



Monitoring Vegetation at St. Croix NSR

- Terrestrial vegetation serves as an integrated measure of terrestrial ecosystem health by expressing information about climate, soils, and environmental disturbance, as well as browsing pressure and invasion by non-native plant species.
- Terrestrial vegetation serves as a base for the food web of other ecosystem components.
- The predominance of forests across the region makes comparisons across Great Lakes Network national parks feasible and a topic of interest to park managers.



Long-term and Regional Comparisons

Vegetation monitoring at St. Croix NSR is part of a long-term program being conducted in all nine national parks of the Great Lakes Network to detect forest change and to draw inferences about forest health so that management recommendations can be provided to Network parks. Monitoring is conducted on a six-year rotation. A hybrid plot design was used at St. Croix NSR in 2007. Data were collected on trees (species and diameter at breast height [DBH]), saplings (abundance and species), shrubs (species present and percent cover), groundcover (abundance by species), and coarse woody material. Thirty-five plots were established among four habitat types at St. Croix NSR in 2007. We will resample St. Croix forests in 2013 and then again every six years thereafter.

What We Are Finding at St. Croix NSR

- *Very Dry to Dry Habitat* – All four plots in this habitat type were along the Namekagon River. Most tree species were present either at low densities throughout their size range, or had the greatest density at the smallest size classes. An exception to this was white pine, which exhibited its highest density in the 7.5-10 cm DBH category with a sharp decline at smaller size classes. White pine seedling density was also low.
- *Dry to Dry Mesic Habitat* – Most of the plots in this habitat type were also located along the Namekagon River. Oak and pine species dominated these sites. White pine was present over a range of diameter size classes, with the greatest densities at the smallest size classes. Red pine was absent from, while jack pine was extremely limited in the younger size classes. No seedlings of either species were present.
- *Dry Mesic Habitat* – The five plots in this type were located along the St. Croix River below its confluence with the Namekagon. Hardwood species densities were generally greatest at the smaller size classes, with the exception of bur oak and quaking aspen, whose densities were greatest in the larger classes. There were no coniferous species present in these plots.
- *Mesic to Wet Mesic Habitat* – Most of the 16 plots in this habitat were along the lower reaches of the St. Croix River. Most tree species exhibited highest densities at the smallest size classes, though both white spruce and white cedar did not, and there were no seedlings of either species present.
- A tree species exhibiting healthy reproduction will reach its greatest density at the smaller size classes and decline as the size classes increase. Lower tree density among smaller size classes suggests reduced reproduction, but we cannot yet say if that is what is happening here along the Namekagon and St. Croix rivers.

The Great Lakes Inventory and Monitoring Network is a group of nine national parks in Minnesota, Wisconsin, Indiana, and Michigan that share similar management issues. The Great Lakes I&M Program office is in Ashland, Wisconsin. Program staff work with managers at each of the nine parks to develop long-term scientific monitoring programs that help to track the “health” of natural resources and provide information for making management decisions. Visit us online at <http://science.nature.nps.gov/im/units/gln/>.