

Wild Things Workshop for Stewards and Monitors
February 7, 2010
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Session II:

Woodlands

Resource Experts:

Pete Jackson-steward-U.S.E.P.A. & steward at Deer Grove Forest Preserve

Ken Klick- Lake County Forest Preserve District

Tom Simpson-McHenry County Conservation District

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How much sunlight is needed at the ground level for a quality woodland? How do we decide how many or how large trees to thin?

Tom: For most people, cutting mature oaks is not an option. We are stuck with the ages of the oak trees we have. McHenry County has cut most trees except the large oak and hickories, usually leaving small native trees such as hawthorn or nannyberry. Gaps have always existed in woods and are a good thing—exploit these gaps for more herbaceous diversity rather than trying to “fix” them.

How to measure sunlight? Meters are difficult to use, tough to find consistent conditions of cloud cover and wind to make comparisons meaningful. Camera light meters are an option if you want to try it. Crown cover is also not easy to estimate.

The best way to determine if there is adequate light is to look at the species growing on the ground. Look for woodland herbaceous species that depend on higher light levels (esp. those blooming in mid-summer through fall like asters and goldenrods). Also look for oak regeneration. They may only be along trails. Check out how much light is hitting the ground there. That is what you need to aim for. Do you have blooming?

Woodland is not a savanna. A woodland canopy cover is 50-80 %. Savanna is less than 50%. If you have prairie and savanna herbaceous species, then you probably should be managing toward savanna rather than woodland.

Tree density can be used to approximate canopy cover. Marlin Bowles has estimated 20 to 40 canopy size trees per acre, for 50-80% canopy cover.

Light intensity: if have a light meter, at ground level aim for 5 to 15% sunlight. (source: Scott Kobal)

Time of year for light meter? Summer but on cloudless days from 10 a.m. to 2 p.m. Surprisingly few sunless days to be able to do this test.

Jim Steffen (Chicago Botanic Garden) found only 1.5 % light reached the ground in CBG woods on average. Vegetation and light intensity varies a lot. Some places have 50% sunlight reaching the ground, others much less. He thinks it should be a mix of low and higher levels of light that reaches the ground. They lost 150 old oak trees in a storm, creating big open areas. Many oak seedlings are coming up. Burning is taking place in the woods.

First step is to remove all non native trees. Then target cutting weedier and quick growing native tree (black cherry, hackberry, American and slippery elm, etc.).

Historically, our tree diameters are larger than land survey records. So canopies are a larger and total canopy cover is greater in comparison to the pre-European settlement woodlands described in the PLS notes. Historically, 150 years ago, woodlands had an open canopy.

1839 PLS notes and maps are useful to show the spatial extent of the woods and the density and type of trees. McHenry County has removed all the non native trees plus many weedy natives. Now only oaks and hickory are in the canopy. But it's still too dark for regeneration, and large oaks need to be cut. Need good public support first. Pruning branches to bring in more light is prohibitively expensive.

There is consensus among scientists and land managers that we need to be more aggressive in thinning trees.

Problem with thinning out the really big old trees. Which do you choose? Gypsy moth, disease, fire, and old age may take care of the problem. Red oak and hills oak susceptible to oak wilt. Oak wilt primarily kills the red oak group, potentially creating large openings. Change from little sunlight to almost full sun.

How do we create the conditions found in the early 1800s?

Where large gaps exist, we can plant oak trees to speed things up. (Chicago Botanic Garden) We will need to wait 80 years to see large trees.

We get adequate mast crops from the oaks, but there is not enough light for acorns to germinate and establish. How many seedlings will survive deer browse and the fires we set? We have a regenerated woods. We have had 100 years of fire suppression.

In an area where many young oak and hickory sapling are very crowded, what do we do? If we thin now, we give surviving trees better health, shape and more space.

In McHenry County the prescribed fire is gradually thinning out oaks and hickories especially as the woodland fires are repeated. Fires are hotter as there is more grass to burn.

It will take 100 years before we have a more natural age distribution of the oaks, where some die from fire, some from disease, etc. Where they aren't all the same age.

How often to burn the woods? We may be burning too often: the U.S. Forest Service has suggested backing off on the frequency of fires, waiting until tree stems are 3 to 4 inches diameter before burning, so they have better chance of survival.

Tom Simpson: If every large oak makes 3000 acorns a year, and each tree produces acorn crops for 100 years, that is a total production of 300,000 acorns over the life span of the tree. Only one of these acorns needs to survive to become a large tree to maintain the density of the woodland. If we focus too closely on the individual oak seeding or sapling, we lose sight of the fact that the vast majority need to die to maintain an open woodland condition. MCCD uses burn intervals of 2-3 years in Glacial Park.

Evaluate why you choose to burn. Look at duff layer. Look at problems you are choosing to battle, in terms of balancing oak reproduction with control of invasive woody plants. Some areas are backing off to a 4 or 5 year burn rotations.

Before settlement fires occurred every 1.8 years (Missouri) based on fire scars. Now the average is 20 years. Fungi are moving in and infecting many of the oaks. The ecology of the area is not the same as pre-settlement.

Glacial park fire frequency is every 2-3 years for controlling invasives and improving ground flora.

Do not go back to fire “skips” and burn them. Rather, allow fire to be variable and spotty. The unburned areas harbor insects and maybe that tree you want to grow.

Know definition of savanna and woodlands. Barrens grew up to savanna.

Will burning get rid of raspberry? Not likely, as canes only last a few years, even without burning. Brambles are a problem mostly in old grazed woods, where only thorny plants are left.

Best source of information is the 1830s public land survey. Marlin Bowles has posted at this website: <http://plantconservation.us/plspub.html>.

The reports come as a PDF for each county.

Armillaria (fungi) is wood rotter. If there is an injury to a living tree, it starts at the site of the injury and spreads throughout the tree. The black strands we see under the bark of a dead tree are the mycelia of this fungi. Buckthorn is a host species.

How do I identify which sites are most appropriate for woodland restoration?

Key in on large oaks, especially bur oaks. Look for sedges and native woodland grasses and summer-fall wildflowers. Thin out elms and cherries. Take a few years to do the clearing. Thin out in phases.

Soil indicators? County soil maps may help. May see many trees but this does not mean it is a woods. If don't have oaks, then steer away. But look in the soil. Woodland soil is easily recognizable in the field. Two workshops on field interpretation of soils will be offered through McHenry County Conservation District and McHenry County College. Contact Tom Simpson at MCCD for more information tsimpson@mccd.org.

Work first with woods that have the best plant growth. If no understory is left, you will have a hard time putting it back.

Pick areas with oak trees and many surviving woodland herbs, as these give the best chance of success. Join the high quality areas by restoring intervening low-quality woods to produce a larger quality area.

Take a few years for the initial clearing so you can watch the system respond.

A recent study indicates that Pennsylvania sedge often occurs in areas with invasive earthworms, probably because it is not mycorrhizal. Penn sedge may indicate the presence of these earthworms.

Often see basswood and sugar maple growing with red oaks. There are more red oaks now than in the 1830 surveys. The present abundance of red oaks may be misleading. After the Chicago fire, many woods were cut over, especially the white oak, which left behind the red oaks (red oaks are less desirable because the wood rots quickly). Scott Kobal added that many of the Red Oak trees at Danada are 170 years old and are rotten in the core.

If a site is a historic woodland with woodland soils, but it looks like a prairie now, what do I do? Depends on many factors. If no woodland ground vegetation is left, it might be really hard to restore it. Limited resources may force tough choices. Remnants get first priority.

What species should I seed in? How much, from where?

Seed it all with whatever seed source you can find, but choose wisely and don't waste your seed in areas where it won't grow. Look at 20 mile radius of your site at the best areas. Collect seed from all around (with land owner permission). Unless we move seed from site to site, the seeds cannot get there. Sites are too far apart. Locally grown seed is good.

Ideally, you look for little wetter and dryer spots and put different seeds in each place.

Fine tune your seed mix by looking to see what is growing in similar but higher quality situations. Tom Simpson has a copy of the seed mix used by MCCD.

How do we bring back the shrub layer?

Make sure fire works around it.

Shrubs are important wildlife habitat.

Most young shrubs are quickly eaten by deer. Hazelnuts seem to be very tasty to deer. Research how to germinate the seeds to the shrubs. Most native shrubs need lots of sun. Plant accordingly in larger gaps.

Public Land Survey notes indicate that Hazelnuts were prevalent throughout the area.

When looking at the shrubs on your site, if you are expecting them to colonize the rest of your site, make sure they actually produce seed.