

South Florida/Caribbean Network Inventory and Monitoring Program

National Park Service
U.S. Department of the Interior



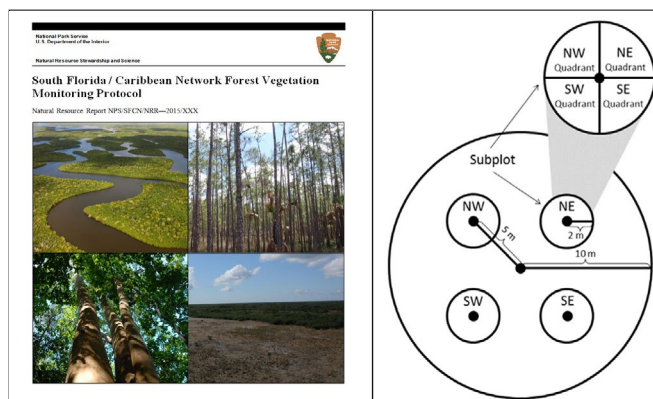
Forest Ecotones and Community Structure: Protocol Update and Pilot Project 2017

Importance: Monitoring the Health of Forests

Forest communities are an important natural resource and cover a large portion of the park units of the South Florida/Caribbean Network. Some forest communities, such as tropical hardwoods and pinelands, are homes for rare, endemic species. The forest communities within South Florida and U. S. Virgin Island parks can be severely altered by disturbances such as changes in fire regimes, hydrology, disease, invasive species, sea-level rise, and hurricanes. Monitoring forest resources helps park staff understand the dynamics of the system, document and mitigate the effects of extreme disturbance, and effectively manage the park units.

Objectives and Approach

This protocol uses permanent vegetation plots and standard forestry metrics (basal area increment, tree composition, biomass, recruitment and mortality) to describe the status of forest communities and detect change in the forest structure or community composition over time. Monitoring permanent vegetation plots for changes in recruitment, survivorship, mortality, size structure, understory plant community composition, and canopy community composition provides park management with early warning of changes that may be occurring, describe changes that have occurred, and provide better understanding of the cause of those changes.



Above left: A draft copy of the Forest Monitoring Protocol was completed and went out for regional review in summer 2017. The protocol will be implemented in all seven of the park units covered by the South Florida/Caribbean Network.

Above right: Plot design for the South Florida/Caribbean Network forest vegetation monitoring protocol. Shrubs, seedlings, and herbs are sampled within the subplots. Trees are sampled within the entire plot.

Pilot Study

The pilot study was completed at Salt River Bay National Historical Park and Ecological Preserve. A restricted random sampling design was used to locate and establish eight forest vegetation plots. In 2012, two plots were established and sampled in mangrove forest. In 2013, two plots were completed; one in a gallery forest and one in a basin moist forest. In 2014, three semi-deciduous forest plots were sampled. The eighth plot was completed in June 2017. A total of 38 tree species were identified within the plots, with the Gallery forest having the highest species diversity and the Mangrove plots showing the least amount of species encountered. The semi-deciduous forest had the most trees tagged, followed by the Gallery forest. The Mangrove forest had the least amount of trees tagged within a plot. It is located at the lowest elevation of all the plots and is regularly inundated with water. The Basin forest is slightly higher in elevation to the Mangrove forest and is dominated by the exotic genip tree (*Melicoccus bijugatus*). The Gallery forest is located uphill from the Basin forest and is where water runoff from uphill areas flows down. The Gallery forest is also dominated by the genip tree. Semi-deciduous forests are located at higher elevations near the top or on the side of hills. These forests are dominated by either the pigeon berry (*Bourreria succulenta*) or *Eugenia monticola*. The results from this study are used to test field methods and to gather time estimates for plot completion.



Sampling a forest in Salt River Bay National Historical Park and Ecological Preserve.

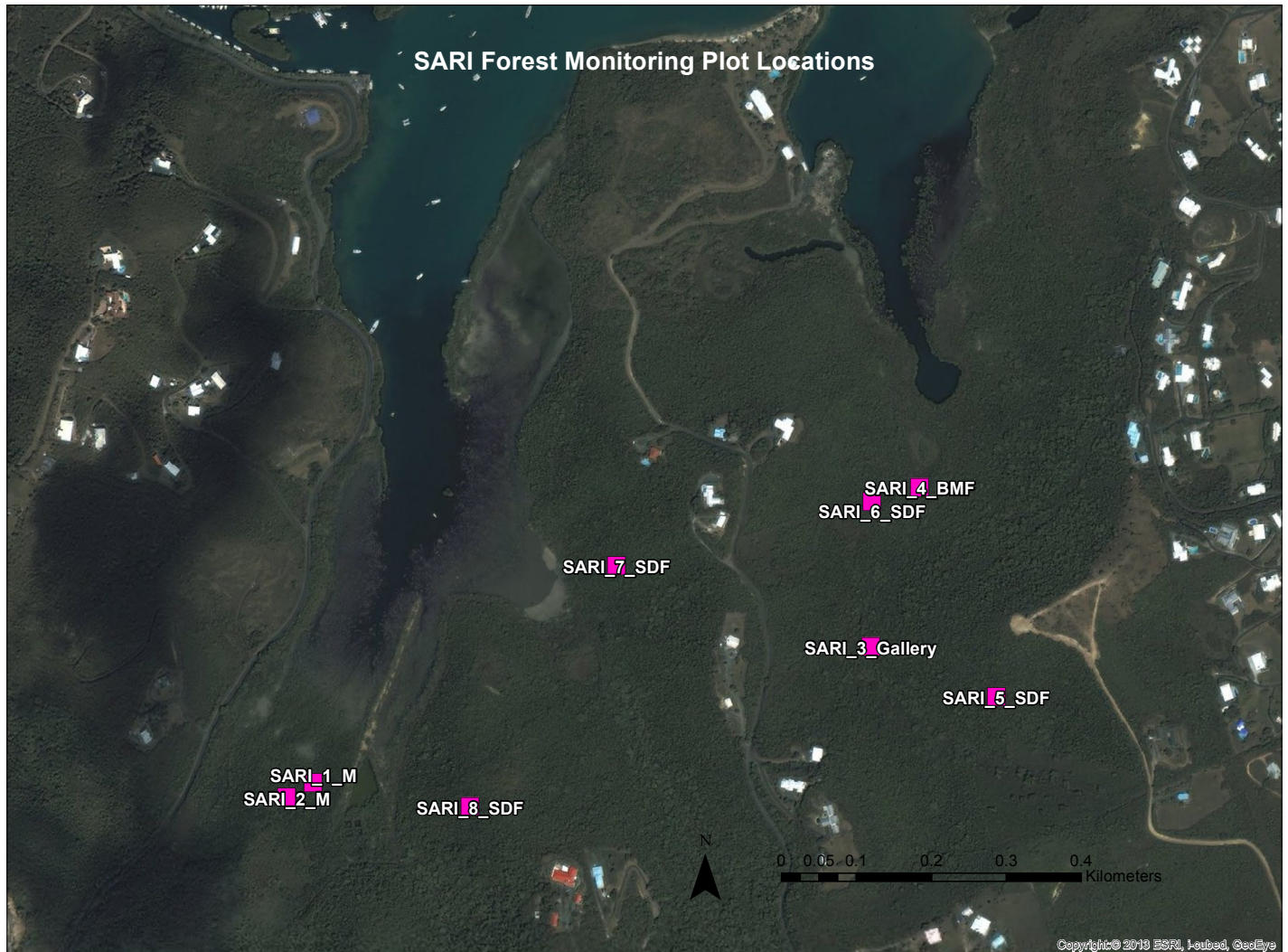


South Florida/Caribbean Network
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https://science.nature.nps.gov/im/units/sfcn/monitor/terrestrial_freshwater/forest_vegetation.cfm

Protocol Status

A draft copy of the forest monitoring protocol was completed and sent for regional review in summer 2017. After review, the protocol was returned and is currently awaiting revisions.



A map showing forest monitoring plot locations in Salt River Bay National Historic Park and Ecological Preserve used in the pilot study for use in gathering data for the South Florida/Caribbean Network's Forest Monitoring Protocol.

Plot	Forest type	# Trees tagged	Species diversity	Most abundant tree
1	Mangrove	116	2	Avicennia germinans
2	Mangrove	47	2	Avicennia germinans
3	Gallery	437	20	Melicoccus bijugatus
4	Basin	386	13	Melicoccus bijugatus
5	Semi-deciduous	261	14	Bourreria succulenta
6	Semi-deciduous	418	18	Eugenia monticola
7	Semi-deciduous	783	17	Eugenia monticola
8	Semi-deciduous	255	13	Bourreria succulenta
Total		2703	38	

A table displaying forest monitoring tree data for Salt River Bay National Historic Park and Ecological Preserve.



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