

Prescribed Fire: Is it a Good Tool for Your Land?

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Prescribed Fire: Is it a Good Tool for Your Land?

Outline

- I. Some context: fire disturbance history in Southern WI
- II. Fire as a restoration tool
- III. Fire as a silvicultural tool
- IV. Considerations when using prescribed fire to achieve management goals
- V. How to plan for fire on your property

Aldo Leopold

... If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of eons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering.

Round River Aldo Leopold:, Oxford University Press, New York, 1993, pp. 145-146.

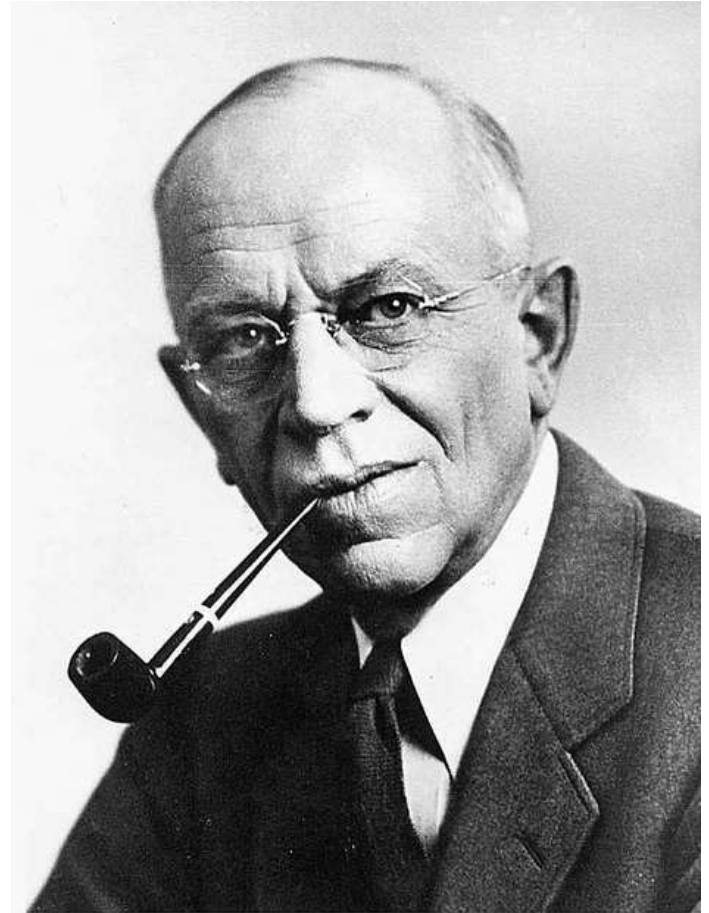


photo courtesy Aldo Leopold Foundation ©2011

Aldo Leopold

What if some of the “cogs and wheels” are missing?

What if new parts slipped into the machine?

Can we learn from the original machine to inform new processes and tools?

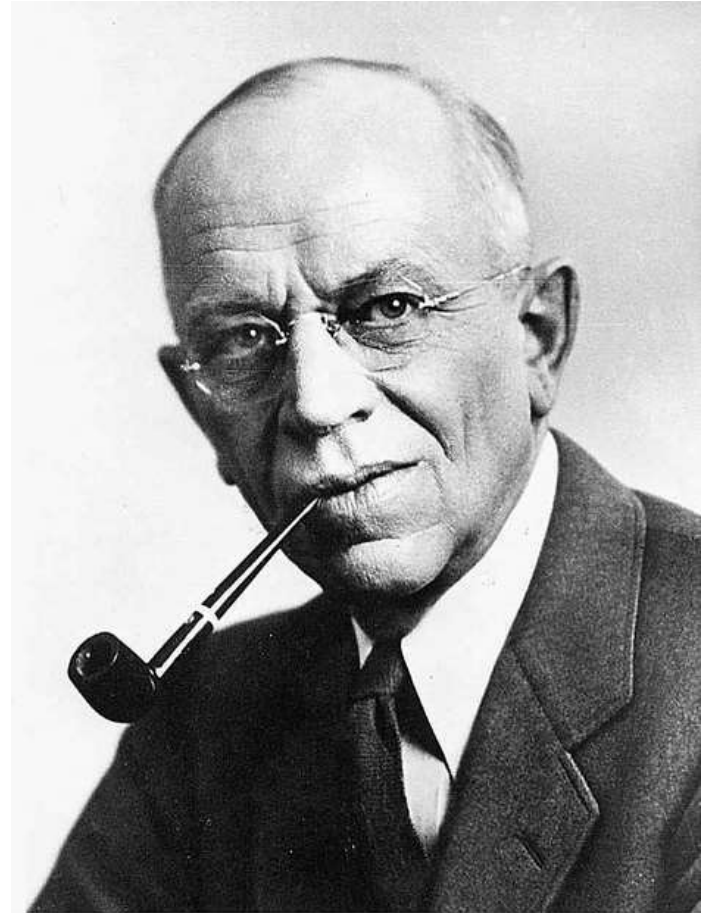


photo courtesy Aldo Leopold Foundation ©2011

A photograph of a forest fire at dusk or dawn. The scene is filled with smoke and the warm glow of the setting or rising sun. In the foreground, there are several large, bright orange flames consuming dry brush and small trees. The background shows a dense forest of tall, thin trees, some of which are silhouetted against the bright sky. A green rectangular text box is overlaid in the center of the image, containing the title in white text.

Fire Disturbance History in Southern Wisconsin

Fire played an enormous role in shaping Southern WI



Fire in combination with other disturbances was the major factor determining the

- composition
- structure
- arrangement

of vegetation throughout the Southern WI landscape prior to European settlement.

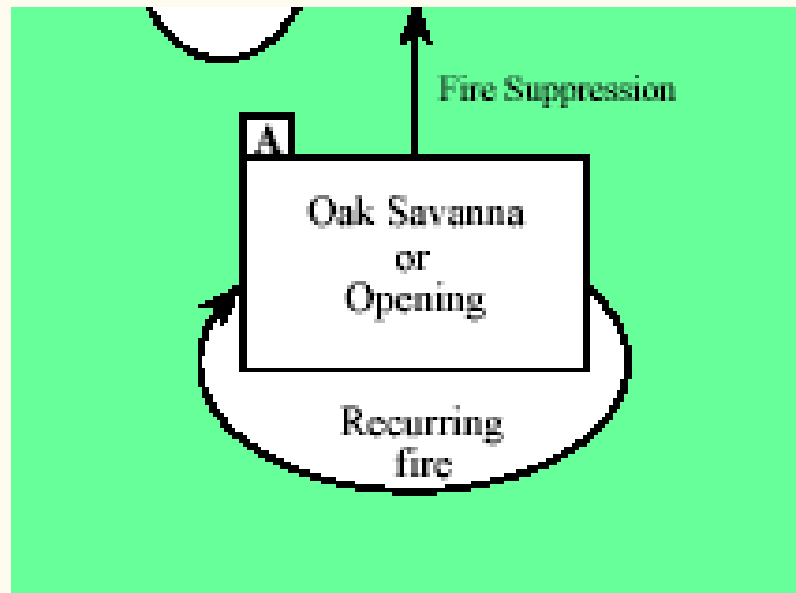
The magnitude of the historical role of fire is often under-appreciated



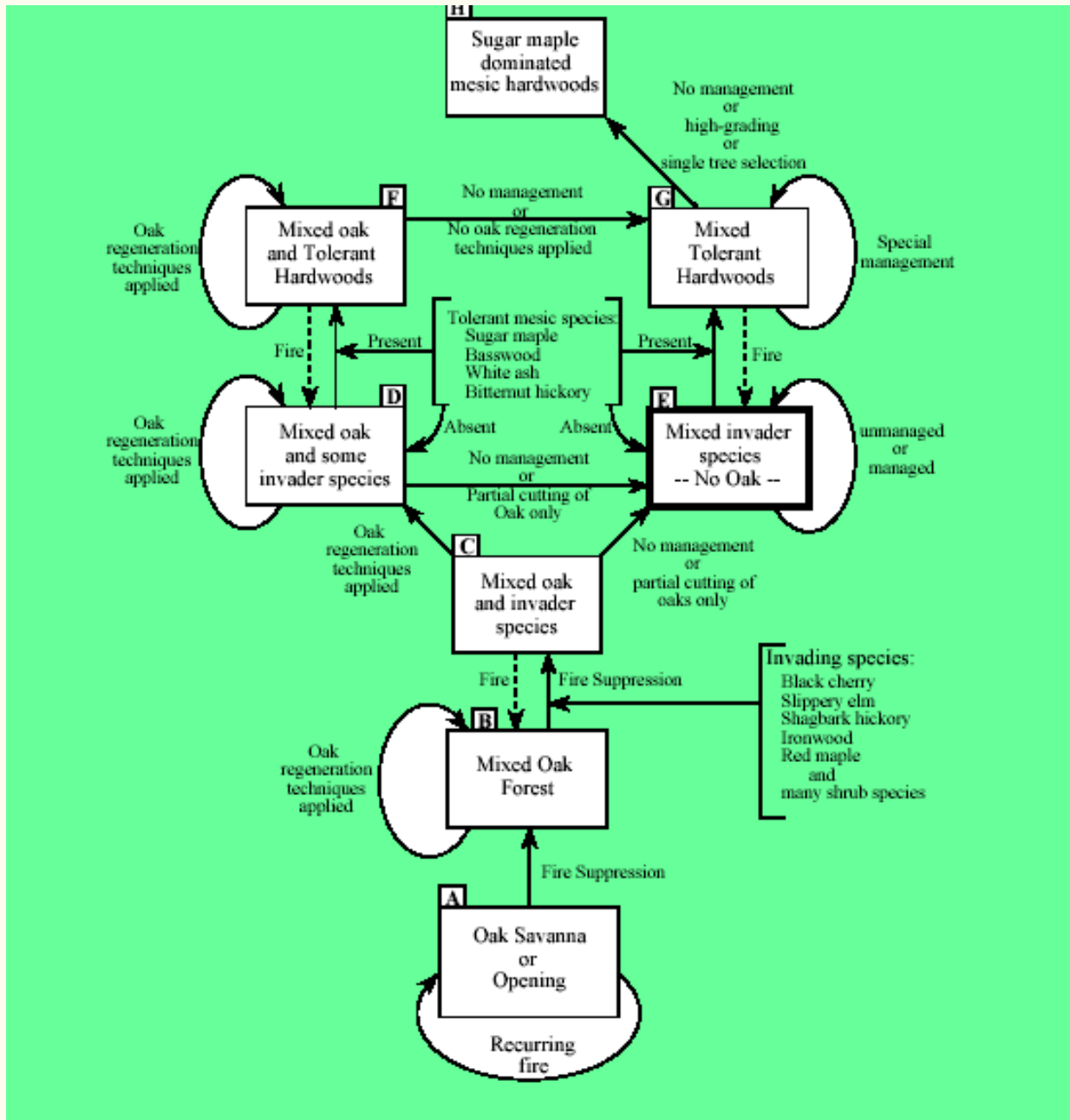
From a historical perspective, it may be more accurate to regard the absence of fire from the landscape as unnatural rather than natural.

Forest Community Dynamics on Mesic and Dry-mesic Sites in Southern Wisconsin

Prior to fire suppression



Forest Community Dynamics (with and without management) on Mesic and Dry-mesic Sites in Southern Wisconsin



A photograph of a forest fire at sunset. The foreground is filled with bright orange and yellow flames consuming dry brush and grass. The background shows a dense forest of bare trees, with a bright sun low on the horizon, creating a hazy, golden light. A semi-transparent green horizontal bar is overlaid across the middle of the image, containing the title text in white.

Fire as a Restoration Tool

What is restoration?

Def. The practice of renewing and restoring degraded, damaged, or destroyed ecosystems and habitats through active human intervention and action.



The challenge for restoration is defining targets and using tools to mimic natural processes.

Fire as a Restoration Tool

1. Mimics Natural Disturbance

Stimulates native plant diversity

- More light to soil – less barrier to seed germination
- Fire adapted species often drought tolerant species
- “Insurance policy” for species able to shift and adapt



Fire as a Restoration Tool

2. Mimics Natural Disturbance cont.

Strongly favors oak – a keystone species

- Acorns – major wildlife food source
- Dappled light to forest floor – increase plant diversity
- Support vast insect diversity – food for migrating birds
- Incredible resprout capacity - oak regeneration accumulates over time



Fire as a Restoration Tool

3. Compliments other management treatments

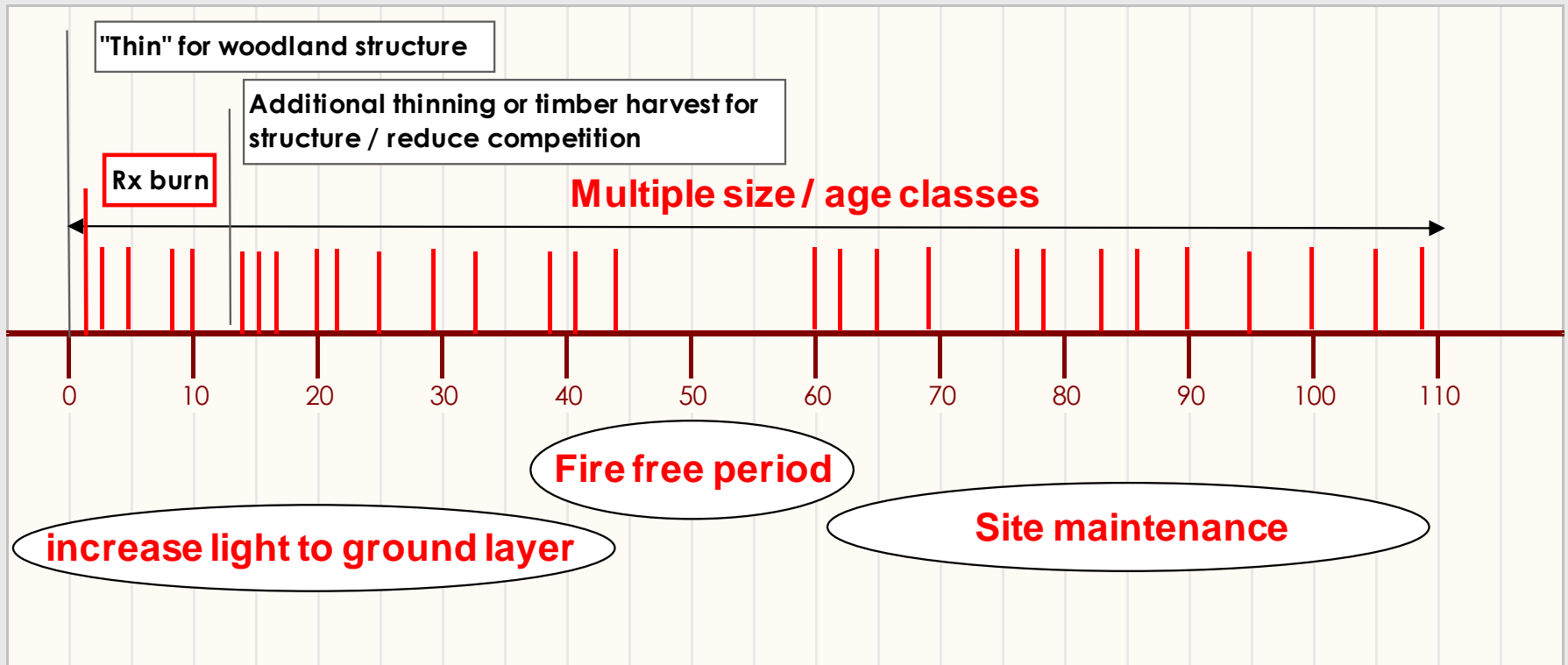
Efficiently treat a large area in one day

- Reduce competition from mesic seedlings and saplings
- Help control fire sensitive invasive species
- Reduce slash after thinning or timber harvest





Rx Fire & Oak Restoration Timeline



A person wearing a yellow safety vest and a yellow hard hat stands on the left side of the image, observing a controlled fire burning on the ground. The fire is concentrated in a line, with bright orange flames and a layer of grey ash. In the foreground, a metal sprayer with a black handle and a nozzle is visible. The background consists of bare trees and a hazy, overcast sky. A green banner with white text is overlaid in the center of the image.

Fire as a Silvicultural Tool

What is silviculture?

Def. The practice of controlling forest composition, structure, and growth to maintain and enhance the forest's utility for any purpose.



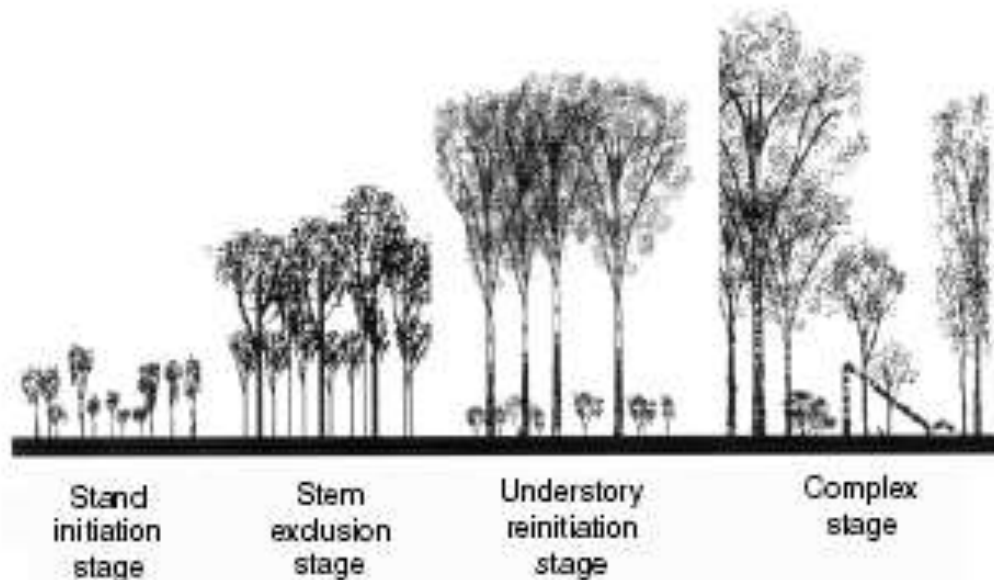
The challenge for silviculture is how to adapt existing tools to meet new objectives.

Fire as a Silvicultural Tool

1. Site Maintenance

Prior to stand initiation and after understory reinitiation, fire can be used to keep less desirable species from encroaching in oak dominated stands.

- Red maple
- Exotic / Invasive Species



Fire as a Silvicultural Tool

2. Establishment of Regeneration

Seedling establishment may be increased by burning due to a decrease in litter depth and exposure of mineral soil.

- Reduces soil moisture which discourages moisture loving species from becoming established
- May control insect predators of both acorns and new seedlings.

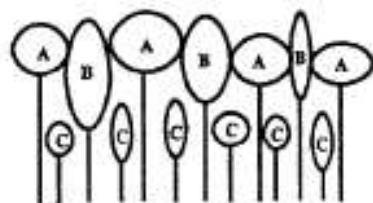


Fire as a Silvicultural Tool

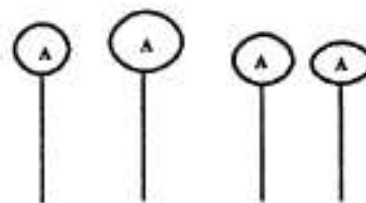
3. Competitive Advantage

Competition from other species might be reduced and the proportion of oaks in advanced reproduction might be increased with fire.

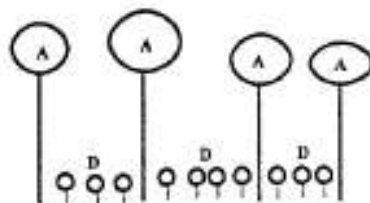
- Oak regeneration accumulates in the presence of disturbance
- Favors a large root:shoot ratio. Oak seedlings have inherently slow shoot growth and attaining a competitive rate of growth depends upon the development of a large root:shoot ratio and large root mass.



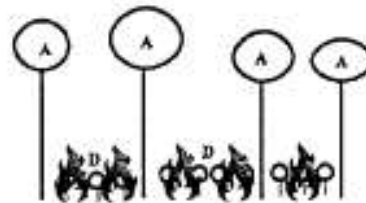
1. Typical upland mixed-hardwood stand.



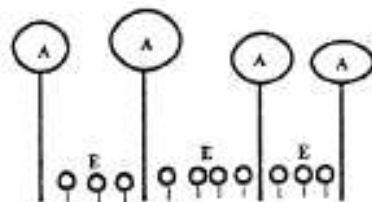
2. Initial cut to a shelterwood (40 to 60% basal area reduction).



3. After 3-5 years, yellow-poplar dominates the advance regeneration pool.



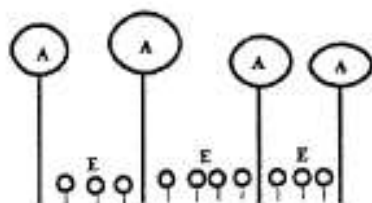
4. Prescribed fire topkills the advance regeneration, forcing rootstocks to sprout. Overstory damage and mortality limited to trees with slash at their bases.



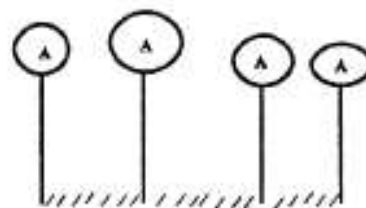
5. Oak now dominates the advance regeneration pool. Three management options available.



6a. Overstory harvested and additional fires withheld creates a new oak forest.



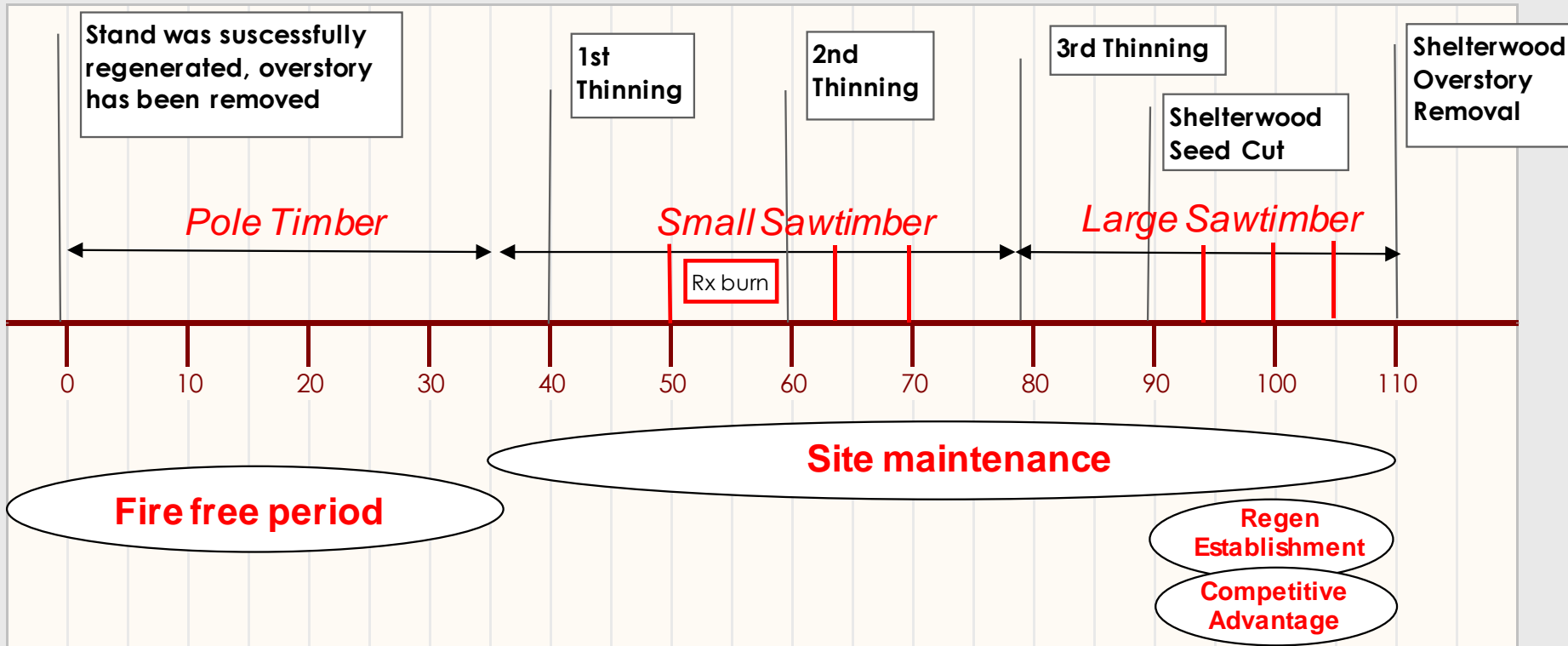
6b. Overstory retained and additional fires withheld creates a two-age stand.



6c. Repeat burning either stockpiles oak sprouts or creates an oak savanna.



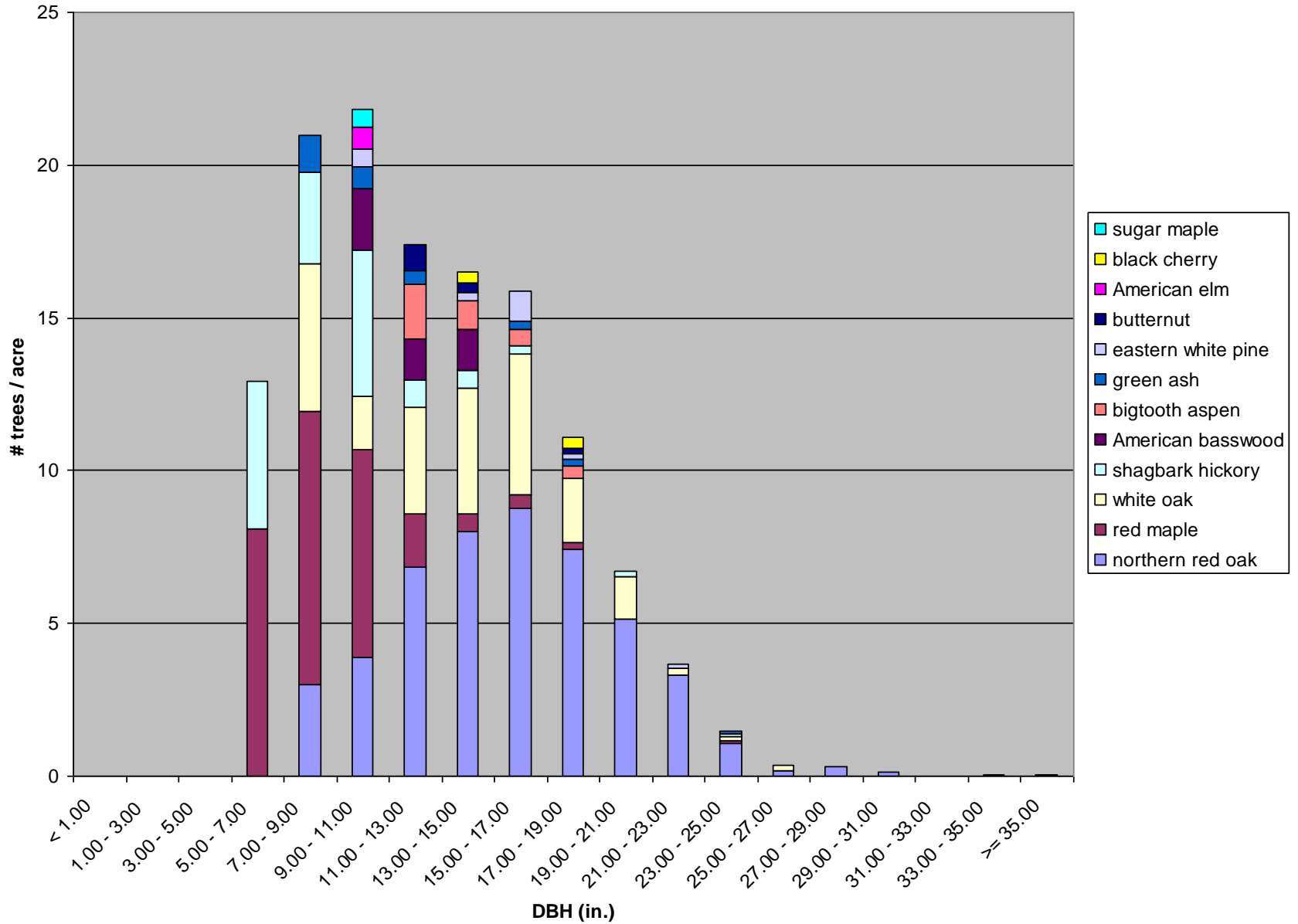
Rx Fire & Oak Forest Management Timeline





Considerations When
Using Fire to Achieve
Forest Management
Goals

Devil's Lake SP: Comp 25 Stand 4











3 Questions to ask when considering fire to achieve your management goals

- Will fire help me achieve my goals?
 - Improve wildlife habitat
 - Reduce invasive species
 - Control competition
 - Regenerate oak
- Will fire benefit the target species or community?
 - Is it a fire dependent community?
- Will the benefits of fire outweigh cost of alternative tools or land management options?



A photograph of a dense forest with many tall, thin trees and a thick undergrowth of green plants. The trees are mostly deciduous with green leaves. The ground is covered in a dense layer of green vegetation, including ferns and other plants. The overall scene is a lush, green forest.

How to plan for fire on your property

How do I effectively implement prescribed fire on my property?

Identify goals & develop a fire management plan

- Tailor burn timing and intensity to help achieve goals

Burning requires training and experience

- Hire a contractor
- Attend burn school training
- Learn from others – network of trained volunteers

Recognize it does cost money

- Prep time required no matter the size of the burn
- Equipment, writing burn plan, securing permits, etc.

Be patient – fire works it's magic over time!

Additional resources:

WI Prescribed Fire Council website:

<http://prescribedfire.org/>

- Provides list of contractors

WI DNR Fire - burning permit information:

<http://dnr.wi.gov/topic/ForestFire/permits.html>

Fire Effects Information System (FEIS)

<https://www.feis-crs.org/feis/>

- Provides information on the effects of fire on plants and animals



Questions?

Thank You

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