Research Projects

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All files are available to members at http://www.sfrc.ufl.edu/CFEOR/LogIn/index.html member log-in section.
3.1  List of Priority Research Areas

This is a list of priority research areas submitted by each member from 2007-2009. Research priorities are submitted as a specific project idea or brief proposal rather than a general topic. This format helps the discussion of funding levels and priorities move forward more quickly.

Submission format:
- Project Title
- One descriptive sentence
- Identify as long (5+ yrs) or short term (1-4 yrs)

Submitted August 2009: Short Term Projects (1-4 years)

1.) **Evaluation of the Ecological Impacts of Saw Palmetto (Serenoa repens) Fruit Harvest From Conservation Lands (FDEP/FPS)**

While natural recruitment of Saw palmetto *Serenoa repens* seedlings in intact natural areas of Florida is understood to be very low, the potential ecological impacts of large scale harvesting of the fruit mast in natural systems is poorly understood. Understanding such impacts could inform policy makers and land managers by providing data for evaluating potential impacts of large scale saw palmetto berry collection on conservation lands. Short term project (1-4 years)

2.) **Assessing the Results of Various Mechanical Vegetation Treatments on Multiple Scrub Habitats (FDEP/FPS)**

The results of mechanical treatments during restoration of scrub habitats can vary widely based on the type of equipment used, vegetative composition, and soil types. Examining the results of various mechanical treatments in scrub habitats could guide future scrub management decisions and help minimize any potential negative impacts. Short Term Project (1-4 years)

3.) **Evaluation of Recommended Planting Densities for the Restoration of Long Leaf Pine (Pinus palustris) Systems. (FDEP/FPS)**

A wide range of recommended planting densities for the restoration of longleaf pine systems exists in the literature. Compiling synthesizing, and evaluating the short term and long term benefits and drawbacks (including costs, time, management considerations, results, etc.) of various planting densities during initial restoration would provide a useful tool for land managers when considering the best approach to restoring long leaf pine systems. Short Term Project (1-4 years)

4.) **Evaluation of current atmospheric measurements to best predict visibility impacts of smoke associated with prescribed fire or wildfire on roadways. (DOF)**

Evaluate current atmospheric measurements to determine which one or combination will best predict or determine potential visibility impacts on Florida roadways from sunset to sunrise. This would be a short term project (1-4 years)
5.) **Range-wide screening of longleaf pine seed sources for susceptibility/resistance to fusiform rust. (DOF)**

Historic and current occurrence of unacceptable levels of fusiform rust on longleaf pine suggest the expediency of a range-wide assessment (using existing protocols and facilities at the U.S. Forest Service’s Resistance Screening Center in Asheville, NC) of susceptibility/resistance among seed sources (provenance and/or families) be evaluated so that, at a minimum, highly susceptible seed sources can be culled from routine distribution in restoration and management of the species. This could be initially a short term effort (1-4 years).

6.) **Ground Cover Restoration in Flatwoods (USFS)**

While there has been considerable research into the establishment of native ground cover on upland sites, there has been little work to determine the best methods of restoring ground cover on fire suppressed hydric flatwood sites. The native ground cover on these sites has been suppressed by palmetto, other woody shrubs and hardwood trees. Almost all land management agencies in Florida are faced with this considerable challenge. An adaptive management study could be used to assess the effects of a combination of management actions such as roller chopping, prescribed fire, herbicide application, mulching and supplemental planting. This study could be accomplished in 4 years.

*Submitted August 2009: Long Term Projects (5+ years)*

7.) **Groundcover Restoration in Pine Plantations (DOF)**

Can the application of groundcover seed mixes be used to reseed tree harvest strips ("kill rows") and restore groundcover diversity, function and structure in the strip and act as seed sources for re-colonization of adjacent portions of the plantation? This project has a short-term component (3 to 5 years) and a long term component (10 to 20 years).

8.) **Biomass Harvesting and Effects on Nutrient Cycling (USFS)**

Many agencies have concerns regarding the effects a growing biomass market would have on nutrient cycling. Most public land management agencies would probably use biomass harvesting as a means to reduce hazardous fuel loads from fire suppressed areas and to facilitate the reintroduction prescribed fire. However, on some sites, such as urban interface areas, biomass could be harvested repeatedly as a tool to manage hazardous fuel loads. The effects of doing so are unknown. In addition to these concerns, there are concerns regarding biomass harvest on private lands. As biomass markets develop there will undoubtedly be increased interest in growing biomass crops on private lands. It would be advantageous to understand more about the effects, especially nutrient cycling and site productivity from the repeated harvest of biomass. This study could be accomplished in 5 or more years.

9.) **Implementation of Uneven Age Management of Longleaf Pine (USFS)**

There continues to be considerable difference in opinion and consternation regarding the best methods of establishing uneven aged stands from even aged forests. This is especially true in flatwood sites where the ground cover is dominated by woody shrubs. An adaptive management study could be conducted to test different methods of implementing uneven age management in concert with restoring native groundcover. Some managers feel adequate natural regeneration of longleaf pine can not be established and/or maintained on flatwood sites without restoring the native
groundcover prior to tree harvest. This study could be accomplished in less than 5 years, however monitoring beyond 5 years would be advantageous.

Submitted 2007: Short Term Projects (1-4 yrs)

10.) Effects on Terrestrial Vertebrates of Burning vs. Mechanically Clearing Scrub (FWC) Project would evaluate habitat response, mortality, and recruitment associated with management activities such as burning, mechanical vegetation control, and chemical vegetation control that are intended to restore fire-suppressed scrub communities. (Short term projects 1-3 yrs)

11.) Salamander Movement and Upland Habitat Use (FWC)

Very few data exist on the movement of individual flatwoods salamanders information is critical to demonstrating upland as well as pond use, designation of population size and boundaries (i.e. area of occupancy), determination of potential for gene exchange, and understanding metapopulation processes. As additional movement data are obtained, recommendations, for habitat definition and protection may change.

12.) Describe and quantify red-cockaded woodpecker foraging habitat characteristics in central and southern Florida (FWC)

Although large home ranges generally are attributed to poor habitat conditions, other factors such as the density and distribution of potential breeding groups may be involved. Additional studies are needed to define optimal foraging habitat in central and southern Florida, which will facilitate the development of foraging habitat management guidelines specific to the region.

13.) (FDEP/FPS) Determine the most successful methods to educate neighbors about fire, exotics, and community restoration. What native species are most acceptable to neighborhoods to substitute for exotics?

14.) (FDEP/FPS) Promote and facilitate the use of standing dead melaleuca as biofuel; also sand pine and hardwoods from restoration projects. (Thousands of acres of melaleuca at Estero Bay Preserve State Park).

15.) (FDEP/FPS) Research the effect of time-of-year on treatment of Lygodium spp., including seasonal effectiveness of glyphosate or other herbicides.

Submitted 2007: Long term projects (5+ yrs)

16.) Density-dependency of white-tailed deer in Florida (FWC)

This project would evaluate if density dependent factors, such as soils, browse and forage quality, effect white-tail deer growth, recruitment, or survival, and the geographical extent to which these factors are observed.

17.) Tortoise Response to Restoration of Longleaf Pine on Silvicultural Lands (FWC)

The U.S. Forest Service has requested the assistance of FWC in determining both initial and subsequent tortoise response to timber removal and planting of longleaf pine. This request was prompted by a recent restoration in Ocala National Forest where cursory burrow surveys
revealed a possible tortoise decline post-restoration; however, interpretation of this general finding was confounded by suspected human predation and observed non-human mammalian predation on the site. Proposed research would include habitat assessment and radio-instrumentation of tortoises prior to and following site restoration.

18.) **Restoration of pasture and bedded pinelands to historical natural communities (FWC)** This project would investigate the efficacy of various restoration techniques on disturbed and ruderal sites to restore natural community composition, function and dynamics. Elements of this project would focus on proper herbicide prescriptions to eradicate pasture grasses, contouring to restore site hydrology, and plantings of either agronomic cultivars or native ground cover material to restore community function.

19.) **(DEP/FPS)** What prescribed fire interval will provide maintenance control of melaleuca?

20.) **(DEP/FPS)** What are the results of fire exclusion in natural areas and the resulting threat to neighborhoods?

21.) **(DEP/FPS)** What are the impacts on natural areas due to a lack of neighborhood efforts to curtail planting exotics?

22.) **(DEP/FPS)** Research how long different groundcover species native to sandhill and flatwoods habitats survive in increasing shade from hardwood encroachment that develops during long periods of fire suppression. The focus should be mostly on the herbaceous species rather than the woody ones.

Submitted 2007: Other project ideas

23.) **(NWFWMD)** A Market-based Approach for Restoring, Preserving, and Enhancing Wildlife Habitat in the Endangered Longleaf Pine-Wiregrass Ecosystem

24.) **(NWFWMD)** Develop cost-effective seed conditioning technology

25.) **(NWFWMD)** Establish a commercial wiregrass seed production demonstration that illustrates effects of fertilization, irrigation, and weed management on seed yield and quality

26.) **(NWFWMD)** Conduct economic analysis of production system variables *Asristida stricta* Germplasm Collection, Evaluation, and Production Strategies

27.) **(SJRWMMD)** What is the effectiveness of various tools for controlling woody shrub encroachment into marsh systems?

28.) **(SJRWMMD)** Are there circumstances when pine straw harvesting may actually assist in restoring old agricultural lands?

29.) **(SJRWMMD)** Is there a way to increase the diameter growth rate in middle aged pine trees to increase available trees for insertion of artificial cavities within RCW habitat?

30.) **(SRWMD)** Growth and yield models for uneven-aged stands of longleaf and slash pines

31.) **(SRWMD)** Inventory techniques and analysis tools to quantify and assess timber, habitat, and other resources on conserved lands

32.) **(SRWMD)** Managing forest lands to maximize water quality benefits
Research proposals ranked by the Steering or Science Committee for the purpose of identifying possible Signature Projects from 2007-2009.
## CFEOR Ranked Project Proposals 2007-2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Rank</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>Ecological Consequences and Impacts of Invasive Plants on南部 forest ecosystems (ECIIP): A regionwide research and educational partnership</td>
<td>1st</td>
<td>Had seed funding, but is no longer available for consideration</td>
</tr>
<tr>
<td>2007</td>
<td>Developing an adaptive multifunctional uneven-aged management system for the longleaf pine sandhills and flatwoods of the southern U.S. Coastal Plain</td>
<td>2nd</td>
<td>Became CFEOR Signature Project in 2008 (combined with Conversion of slash pine proposal below)</td>
</tr>
<tr>
<td>2007</td>
<td>Increasing awareness and knowledge about using woody biomass for energy production</td>
<td>3rd</td>
<td>Funded outside CFEOR, ongoing</td>
</tr>
<tr>
<td>2007</td>
<td>Carbon sequestration scoping project analysis</td>
<td>3rd</td>
<td>Funded outside of CFEOR, ongoing</td>
</tr>
<tr>
<td>2007</td>
<td>Management Options for Hardwood Forests of Florida: Sustaining Timber production, Biodiversity and Wildlife Habitat</td>
<td>4th</td>
<td>Status unknown</td>
</tr>
<tr>
<td>2007</td>
<td>Multi-scale Modeling of Fire Dynamics to Assess Longleaf Pine Regeneration Success</td>
<td>4th</td>
<td>Partially funded outside of CFEOR, ongoing</td>
</tr>
<tr>
<td>2007</td>
<td>Changing face of southern forests: Interactive effect of climate change, land conversions and invasive plants</td>
<td>4th</td>
<td>Funded outside of CFEOR, Completed</td>
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<tr>
<td>2007</td>
<td>Conversion of Even-aged Slash Pine Plantations to Uneven-aged Slash Pine Stands: Implications for timber production, ecology, and fire risk.</td>
<td>4th</td>
<td>Became CFEOR Signature Project in 2008 (combined with Adaptive uneven aged management project above)</td>
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<tr>
<td>2007</td>
<td>Evaluation of Natural Resistance to Laurel Wilt Disease in Red Bay (Persea borbonia)</td>
<td>4th</td>
<td>Not funded</td>
</tr>
<tr>
<td>2008</td>
<td>Assessment and Compilation of Understory Vegetation Restoration Techniques</td>
<td>Top 4</td>
<td>Signature Short Term Project 2008</td>
</tr>
<tr>
<td>Year</td>
<td>Priority</td>
<td>Rank</td>
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<tr>
<td>2008</td>
<td>Assessment of Data Collection and Monitoring Systems for Adaptive Management of Conserved Forests and Ecosystems</td>
<td>Top 4</td>
<td>Not funded, and no longer available for consideration</td>
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<tr>
<td>2008</td>
<td>Developing Adaptive Management Strategies for Ecosystems in Transition</td>
<td>Top 4</td>
<td>Signature Long Term Project 2008</td>
</tr>
<tr>
<td>2008</td>
<td>From Fire Restoration to Fire Maintenance: Impacts on Vegetation, Water Quality, and Stand Development across a Gradient of Restoration Progress</td>
<td>Top 4</td>
<td>Not funded, but is still available for consideration</td>
</tr>
<tr>
<td>2009</td>
<td>Immunocontraception to Reduce Feral Swine Populations</td>
<td>No rank, Long Term</td>
<td>Not funded</td>
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<td>2009</td>
<td>From Fire Restoration to Fire Maintenance: Impacts on Vegetation, Water Quality, and Stand Development across a Gradient of Restoration Progress</td>
<td>No rank, Long Term</td>
<td>Same as submitted in 2008, not funded</td>
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<td>2009</td>
<td>Evaluation of Natural Resistance to Laurel Wilt Disease in <em>Persea borbonia</em></td>
<td>1st (short term)</td>
<td>Same as submitted in 2007, not funded</td>
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<td>2009</td>
<td>Simulation Modeling to Test Different Harvesting Regimes for Stand Conversion and Old Growth Restoration in Southern Pines</td>
<td>2nd (short term)</td>
<td>Not funded, but is still available for consideration</td>
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<td>2009</td>
<td>Baseline Survey, Health Assessment and Protection of Critically Endangers <em>Torreya taxifolia</em> in Florida and Georgia</td>
<td>5th (short term)</td>
<td>Not funded</td>
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<tr>
<td>Year</td>
<td>Research Question</td>
<td>Ranking</td>
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<td>2009</td>
<td>Fire in the Juniper Prairie Wilderness: Is it a viable tool for ecosystem management?</td>
<td>6th</td>
<td>Not funded</td>
</tr>
<tr>
<td>2009</td>
<td>Interactive Effects of Sea-Level Rise and Fire on Florida’s Coastal Forests,</td>
<td>6th</td>
<td>Not funded</td>
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</table>
Please visit www.sfrc.ufl.edu/CFEOR for the most recent project lists.
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