



Monitoring Forest Vegetation at Indiana Dunes

- 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.
- The goals of this monitoring program are to detect forest change, draw inferences about forest health, and provide management recommendations to park managers.



Long-term and Regional Comparisons

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), groundlayer (abundance by species), and coarse woody material (i.e., down trees). The information collected at Indiana Dunes is collected the same way from forests in eight other national parks in Michigan, Wisconsin, and Minnesota. This allows us to look not just at the health of Indiana Dunes forests but at the health of forests across the upper Great Lakes region.

What We Are Finding at Indiana Dunes

- Measurements from 20 different plots representing four habitat types yielded 35 tree species, 48 shrub species, 6 woody vine species, and 190 herbaceous species. One type, *wet-mesic forest*, was not sampled adequately by this method; future sampling will correct this problem.
- *Black Oak Savanna* – Despite its name, tree density (number of trees in a given area) in this habitat was highest for trembling aspen and sassafras. However, black oak seedling density and stem basal area (the amount of ground covered or taken up by black oaks) were greater than for all other species.
- *Upland Oak* - These sites were dominated by red maple; black cherry; sassafras; and white oak, red oak, and black oak. Oak density in smaller size classes (those with breast-height diameters less than 7.5 cm, or 2.9 inches) was lower than in the next larger size classes.
- *Mesic Forests* - Twenty-two tree species were found, but no single species or group of species was dominant. Black cherry, red oak, and sassafras all exhibited considerably lower density at the two smallest size classes compared with density in the next larger class.



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/glkn/>.