public&priv,USFWS)	75	X acres (public&priv,USFWS)	225
		X acres (public, DNR)	750	X acres (public, DNR)	3750
		X acres (public, SC State Parks)	140	X acres (public, SC State Parks)	1700
		X acres (???)		X acres (???)	
		X acres (folk land mgmt)	900	X acres (folk land mgmt)	
		X acres (private, TNC)	200	X acres (private, TNC)	400
		X acres (private, Audubon)	330	X acres (private, Audubon)	1500
		X acres (NRCS)	49,200	X acres (NRCS)	
Private Landowner Outreach	# private landowners engaged in stewardship activities	# of private landowners	78	# of private landowners	698