

Fort Necessity NB - Friendship Hill NHS

IMPORTANCE

The vast majority of Fort Necessity National Battlefield (FONE) and Friendship Hill National Historic Site (FRHI) is forested, and these forests are critical park resources that provide many important functions. Forests in these parks create habitat for hundreds of species of plants and animals; as well as maintain soil stability and protect water quality. Besides providing beautiful landscapes for people to recreate in, forests also influence our weather and reduce some gases that contribute to climate change.

Studying the different components of a forest gives us information on the health of the forest, which allows park managers to make better informed decisions on how to manage the forest. Several important stressors to the parks' forest health are exotic species, white-tailed deer, atmospheric acid and nutrient deposition, climate change, and altered disturbance patterns.

WHAT WE ARE DOING

The Eastern Rivers and Mountains Network (ERMN) monitors forest health by collecting monitoring data on canopy trees, tree regeneration, shrubs, plant diversity, downed logs, and soil at permanent plots established in the parks. Data collection began in 2007, and thus far, a total of 30 plots have been established in FONE and FRHI. By the end of 2010, all 40 monitoring plots will be established in these two parks. Data will be collected from 10 plots in each park every year, such that each plot will be visited every 5 years.

WHAT WE ARE FINDING

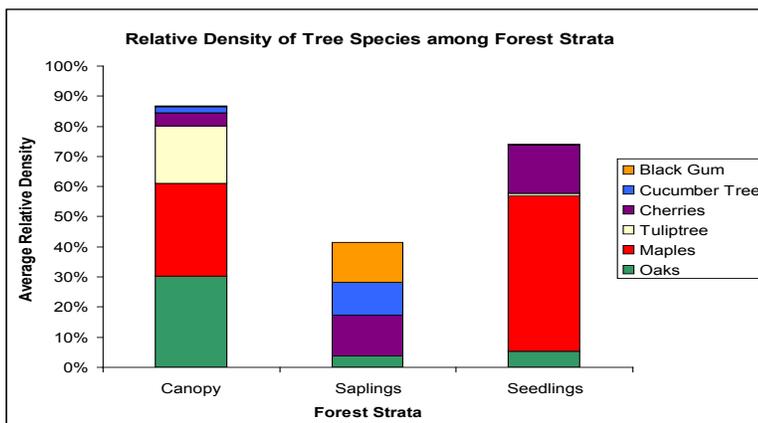
In general, forests in FONE and FRHI are typical of other second-growth forests in the Appalachian Mountains. Some important highlights from the forest health monitoring include:



Establishing transects to collect forest monitoring data.

Forest Composition in FONE

In the future, the forests in FONE will look different than they do today. Disproportionately fewer oaks and tuliptrees occur in the forest understory when compared to the forest canopy (see figure below). This means that as large oaks and tuliptrees die, they likely will be replaced by maples and cherries that are now common as saplings and seedlings. Therefore, future forests will contain fewer oaks and tuliptrees and more maples and cherries. There are many birds, insects, and mammals dependent on oaks and tuliptrees that would be affected by this shift in forest composition.



Tree species distribution in oak- and tuliptree-dominated forests in FONE.

Forest Regeneration in FRHI

In FRHI, more than half of the forest monitoring plots do not contain enough tree seedlings and saplings to replace the forest canopy. In these stands, large trees will not be quickly replaced when they die and the forest will take longer to re-establish after disturbances. This regeneration failure could be attributed to many different factors, ranging from soil infertility to natural forest succession to intense browsing by white-tailed deer.

Exotic Invasive Species

An exotic invasive species is a plant or animal that is not native to the parks and has negative impacts on the parks' native flora and fauna when introduced. Over 75% of the monitoring plots in FONE and FRHI contain exotic invasive plants. One exotic invasive plant new to FRHI was also found during forest monitoring. Given that exotic invasive species are a pervasive and serious threat to the parks' forests, it is important that these species are managed in order to protect the parks' forests.

CONTACT INFORMATION

Stephanie Perles, Plant Ecologist
Stephanie_Perles@nps.gov

