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The Oak Keepers of *Project Quercus* Survey Private Woodlots

Gregory T. Rajsky, CAE¹, Lisa Haderlein², and Myrna Nelson³
¹Volunteer Steward and Monitor, Certified Naturalist, Instructor;
²Executive Director, The Land Conservancy of McHenry County;
³Volunteer Plant Monitor and Educator

In the summer of 2008, some two dozen volunteers, dubbed Oak Keepers, were trained to survey oak-dominated woodlands in a broad ecological assessment. Sites under investigation were parcels or assemblages of 50 acres or more, perceived to be remnants of oak woodlands and savannas extant in McHenry County prior to the time of European settlement (ca 1837), and now privately held. Investing some 164 volunteer hours between July 1 and September 30, eleven Oak Keepers had monitored 72 study points in eight wooded blocks, with as many additional study areas targeted for future assessment. They collected information pertaining to the species of oaks present and their size; canopy cover, understory, and ground cover; assessment of the overall health of the woods; presence of invasive species; and degree to which oak regeneration was evident. Preliminary findings of the first season's data collection are presented.

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Greg Rajsky	Lisa Haderlein, Executive Director	Myrna Nelson
1030 Clay Street	The Land Conservancy of McHenry County	905 Paul Street
Woodstock, IL 60098	PO Box 532, Woodstock, IL 60098	McHenry, IL 60051
<a href="mailto:quirkaceae@yahoo.com">quirkaceae@yahoo.com</a>	<a href="mailto:lhaderlein@conservemc.org">lhaderlein@conservemc.org</a>	<a href="mailto:myrmanelson1@cs.com">myrmanelson1@cs.com</a>
815-814-5055	815-337-9502	

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## INTRODUCTION

The McHenry County Conservation District (MCCD) determined that the county contained approximately 143,000 acres of oak-dominated plant communities in 1837. They found that coverage to have been reduced by nearly half to 72,000 acres in 1872, reduced further to 26,350 acres by 1939, and concluded that only 18,000 acres remained by 2005, less than 13 percent of the county's original oak coverage. It was determined that a significant portion of these remaining oak woods were under private ownership and no organized study had yet been made to evaluate the ecological status of these plant communities. Recognizing that oaks have no legal protection, a coalition of public and private organizations came together under the banner of *Project Quercus*.

Most of the 18,000 acres of oaks catalogued in 2005 were in very small parcels. Some 2,888 blocks were of only a few acres in size. Only 148 were in the 25-acre plot size. Countywide, only eight contiguous oak woodlots were larger than 100 acres in extent, of which only three were included within the Conservation District's holdings. It was clear that private landowners needed to be engaged in the process. Project Quercus decided to recruit and train volunteers (dubbed Oak Keepers) to survey privately owned plots or assemblages of oak woodlands larger than 50 acres in size.

To that end, a call for volunteers was issued in the spring of 2008. And in June of that year, 25 Oak Keepers were recruited and trained to monitor the sites. Parcels of interest were identified through an iterative process. First, the overlays of the geographic-information-system (GIS) maps developed by MCCD were used to determine where existing woodlands of adequate size were perceived to be possible remnants of the county's original oak stands. Then the McHenry County Soil and Water Conservation District compiled a list of landowners holding deed to the subject properties. After that, The Land Conservancy of McHenry County contacted the landowners to invite their participation and obtain permission to survey their woodlots. From there, Oak Keepers were put in contact with property owners to arrange for access.

## **METHODOLOGY**

With the monitoring tasks assigned to volunteers as citizen scientists with minimal training, the protocols were appropriate to a broad environmental assessment. Aerial photographs were generated for each parcel and provided to the Oak Keepers, who typically worked in teams of two. For each parcel, a number of survey plots could be selected, based on the size of the parcel, accessibility, and site features. The data collected reflected six categories of information:

- Property
- Trees
- Shrubs
- Groundcover
- Overall Impressions
- General Information.

**Property.** The owner's name and contact information was recorded, along with site location and size in acres, wooded acres, and plot location within the site.

**Trees.** Overall canopy coverage was estimated, as was oak-hickory canopy coverage, both reported as percentages. Volunteers were asked to identify and count the number of each of several species of oak (*Quercus*) and hickory (*Carya*) present within view at each study plot. Estimated percentages of those species falling into size categories of seedlings (<3ft. high), saplings (<3 in. dbh), young trees (3-10 in. dbh), and mature trees (>10 in. dbh) were recorded. The degree to which the oaks appeared stressed was assessed and recorded, along with identification of likely stressors. The five largest mature oaks/hickories were measured by diameter at breast height (dbh). Based on this measurement, the trees' ages were estimated using a table derived from a study of old-growth trees in the Chicago region (Bowles and Jones, 1996).

**Shrubs.** Subcanopy coverage and density were estimated and invasive shrub species were identified. Buckthorn (*Rhamnus spp.*), honeysuckle (*Lonicera spp.*), and multiflora rose (*Rosa multiflora*), it was presumed, would be the most prevalent of these.

**Groundcover.** Percentage of groundcover was estimated and notable species of interest recorded. Coverage of garlic mustard (*Aliaria petiolata*) was to be noted.

**Overall Impressions.** Percentage of bare ground was estimated, and the woods characterized in terms of sun and shade, along with ease of maneuverability and aesthetic quality.

**General Information.** Threats and other activities such as livestock, development encroachment, mowing, and erosion were noted, along with information pertaining to land management and owner interest. Wildlife observations were recorded.

Oak Keepers were encouraged to photograph their survey plots to augment their reports.

## RESULTS

Survey forms for 72 study points were turned in for parcels belonging to 33 different landowners. Taken together these sites were part of eight different woodland blocks of 50 acres or more. Reportedly, a few additional sites were surveyed, but the results had not been submitted so are not reflected in this report. Nine more blocks of woods, each measuring 50 acres or more in size, are available for potential study in 2009.

Surveyors were asked to count all the mature oaks and hickories within each study plot; as a result, 609 trees were counted. The surveyors also were asked to measure the five largest trees at each study point; as a result, 338 trees were measured. The percentage of each species represented in the samples is presented in Table 1.

**Table 1. Oak/Hickory Species Distribution**

Species	Total count and Proportion of largest (%)	Max. dbh	Proportion (%) of total
White Oak	129 (38)	41	30
Bur Oak	98 (29)	40	22
Red Oak	75 (22)	49	30
Black Oak	18 (05)	43	09
*Scarlet Oak	12 (04)	36	03
Swamp White Oak	6 (02)	46	01
Hickories			05

*For this study, no distinction was made between Scarlet Oak (*Quercus coccinea*) and Hill's Oak (*Q. ellipsoidales*).

Reportedly, 18 percent of the study points exhibited significant signs of stress. While several stressors were implicated in the sites, among them oak wilt, gypsy moths, lightning strikes, and deep shade and overgrown understory, only 14 percent of the study points exhibited significant (more than 33 percent) coverage by garlic mustard (*Aliaria petiolata*). Invasive or aggressive species of the understory included buckthorn (*Rhamnus spp.*), raspberries (*Rubus occidentalis*), bittersweet (*Celastrus orbiculatus*), honeysuckle (*Lonicera spp.*), and multiflora rose (*Rosa multiflora*).

## **DISCUSSION**

The first year's work of the Oak Keepers can be seen as an initial, partial season. From July through September 2008, 11 volunteers contributed 164 hours to the study of 72 study plots representing eight of the county's privately held woodlands greater than 50 acres in extent. These sites include two of the largest remaining privately held oak woodlands in the county: a 191-acre assemblage in Alden and Chemung Townships, and a 134-acre site in Marengo Township.

Property owners, as a group, are proud of their oaks and the natural legacy they represent. Many of these owners are concerned about threats such as those posed by invasive species, excessive shade, and lack of oak regeneration. Stressors such as gypsy moths and oak wilt are seen by landowners as especially troublesome.

Increasingly, the lure of development also has proven to be a threat to these oak woods. From 2005 to 2008, two of the 50+ acre woodlands were largely destroyed by development.

The stand of swamp white oaks (*Quercus bicolor*) is significant, as it had escaped scrutiny in prior assessments and inventories of the county's flora: it is the first verified citation of the species from within McHenry County. Given the size (~46 in. dbh) of the largest specimen, it is quite likely to represent a spontaneous population of presettlement age.

Additional large specimens of several oak species were identified in subsequent visits to Oak Keepers sites, including some extraordinarily large scarlet oaks (*Quercus coccinea*) in excess of 46 in. dbh and an immense red oak (*Q. rubra*) measured at 57.64 in. dbh. These giants of ancient origin may represent the remnants of an uncut presettlement grove.

Based on the first season's work, The Land Conservancy and its partners in Project Quercus expect to accomplish even more in 2009. At the same time, some neighboring counties have expressed interest in this work, so there is hope that the contributions of the Oak Keepers under Project Quercus will inspire a greater appreciation of our local oak heritage.

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