

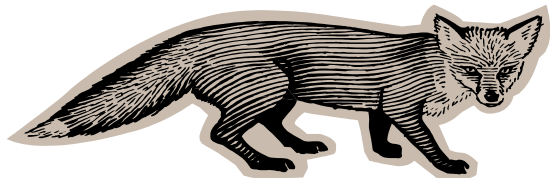


## YOU AND YOUR FOREST: LETTER 5

### *Forest Management*

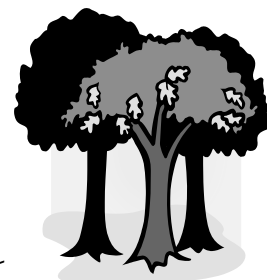
#### Forest Ecology

We have learned from earlier letters that, “Forest ecology is the study of life in areas where the predominant vegetation is trees.” This study of life is very broad and includes life forms from microscopic organisms right through to the largest towering tree in your forest. The relationships between these living organisms can be very complex and seemingly endless when looked at in detail. As foresters and landowners, it is important to understand that actions taken in the forest will have reactions that may ripple throughout the forest resulting in desired or sometimes undesired outcomes. The history of forest management has been helpful in providing us with general trends in forestry and a forest’s reaction to various forms of management. It is important to use this historic information to help guide us through management of our forests. We must also keep in mind the underlying magnitude of interconnected life in our forests and realize there are no certainties when dealing with forest ecology, rather a never ending education. Furthermore, that forests are dynamic systems and there are many variables that are influencing our forests today and into the future.

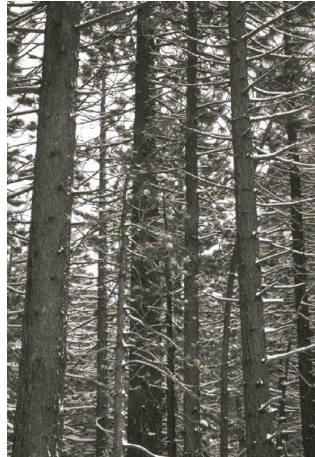


#### Silviculture

Silviculture is perhaps the most important aspect of forestry. Silviculture is defined as the art and science of growing and tending forest crops. Crops? You might ask. Certainly! Trees and forests are a form of agriculture just like a farmer’s corn field, with a few differences, such as the time required to reach maturity, and the obvious height and appearance differences. The science aspect of silviculture draws upon the requirements that trees have for growth and their response to changes in their environment. Components of many sciences are drawn together to help the silviculturist better understand this scientific approach to tree growth. The art aspect of silviculture involves thinking of creative ways to manipulate the forest mosaic to reach desired goals. Communication between the landowner and the forester will inform the forester of the landowner’s goals and will inform the landowner of limitations and expectations associated with various forms of management. An understanding of goals, and limitations will set the general parameters for the silvicultural treatment. A silvicultural treatment is made up of three steps. These steps are regeneration (establishment of the next crop), tending (improvement cuttings and other practices performed on the growing crop) and harvesting (removal of the mature crop).



Two predominant forest conditions that influence which treatment to use, are even-aged and uneven-aged forest stands. As the names suggest, an even-aged stand is comprised of a community of trees all having comparable ages and the uneven-aged stand is made up of trees of varying ages.



Foresters should bring with them knowledge of silviculture through education and, most likely, experience. Using forest measurements taken in the field, the forester can determine which silvicultural treatment should be applied to reach the desired outcome. The silvicultural treatments prescribed by the forester are actions that often times alter the forest stand to encourage an accelerated realization of desired goals. Silviculture is an ever-evolving and continually tuned management tool that will hopefully guide sound forestry into the future.

### Let's take a look at some common silvicultural treatments:

The selection method of treatment is most often used on an uneven-aged stand and concentrates on removing mature trees while simultaneously tending the immature trees. This treatment focuses on maintaining a specific spacing and density of remaining trees in the stand and will result in healthy harvests at short time intervals.

The **shelterwood method** is used in an even-aged stand. The mature trees are removed in two or more successive cuttings. Remaining trees are left to provide a seed source and protection for the next generation of trees. Once the new generation of trees has taken hold and no longer needs protection, the remaining overstory is removed.

The **seed-tree method** is very similar to the shelterwood method and is also used in even-aged stands. The seed-tree method removes all but a few, widely spaced residual trees in the stand. This method is often times used with tree species that have large amounts of easily dispersed seed. As with the shelterwood method, the remaining mature trees are removed once an adequate amount of regeneration is reached.

The dreaded **clearcut** is the final method we will take a look at. Unfortunately the clearcut method has received a bit of a bad reputation, however, it is one more acceptable form of silvicultural management. The visual impacts of a clearcut are most likely the reason for its negative perception. The clearcut is defined by the complete cutting of an area in one operation. Removal of all trees in a stand will open a stand up to many regeneration possibilities. Planting is one option of regenerating an area after a clearcut and will allow the manager more control over the next generation of trees; however, it is also quite cost and labor intensive. Seed that is lying dormant in the soil is another possibility for the type of regeneration that will take over. (Some seeds can remain dormant and viable in the soil for up to 50 years before the correct growing conditions occur.) Seeding from surrounding trees is another source of regeneration for clearcuts. Clearcuts can vary in size and shape, can be very obvious or quite conspicuous, and after a few years will most likely be a thick jungle of vegetation and regeneration that is sought after by many forms of wildlife.

*(Silviculture Concepts and Applications,  
Ralph D. Nyland, 1996.)*

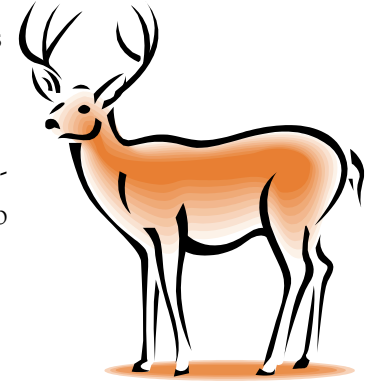


## Forest Regeneration

The forest seems to just want to exist. By mowing your lawn you are essentially keeping away a forest. Seeds from trees are widely dispersed by wind, water, wildlife and by a number of other means. Some trees are also born out of roots of existing trees. There are general trends that help determine what, where, when and why various types of trees will grow in a Northern hardwood forest. One major trend that helps determine what trees will occupy a site is shade tolerance. Some trees are shade intolerant and generally will not grow unless they have plenty of sunlight. These trees are usually the first types that occupy a site when a lot of sunlight is available, such as a recent clearcut, an area after a forest fire, or a neglected farm field. Some northeastern tree species that are in this “pioneer” category include aspen, white birch, fire cherry, and pine. Once these trees are established and start growing, the shade created by them will allow more shade tolerant species like yellow birch, maple, beech, hemlock, spruce, oak and hickory to begin growing. Taking shade tolerance into account can help the forester manage a forest for the desired outcome.

While it seems like trees are sprouting up everywhere, it can be difficult trying to make some specific types of trees grow. There are many factors which limit the success of natural regeneration on a site. Some factors that affect success of regeneration are: soil type, aspect, temperature, moisture and wildlife. One regeneration problem encountered in New York is deer. Deer seem to love munching on commercially desirable tree species. Small, delicious, hardwood regeneration is usually right at the perfect height for hungry deer to browse.

This continual browsing by deer in high density deer areas can cause some serious forest management problems. Some types of trees such as oaks are also difficult to naturally regenerate, not because of deer browse, but because we haven’t quite figured out how to set up the right conditions to help oak naturally regenerate. Overall, it is usually possible through proper management to utilize natural regeneration to help perpetuate a healthy forest and attain the landowner’s goals.



## Do nothing...

Not doing anything is always an option when dealing with forest management. Even with no management, a forest will continue to grow into something on its own. If no management will create the type of forest that best meets the landowner’s goals, wonderful! The owner’s objectives are always key. Many types of management require a waiting period. Time will allow trees to grow and compete and may be the best thing to do in some instances.

Understanding the goals of management will allow the manager to plan accordingly to best reach the desired outcome. Proper management can keep a forest healthy, benefit wildlife, and allow for a shorter and more profitable harvest rotation.

## Harmful Practices

While forests can be very resilient in some aspects, they are also quite delicate. Improper use of harvesting equipment in a forest can cause serious damage for years to come. Likewise, improper forest management practices can have extremely long lasting effects on the forest.

The improper use of equipment can cause damage to the forest through erosion, soil compaction, and wounds to remaining trees. Skid trail layout and time of year play an important role in forest management. After taking conditions into account, a forester will lay out an efficient system of skid trails to be used when accessing the property during an operation. This may be done with the aid of a timber harvester who will be performing the work. Working together, the harvester can sometimes help the forester realize the limits of various types of equipment.

Sometimes, however, certain types of harvesting equipment may be restricted from use on the property and more specialized low-impact equipment may be required. By using the same skid trail system from operation to operation, disturbances will be confined to a smaller area. Soil compaction is a problem encountered in many forests. Fine soils have a greater tendency to compact. These soils are also better suited for growing. Tree roots spread out to fine hair-like tips and are generally found in the upper six inches of soil. These roots are called the feeder roots. Feeder roots can make up to 80 percent of the tree's root system and supply the tree with its life sustaining nutrients and water. Compaction of the soil around these roots can essentially cut off the tree's supply of nutrients. Limiting the use of equipment to specific areas can reduce the overall impacts of soil compaction.

Seasons and weather play an important role in skid trail use. The springtime or "mud season" can be one of the worst times to harvest timber. Wet soils at this time of year can cause rutting, erosion and damage to tree roots. Increased sap flow during this season will also allow bark to be knocked off remaining trees much easier. Missing patches of bark are open wounds for a tree and will most likely cause problems for the tree in the future. Winter "freeze up" is probably the best time in which to harvest. Frozen soil will often show very little evidence the forest has been accessed at all.

"Bumper" trees are a management tool used by foresters when laying out skid trails. Bumper trees are usually of low-value and are intentionally left in strategic places along skid trails. Bumper trees are used to help pivot and aid in navigation of skidded logs along skid trails. This practice reduces damage to residual trees in the stand. Bumper trees may be left after a harvest, however, they may be removed if they could lose their harvest value or are too damaged to be retained for future use as bumper trees.

Poor harvest decisions can also be a harmful practice. Removal of just high-value timber or "high-grading" during a harvest can produce poor, long lasting effects in a forest. High-grading removes all merchantable timber, including the seed source for future regenerations. Successive high-grading operations will deplete a forest of all merchantable timber, leaving only undesirable timber species. Recovery from this improper practice can require a long period of time.



## Forest Health

As part of their life cycle, trees eventually succumb to some sort of disruptive force. Once a tree dies and sometimes even before, it will begin to decay and eventually return to the forest floor., making essential nutrients available for other organisms.

“Tree decay releases stored energy and essential elements by the breakdown of wood. Fungi decay the wood in living and dead trees as part of a vital web of microorganisms, insects, and wildlife. Decay organisms enter trees through wounds, large and small.” (Smith, Shortle) Trees, like people, are affected by many health issues.



Disease, pests, and pathogens exist in the forest community. Generally speaking, healthy trees are less susceptible to disease, pests and pathogens. When a tree is in a weakened state, through injury, extreme weather conditions, or exposure to toxic substances, it is more prone to develop further health issues. Tree injuries usually provide a direct avenue for awaiting pests and diseases. The best way to maintain a healthy forest is to follow proper management and monitor trees for symptoms of new health problems, including invasive insect pests, so that they might be remedied quickly. Early detection usually results in more successful outcomes.

*(A First Look at Tree Decay by Kevin Smith and Walter Shortle, USDA Forest Service)*

## Stewardship Plans

A stewardship plan is a valuable document for the forest owner. A professionally prepared plan will outline the owner's objectives and give the landowner a comprehensive description of many aspects of the forest property. Soil types, stream classifications, and rare, threatened or endangered species are just a few of the topics that should be covered in a plan. The plan will break the forest down into manageable units based on forest type, accessibility, topography or any condition that would prove beneficial to manage as a separate unit. The plan will predict the growth trends of the forest, and will outline the necessary steps required to reach the landowner's forest goals. While providing a guide to managing the property, a stewardship plan can also qualify the landowner for cost-share or tax incentive programs such as the 480 A Forest Tax Law program. The stewardship plan will help the landowner reach a sound and properly managed forest. Forest Stewardship plans and can be done by regional Department of Conservation (DEC) foresters. Contact your regional DEC office to find out more about this service.





# List of General Components of a Forest Management Plan

- |  |  |
|--|--|
| 1. Identification of owner & the tract           | -site quality  |
| 2. Plan preparer information                     | -timber quality  |
| 3. Date of plan preparation                      | 9. Location map  |
| 4. Landowner goals statement                     | 10. Forest type map  |
| 5. General property description                  | -property boundaries   |
| -rare or endangered species                      | -stand boundaries  |
| -classified streams                              | -stand identification  |
| -protected wetlands                              | -water bodies, roads, structures,  |
| -natural features                                | other physical features  |
| 6. Soils information                             | -scale, north arrow  |
| 7. Description of interrelationship of resources | 11. In depth listing of stands, or forest management areas, that comprise all of the forest land to be committed pursuant to the management plan.  |
| -wildlife and fisheries habitat                  | 12. A work schedule for each of the next 10 to 15 years that outlines all commercial and noncommercial cuttings, road construction and other needed treatments on the property.  |
| -forest health                                   | 13. Signature and typed or printed name of the forester who prepared or supervised the preparation of the management plan and the date prepared, together with certification by the forester that all land shown as eligible land on the type map qualifies as eligible land in any program addressed by the plan. |
| -recreation and aesthetics                       |  |
| -timber  |  |
| -soil and water                                  |  |
| 8. Description of each stand or management unit  |  |
| -forest or cover type                            |  |
| -stand history                                   |  |
| -stand management objective                      |  |
| -best management practices                       |  |
| -stand acres                                     |  |
| -species composition                             |  |
| -size class                                      |  |
| -stocking density                                |  |

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*Go forth and enjoy your forests! A healthy and well managed forest can be profitable, benefit wildlife and the environment and provide many forms of enjoyment. Take the time to learn about and from your forest. Your trees will thank you!*

## For those interested in forest related internet links:

### Forest Health Issues (a very comprehensive list in Excel format):

[http://files.dnr.state.mn.us/assistance/backyard/treecare/forest\\_health/links.xls](http://files.dnr.state.mn.us/assistance/backyard/treecare/forest_health/links.xls)

### Eastern Forest Insect and Disease Leaflets:

<http://www.na.fs.fed.us/spfo/pubs/fidleast.htm>

### How To Publications:

<http://www.na.fs.fed.us/spfo/pubs/howto.htm>

### Strategies For Forest Landowners:

<http://www.ext.vt.edu/pubs/forestry/420-144/420-144.html>

### Forest Service Tree Index:

<http://www.fs.fed.us/database/feis/plants/tree/>

## Emerald Ash Borer NYS First Detector Training

**Want to help in the fight with Emerald Ash Borer? We're looking for First Detectors who want to:**

- ◇ Become a local expert who can answer EAB biology and management questions.
- ◇ Aid in the community preparedness planning process
- ◇ Engage others as volunteers to monitor for EAB, conduct street tree inventories, collect ash seed and educate about the issues surrounding Emerald Ash Borer

These training sessions will go over in-depth details on EAB biology, signs and symptoms, hosts, control and management, reporting, and resources through presentations and hands-on field activities at near-by EAB infested locations. Materials have been created by Cornell University and the Northeast Plant Diagnostic Network. These workshops are supported by the Northeastern IPM Center- IPM Partnership Grant.



### **First Detectors can give back.**

There is huge public demand for answers on what to do about EAB. As a trained EAB First Detector, you'll have those answers. We hope that you will be able to help the greater community by sharing your EAB knowledge, participating in community preparedness activities, or monitoring for EAB.

May 14, 2012. 1-5 pm at CCE's Agroforestry Resource Center, 6055 Route 23, Acra, NY 12405.

May 18, 2012. 1-5 pm at Reinstein Woods Nature Preserve and Environmental Education Center (Erie County), 93 Honorine Dr. Depew, NY 14043.

May 29, 2012. 1-5 pm at Cornell Cooperative Extension of Monroe County, 249 Highland Avenue, Rochester, NY 14620.

All sessions are free, but registration is required. Please register at:

[EAB First Detector Training http://tinyurl.com/7b9l3ep](http://tinyurl.com/7b9l3ep).

This program qualifies for 2.5 ISA CEUs. NYS DEC Pesticide, CNLP, SAF CF credits have been applied for.

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CORNELL COOPERATIVE EXTENSION'S  
AGROFORESTRY RESOURCE CENTER &  
THE WATERSHED FORESTRY PROGRAM OF THE WATERSHED  
AGRICULTURAL COUNCIL

Cornell Cooperative Extension  
of Columbia and Greene Counties  
Agroforestry Resource Center  
6055 Route 23, Acra, NY 12405  
Phone: 518-622-9820  
Email: [greene@cornell.edu](mailto:greene@cornell.edu)  
[www.ccecolumbiagreene.org](http://www.ccecolumbiagreene.org)

Cornell Cooperative Extension provides equal program and employment opportunities.

The Forest Stewardship Self-Study Course is a collaboration among Cornell Cooperative Extension, New York City Department of Environmental Protection, U.S. Department of Agriculture's Forest Service and the Watershed Agricultural Council's Forestry Program.

Many thanks to Greater Adirondack R C & D Council and especially Laurel Gailor of Cornell Cooperative Extension of Warren County for their outline and assistance with the Forestry Letter Series.

