



Division of Forestry

Connecticut Department of Environmental Protection

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www.ct.gov/dep



Forestry Practices and Wetland & Watercourse Resources in Connecticut



Introduction to Presentation

This presentation is on the relationship of forestry and timber practices to inland wetlands and watercourses. Under the Connecticut Inland Wetlands and Watercourses Act (IWWA) forestry is considered agriculture. The definition of agriculture is found under section 1-1(q) of the General Statutes. The definition states that **agriculture includes forestry** and the production or harvesting of lumber.



Introduction to Presentation

Though trees may appear unchanging, forests in Connecticut are **dynamic entities** influenced by a variety of economic, historical, and natural factors. An ongoing cycle of harvest and re-growth has occurred in our forests. To this day, Connecticut has a successful timber harvesting industry.

Your commission may find itself ruling on forestry activities. Some activities may be exempt while other activities may require a permit.



Timber Harvesting in CT

- Each year about 19,000 acres or about 30 square miles are harvested in Connecticut. According to US Forest Service statistics, the annual net growth of trees in Connecticut's forests exceeds the amount of wood removed through timber harvesting by an impressive 2.5:1 ratio
- The average harvest is approximately 42 acres and removes 85,000 board feet*.
 - *Note: a "board foot" is a measure of wood equivalent to 1 foot by 1 foot by 1 inch.
- There are approximately 400 to 500 timber harvests in Connecticut annually.
- With few exceptions, timber harvesting occurs in some form in every town in Connecticut



Human Impacts to Forests in CT



Early land-use by settlers

As Europeans arrived and acquired land, they cleared forests for crops and pasture. By 1850, only 10% of CT remained forested.



Historical photo

This photo, circa 1870, shows the Litchfield Hills with the most productive land used for farming. The forested areas primarily occupied steep and rocky slopes.



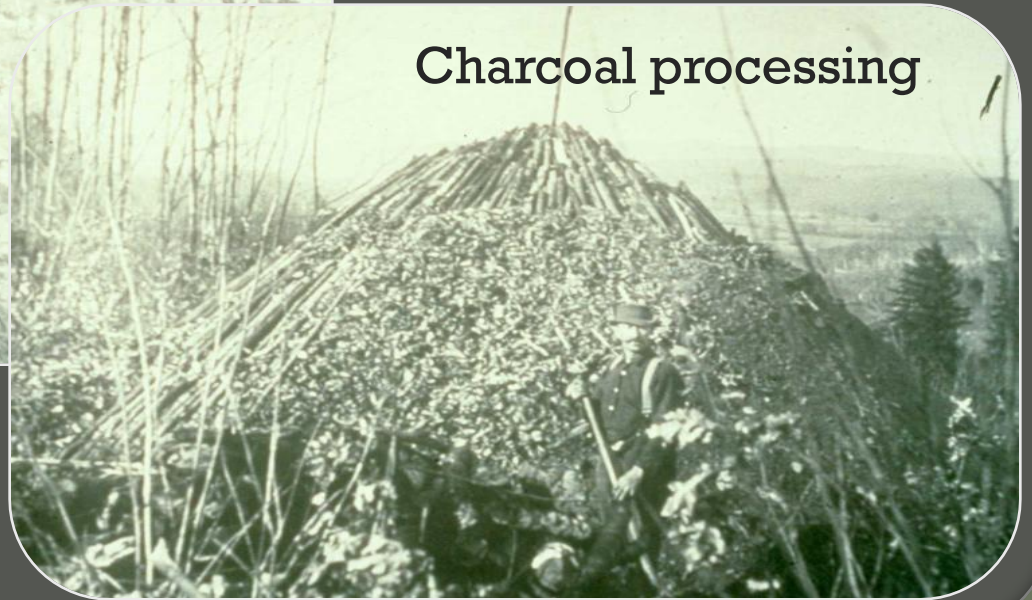
Farm abandonment

Around the period of the American Civil War (1850s to 1870s), farm abandonment occurred on a large scale in CT. The stone walls found throughout the state are indicative of agricultural areas that have been reclaimed by forests.



Forest succession

Forest succession, the natural re-growth of trees on disturbed sites, took place and reclaimed much of the farmland.



Charcoal processing

Impact of 19th century development

This new cycle of forest re-growth provided the resources for rapid industrial development in the late 19th century and early 20th century. The metals industry in Connecticut utilized charcoal obtained from local forests as an energy source. Millions of cords of wood were cut for fuel.



Sawmill industry

In addition, a vigorous sawmill industry thrived in CT during this period driven by salvage cutting of Chestnut trees and strong commercial demand. In 1909, 454 sawmills in CT produced 168 million board feet/year. By comparison, approximately one hundred years later, the statewide production was 47 million board feet/year.



The contemporary forest

In the early 1920s, the demand for charcoal collapsed when the blast furnace was introduced into the CT metals industry. This reduced the demand for timber and allowed the forests to regenerate into their present state. Our contemporary forest is also a result of trees planted by the Public Works program in the 1930s and natural thinning following the destructive 1938 hurricane.

Before



After



Wind throw

CT forests are dynamic. The structure of forests can change when strong winds from hurricanes and tornadoes knock down trees or limbs. The pictures above show damage from a tornado in Cornwall. In these areas and where timber is harvested, trees will quickly regenerate from seed stock and sprout from stumps. White pine has benefited from this process.



Fire

Fire is an important natural event that can impact the ecology and species' composition of the forest.



Timber products as an energy source

The current landscape in Connecticut supports a modern sawmill and timber harvesting industry worth 500 million dollars per year to the State's economy. The oil crisis of the 1970s reawakened many people to the economic benefits of forest materials as a source of energy. With higher energy prices, we may once again see timber used as a primary heating source or used as a stock source in biofuels.



Threat of development on forests

The greatest threat facing today's forest is man-made, land-use change. By removing or burying soil under concrete and asphalt, the potential future productivity of the forest is taken away and forests are permanently fragmented.



The Forest Practices Act



Introduction

Connecticut forests are not pristine or static, and almost without exception, logging occurs in every town. Since Europeans arrived in CT, our forests have undergone multiple cycles of harvesting, forest regeneration and growth. Forests change both because of natural events, such as fire, and man's intervention. Currently about 60% of the state is covered in forests, which continue to change in age and composition.



Forest Practices Act

To assist with the Management of CT's forests, the CT legislature passed the Forest Practices Act

- Adopted in 1991 the Act:
 - Established the Forest Practices Advisory Board
 - Allowed the Department to adopt forest practice regulations
 - Required all forest practitioners that advertise, solicit, contract or engage in Commercial Forest Practices to be **Certified** by DEP



Forest practitioner certification

Only the Supervising Forest Products Harvester and the Forester can plan a forestry operation for presentation to a Wetlands Commission

○ Three Levels of Certification:

- **1) Forester Products Harvester**
 - Forestry worker only. Cannot purchase timber or plan an operation.
- **2) Supervising Forest Products Harvester**
 - May work in the woods, supervise an operation and develop an operational plan. Cannot develop a silvicultural plan.
- **3) Forester**
 - May work in the woods, supervise an operation, develop both an operational plan and a silvicultural plan.



Commercial forest practices

Use this [hyperlink](#) for more information on forestry practices from DEP.

- Essentially, a commercial forest practice is any harvest that is:
 - Greater than 25,000 board feet (equal to 50 cords or 150 tons).
 - Has **not** been approved for conversion to non-forest by both the municipal Planning and Zoning and Inland Wetlands Commissions .
- If a subdivision has been permitted by both the Planning and Zoning and the Inland Wetlands Commissions, the harvest of trees associated with such subdivision is **not** considered a commercial forest practice so the forest practitioner does not need to be certified.



Confirming certification

Inland Wetlands Agencies can request verification of certification when considering forestry related proposals

- Check the following information:
 - Photo ID
 - Directory of Certified Forest Practitioners on DEP's website
- Why is it important?
 - Helps identify different levels of expertise
 - **Only** Supervising Harvesters and Foresters are permitted to develop and supervise the execution of harvest plans and come before inland wetlands agencies



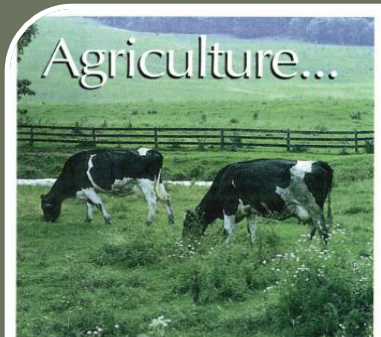
Achieving certification

*Forest Practitioners are educated
on Connecticut's Inland Wetlands
and Watercourses Act*

- ◉ Forest Practitioner Study Guide
- ◉ Written examination required
- ◉ Continuing Education required

Additional notes

The “Agriculture, Forestry and Wetlands Protection in Connecticut” brochure is available on the DEP website. See this [hyperlink](#).



...and Wetlands
Protection in
Connecticut

- The DEP-Forestry Division conducts about 20 unannounced on-site inspections per month.
- The DEP-Forestry Division provides assistance to towns concerning forest practitioner certification and forestry practices.
- The *Agriculture, Forestry and Wetlands Protection in CT* brochure provides guidelines when determining which activities may or may not be permitted “as of right.”
- Certification does **NOT** exempt forest practitioners from seeking a jurisdictional ruling or a permit from municipal inland wetlands commissions!



Forestry Equipment



Introduction

The following section discusses equipment used in forestry operations as they relate to wetlands and watercourses. Many of us are unfamiliar with timber harvesting and forestry activities. It is important to be aware of and respect forestry equipment for safety reasons. Never approach any forestry operation with the equipment running, even a chainsaw. Wear visible clothing, get the operator's attention, and wait until all equipment is off before approaching.



Cable Skidder

The Cable Skidder is the most commonly used machine to move trees from stump to a landing. The Landing is where logs are temporarily stored and then loaded onto trucks for transport to a sawmill.



Grapple Skidder

This is a Grapple Skidder with a “hitch” of logs. It is traveling over a portable bridge section installed over a drainage channel.



Forwarders

The left-hand photograph is a six-wheel Forwarder with tracks over the rear wheels. The right-hand photograph is an eight-wheel Forwarder. These machines carry logs to a landing rather than dragging them. The tracks are not always used.



Wheeled Harvester

The upper photograph is a Wheeled Harvester. The device cuts and directionally fells trees. The stems are processed into log lengths that are loaded onto the Forwarder seen in the background.



The lower photograph is a Tracked Harvester. These devices are always safer than chainsaws because of their directional control of felling.

The planning skills and positive attitude of the forestry practitioner is the key to a sustainable and profitable harvest.



All-season capabilities

Some large machines are designed to be used year round on a variety of soil conditions. This Forwarder stopped operating so the photo could be taken. It is resting on an organic wetland soil. Note that the tracks on the wheels are mud free and the machine is not sinking. Interestingly, the photographer was unable to walk where the machine had crossed the ground.

Ground Pressure

| <u>Category</u> | <u>Tire size</u> | <u>Ground Pressure</u> |
|----------------------------|---------------------------------|------------------------|
| Average person | | 3.7 psi |
| Small bulldozer | 24" pads | 7.5 psi |
| Pickup truck | | 15.0 psi |
| Draft horse | | 10.0 psi |
| | <u>With a full load of logs</u> | |
| Cable skidder | 23.1x26 | 8.5 psi |
| 16 ton 6 wheeled Forwarder | Rear bogies | 11.5 psi |
| | front tires | 13.7 psi |

Ground pressure

Forestry equipment is engineered and designed to have low ground pressures on soils even when fully loaded with logs.



Best Management Practices



Introduction

Best Management Practices (BMPs) are critical to reducing the impact of forestry operations on wetlands and watercourses. The use of BMPs are automatic with most forest practitioners and bad practices are the exception.

This Cradle Bridge and Corduroy are examples of BMPs.
For more information on BMPs see this [website](#).

compare to next slide



No BMPs used

This forestry operation was poorly planned. The weather conditions changed during the operation and the ground thawed. The operator rushed the job and did not use BMPs. It resulted in extensive ruts and interrupted subsurface flow. Sediment and water ran down the hillside into a wetland causing extensive sedimentation, which was a non-permitted regulated activity.

compare to previous slide



Well-planned BMP

This harvest was conducted on non-wetland soils positioned upslope from a wetland. As a result of good project planning, the operation was conducted with minimal soil disturbance despite poor conditions. While the hillside appears messy, this is actually a BMP, called a Corduroy. The tops of trees were placed on the soil for the equipment to drive over. This prevented soil disturbance and allowed for dispersal of seeds.

INITIAL BMP



AFTER OPERATION



Stream crossing BMPs

This is a properly conducted stream crossing in wetland soils using BMPs. As seen in the left-hand image, a Poled Ford (a crossing constructed with logs) was initially installed. After the operation was completed, the impacted area was seeded and mulched.

An Inland Wetlands Agency, when reviewing forestry proposals, should consider BMPs proposed by forest practitioners to mitigate impacts to wetlands and watercourses.



This harvest was a ½ day from completion when soil conditions deteriorated. The operator damaged this area in about an hour in an effort to complete the job, without regard to the local watercourse he was working in and around.

The forest practitioner in this harvest properly implemented the BMP.



Temporary bridges

Temporary bridges can come in different forms. The bridge in the upper image utilizes chains to hold the logs together. The ends of the logs need to be tapered for access onto and off of the bridge. It is inexpensive and simple to build. Note the clean snow.

The bridge in the lower image is a portable steel bridge which is very effective and durable. However, it is much more expensive.





Long-term benefits of a BMP

This picture shows a Header and Corduroy area, left in place to protect the stream bank, one year after the forestry operation was conducted. Note that grass has germinated in the intermittent watercourse.



How good planning helps wetlands

Wetlands in Connecticut are based on soil type so the area may not look wet. This site was used as a Landing, and though this is a wetland soil, no disturbance occurred. The operation was well-planned by a creative forester.



Resilience of Nature

Nature can be forgiving when a disturbance occurs. This is an image of a skid road down a 40% slope. Two years after harvest the erosion is minimal and the vernal pool still exists.

Both are agricultural practices under Connecticut's IWWA

CORN HARVEST



A corn harvest seems normal to people. The farmer placed a silt fence to protect the pond, but the fence has failed. The USDA considers a soil loss of up to 4 tons/ac/year normal for cropland.

CLEAR-CUT REMOVAL



The forest floor is not disturbed because slash (tree tops and branches) have been left on the surface as a BMP. Despite being on a 35% slope, no erosion occurred. Soil losses from timber harvests rarely exceeds 100 lbs/ac/year.



Conclusion to Presentation

Forest practitioners require **certification**, and proposed forestry activities in and around wetlands and watercourses should come before Municipal Inland Wetlands Agencies for a **permit determination**.

Please consult with the CT Division of Forestry for more information on BMPs or forestry activities in and around wetlands and watercourses.

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