



Monitoring the Effects of Fire at Indiana Dunes National Lakeshore



The Fire Effects Monitoring Program at Indiana Dunes National Lakeshore is part of a National Park Service initiative to monitor the effects of fire on natural communities. Fire effects monitoring generates information that helps park managers make critical decisions impacting park resources.

Background

The use of prescribed fire as a tool for restoration at Indiana Dunes National Lakeshore began on a small scale in 1982, and was limited to research burns. The results of the initial research showed that prescribed fire had benefits for the maintenance and restoration of fire adapted ecosystems (NPS, 2007). The use of prescribed fire as a routine management tool at Indiana Dunes was approved in 1992. In 1994, the Fire Effects Monitoring program was initiated.

Why We Monitor the Effects of Fire

Managers work hard to maintain the ecosystems within Indiana Dunes National Lakeshore in as healthy a state as possible. By monitoring the effects of fire, park staff members learn how

different components of an ecosystem and ecosystems as a whole are responding. This understanding enables staff to evaluate the degree to which fire and resource management objectives are being met. Monitoring also helps staff be sure that undesirable effects are not occurring.

What type of data is collected?

Fire Effects Monitoring consists of a set of responsibilities which begin long before an actual fire is ever ignited. These responsibilities are described as levels. The first monitoring level is to gain understanding of the environment in which the fire may, will, or historically has occurred. Information about the ecological communities and resource concerns is gathered from park researchers, scientists, and ecologists. Climate and weather

trends, topography, vegetative fuel types, ecosystem components/wildlife habitat, cultural resources, soil, water, air, and human factors which may impact fire behavior and/or may be impacted by fire are all assessed.

The second monitoring level consists of fire observation during active fires. This includes monitoring of weather and weather forecasts to predict fire behavior and identify potential problems.

In the third and fourth levels of monitoring, the effects of fire are monitored for short term and long term change. Fire effects staff establish permanent monitoring plots prior to the actual fires and conduct sampling according to established protocol. The plots are sampled pre-burn, immediate post-burn, and years

following the burn, typically at intervals of the first and/or second year, the fifth year, and at five year intervals thereafter.

To assess immediate post-burn effects, fire effects staff collects information on fuel loading during pre-burn conditions. Fuel loading is the total amount of potential fuel for a fire in a given area. Immediately after the burn, staff re-sample fuel loading and make burn severity assessments. To assess long term trends, the fire effects crew collects pre- and post-burn data regarding plant populations and other aspects of the plant communities. Sampling includes photo documentation of trees, shrubs, vines, and herbaceous species; canopy photos to determine canopy closure; and collection of various other data designed, in general, to determine density, frequency and or cover of plant species over time in order to track change.

Pre-burn, 2002



Data, including photo documentation, is collected from each monitoring plot before each fire and at regular intervals thereafter. This data is analyzed to evaluate the effects of the burns.

Citations

Indiana Dunes National Lakeshore Fire Management Plan, 2007. <http://www.nps.gov/indu/parkmgmt/firemanagement.htm>



A fish-eye lens and computer program allow staff to assess changes in the forest canopy (above). Staff member collects data on plant communities (right).

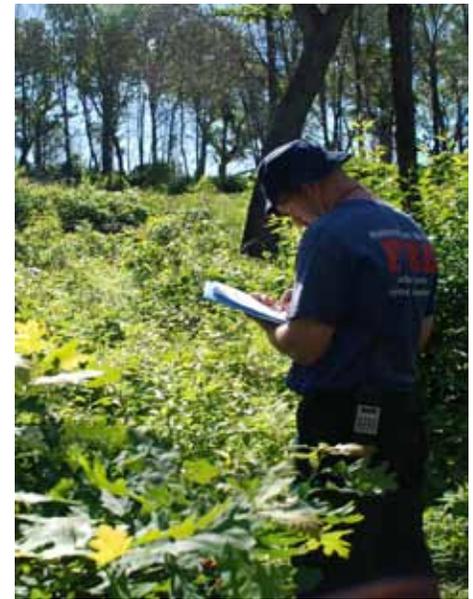
Toward the future:

As we move into the future, monitoring the effects of fire will continue to be one of many ways park managers use science to effectively care for natural resources within Indiana Dunes National Lakeshore.

For more information:

Sampling protocols for the Fire Effects Monitoring Program

Post-burn, 2012 (Two years after the second burn)



follow the National Park Service Fire Monitoring Handbook (FMH). This handbook can be viewed on line at <http://www.nps.gov/fire/wildland-fire/resources/documents/fire-effects-monitoring-handbook.pdf>. Park specific adjustments and alternative protocols to the FMH protocols are developed by the Great Lakes Eco-Region Fire Ecologist. For those interested in learning more about Fire Effects Monitoring at Indiana Dunes National Lakeshore, a comprehensive overview and details about the Fire Effects Monitoring Program and specific protocols can be found in National Park Service Indiana Dunes National Lakeshore Fire Management Plan, Appendix O: Fire Monitoring Plan. This plan can be viewed on line at <http://www.nps.gov/indu/parkmgmt/firemanagement.htm>. The Fire Effects Monitoring Plan is updated periodically.