Which Tree Do I Cut? Basic Silviculture

Silviculture – the art and science of controlling forest vegetation for desired outcomes.
Desired outcomes could include: cutting your own firewood, obtaining building materials, increasing future value of the timber, maintaining/encouraging certain types of wildlife habitat or plant communities, creating particular visual or scenic qualities, etc. Silviculture is geared toward managing the forest for the future, not just getting what you need now.

"Treatments" – the most common way to control forests is to cut trees, usually to create space for other trees.

Key questions:
- Are there products you need now, e.g. firewood?
- What are current conditions in your forest?
- Do you have the ability to cut & yard trees safely and efficiently (or do you need a professional logger)?
- Are there current markets for any trees you might cut?
- Is there enough benefit (current or future products/income/conditions) to justify the cost (labor, equipment, etc.) of cutting trees?

Process:
- Assess what you have
- Prioritize your goals (short and long-term)
- Understand the consequences of different actions
- Get outside input/help (e.g. from a forester) if needed
- Implement & monitor results

Types of treatments (cuttings):
- Thinning – creates space within the current forest, to be used by existing trees
- Regeneration – creates space at the forest floor for new seedlings/sprouts

What do thinning treatments do?
- Create canopy/crown space (light) and increase growth rates of remaining trees
- Select tree species that you want in the future
- Select tree quality (timber, wildlife habitat, etc.)

General principles:
- **"Worst first" – cut the trees that have the least future potential to increase in "value" (as you define it)**
- **Thin lightly – To maintain stand growth, cut no more than 1/3 of the canopy.**
- **Thin carefully – limit damage to remaining tree crowns, stems, roots**
- **Thin after trees have begun to compete, and before trees begin to decline.**
- **Be patient! Don't rush your decisions.**
- **Use what you cut (or let it rot/become soil)**
- **BE SAFE**

1. **Growth rates**: To maintain/increase growth, you need healthy trees which are capable of using additional space, based on
    a. **Crown position**
        i. dominant, co-dominant, intermediate, overtopped/suppressed

    b. **Live crown ratio**
        i. As a percentage of tree height – full crowns that take up 25% or more of the tree height have better potential to grow (trees with very small crowns will grow very slowly and may blow over)

    c. Spacing – spacing is often less important than other characteristics, i.e. species, condition, and quality of individual trees

2. **Species**: Tree species have many different characteristics, and grow differently depending on soils, location, shade conditions, and past events. Species influences choices in different ways depending on individual tree condition, personal preferences, and local uses/markets. Generally:
    a. Leave trees that are long-lived (white pine, oak, sugar maple, etc.)
    b. Leave trees that have healthy/undamaged crowns, stems, and roots
    c. Longer-lived species with multiple values (including potential to grow into higher-value sawlogs or veneer) include
        i. Hardwoods: oak, sugar maple, beech, yellow birch, cherry, locust, hornbeam
        ii. Softwoods: white pine, red spruce, hemlock, cedar
    d. Medium: red & other soft maples, white birch, white ash
    e. Shorter lived, lower value species: poplar/aspen, balsam fir, willow, alder, basswood

3. **Quality**: Trees with "defects" usually have less potential to develop future value as timber. However, if wildlife habitat, non-timber products or visual qualities are important, these criteria might be more important than timber.
    a. Trees with defects are ones that are crooked or forked, show signs of rot (safety concern?), have many limbs and/or large limbs, have very small crowns or poor foliage, or are of lesser-value species.
    b. The best trees to leave for timber value are ones of suitable species that have healthy crowns, straight stem sections, 8 feet or longer, fewer/smaller limbs especially on lower portions of the stem, no signs of rot/damage. Avoid cutting such "crop" trees that have the potential to become sawlogs or veneer in the future (usually these higher-value products have 5-10 times the value of pulpwood or firewood).
    c. Wildlife: Snags (dead trees), den trees (trees with holes in them), and mast trees (nut/fruit/seed bearing trees) are very important for many species of wildlife.

4. **Types of thinning**: There are many rules of thumb of how many and which trees to cut in a given woodlot. Many publications are available that describe proper selection of trees to cut and cutting levels. Proper cutting can produce firewood while improving growth and value of the remaining forest. If in doubt, contact/hire a Licensed Forester to help choose or mark trees to cut.
    a. "Crop tree" thinning – select trees with the best future potential and only thin around them. The most important feature is to give the crowns (leaves and branches) of the trees you leave extra space to grow and spread. For the long term, you will want 40-80 "crop trees" – the best trees – per acre.
    b. Thinning from below - Thin by cutting lower quality, smaller, or poor-crowned trees of less desirable species that are touching the crowns of better quality trees. This involves cutting overtopped, intermediate, and some co-dominant trees, to give the remaining trees more room to grow.
    c. Thinning from above – especially if trees vary widely in size, cut larger, lower quality trees that are shading or overtopping other, better quality trees of moderate size or trees in the understory. If you take this approach, BE SURE you are leaving quality trees with full

crowns that are capable of responding to more sunlight. Avoid "high-grading" – cutting the best large trees and leaving weak trees.

d. Remember, for most forests, cutting which opens up less than 1/4 to 1/3 of the overall tree canopy every 5-15 years will usually leave enough trees for the future.

Thinning your woodlot can provide you with firewood, other products, AND improve your woodlot. For more information contact the Maine Forest Service at 1-800-367-0223, or visit our website at www.maineforestservice.gov.

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