



## Monitoring Forest Vegetation at Grand Portage

- Plant communities provide a comprehensive measure of forest health by expressing information about climate, soils, environmental disturbance, browsing pressure, and invasion by non-native plant species.
- Plant communities are also important because they form foundation of the rest of the food web.
- Because forests are the dominant landscape in the Great Lakes region, we are monitoring forest vegetation exclusively.



### Long-term and Regional Comparisons

The goals of this monitoring program are to detect forest change and to draw inferences about forest health so that management recommendations can be provided to park managers. Monitoring is conducted every six years by collecting information on trees (species present and sizes), saplings (species present and abundances), shrubs (species present and percent cover), ground cover (abundance by species), and coarse woody material (i.e., down trees). The information collected at Grand Portage National Monument is collected the same way from forests at eight other national parks in Michigan, Indiana, Wisconsin, and Minnesota. This allows us to look not just at the health of Grand Portage forests but at the health of forests across the upper Great Lakes region.

### What We Are Finding at Grand Portage

- All plots are in the white spruce-balsam fir-paper birch forest- type, which dominates this area.
- A total of 11 hardwood and five conifer tree species were recorded in the plots.
- Most tree species have higher densities (number of trees per unit area) among the lower size classes, although paper birch and white cedar did not, and no white pine less than 7 inches in diameter were found.
- Higher densities at smaller size classes are an indication of healthy growth. Low densities at smaller size classes compared with larger size classes suggests reduced reproduction. This can either be a natural, healthy, successional process, or an indication of an impaired ecosystem. Continued monitoring should reveal which is occurring.
- In the case of white pine, reproductive failure is likely due to fire suppression and an inability to grow under an increasing cover of balsam fir.



*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/>.*