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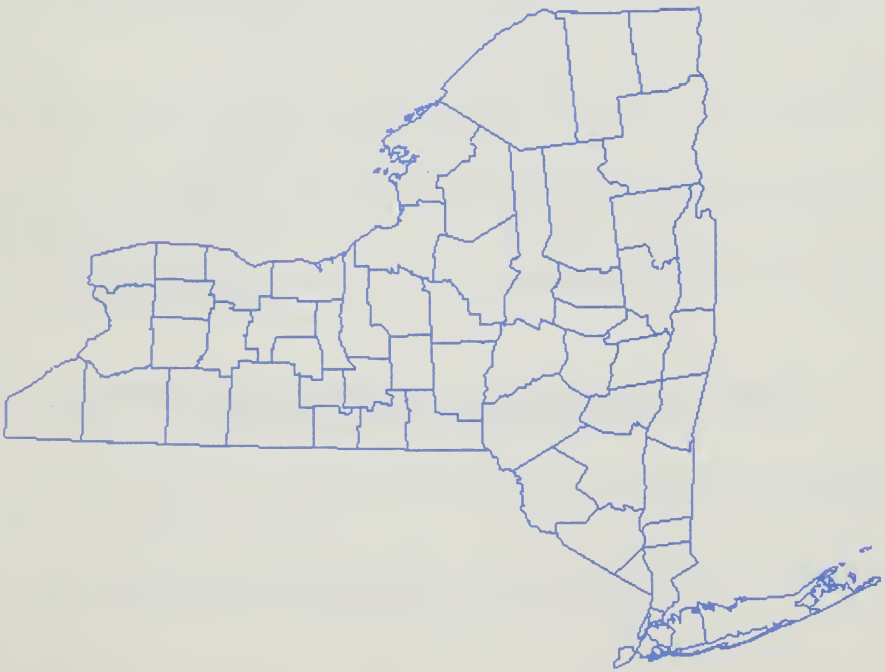
CURRENT SERIAL RE

Forest Health Monitoring in New York

1996-1999



NEW YORK

The National Forest Health Monitoring (FHM) program monitors the long-term status, changes and trends in the health of forest ecosystems and is conducted in cooperation with individual states.

In New York, 193 FHM plots were established in 1999 (Fig. 1). Each point in Figure 1 represents the status and approximate location of one FHM plot. Each plot is a set of four fixed-area circular plots. Most tree measurements are made on four 1/24-acre subplots. Seedling and sapling measurements are made on four 1/300-acre microplots, located within the subplots.

This report summarizes the conditions on the plots at the time of establishment.

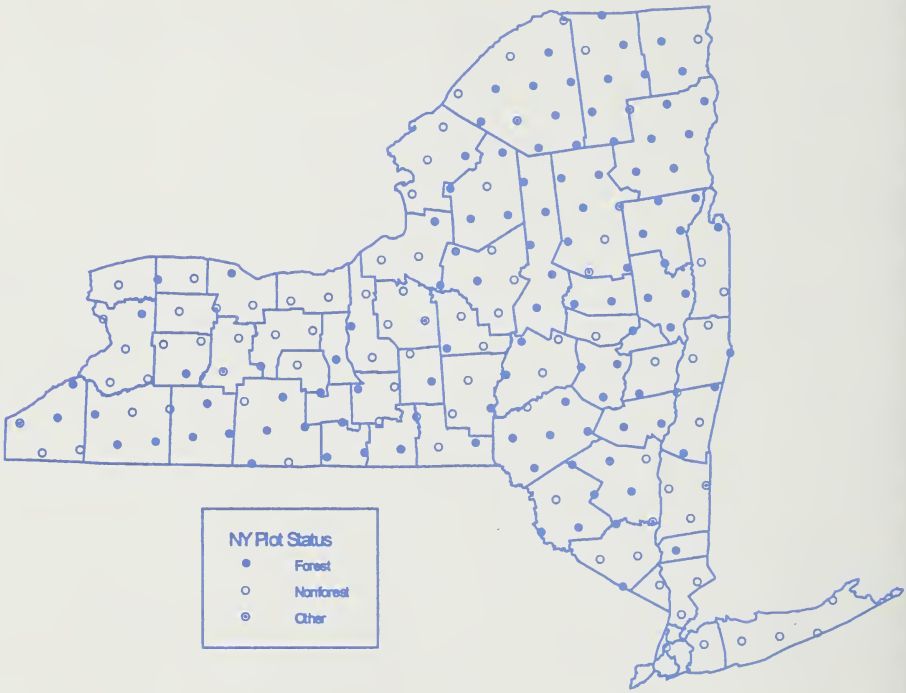


Figure 1. – Current status and approximate locations of Forest Health Monitoring (FHM) plots in New York.

Plot Characteristics

- 107 of the 193 plots were at least partially forested.
- 52 percent of the 193-plot area was forested and accessible.
- 55 percent of the forested areas were in maple-beech-birch forest types; the second most common group was the white-red-jack pine forest type, accounting for about 13 percent of the forested areas. Spruce-fir forest types accounted for 10 percent of the forested areas and oak-hickory types accounted for 9 percent.
- 50 percent of the forested areas were in sawtimber-size stands; 43 percent of the forested areas were in poletimber-size stands.
- 56 percent of the forested areas were in stands that were more than 60 years old; 33 percent were 41 to 60 years old.

Plot Structure (Table 1)

Seedlings

- Sugar maple seedlings (12 inches tall, less than 1 inch diameter) were most abundant, accounting for about 15 percent of the 3,621 seedlings counted.
- The five most abundant species groups collectively accounted for 57 percent of the seedlings. They were sugar maple, white and green ash, American beech, red maple, and other maple.
- Balsam fir, yellow and other birch, black cherry, and slippery elm collectively accounted for 21 percent of the seedlings.

Saplings

- American beech saplings (1 to 4.9 inches d.b.h.) were the most abundant, accounting for 13 percent of the 591 saplings counted.
- The five most abundant species groups collectively accounted for 53 percent of the saplings. They were American beech, red maple, sugar maple, white and green ash, and other maple.
- Red spruce, balsam fir, eastern white pine, and willow collectively accounted for 17 percent of the saplings.

Trees

- Red maple trees (5 inches d.b.h. or greater) were the most abundant, accounting for 21 percent of the 2,933 trees counted.
- The five most common species groups collectively accounted for 54 percent of the trees. They were red maple, sugar maple, eastern white pine, American beech, and eastern hemlock.
- White and green ash, red spruce, select red oak, yellow birch, and quaking aspen collectively accounted for 21 percent of the trees.

Table 1. -- Number of trees by size class, and species groups, New York, 1999. Rankings of species quantity appear as superscripts beside numbers.

Species	Size Class		
	Seedlings	Saplings	Trees
Eastern hemlock	47	10	172 [5]
Eastern white pine	43	26	286 [3]
White/green ash	482 [2]	58 [4]	161
American beech	407 [3]	79 [1]	202 [4]
Sugar maple	541 [1]	71 [3]	331 [2]
Red maple	335 [4]	73 [2]	607 [1]
Other maple	286 [5]	34 [5]	23
All softwoods	387	110	818
All hardwoods	3,234	481	2,115
All trees	3,621	591	2,933

Table 2. -- Mean plot values and percentage of trees with ratings of specified values, by crown variable, New York, 1999. (plot means based on 106 forested plots; percentage of trees based on 2,933 live trees 5 in. or more in d.b.h.)

	Value
Crown Dieback	
Plot Mean	3.2%
Trees with ≤5% dieback	95
Foliage Transparency	
Plot Mean	16.1%
Trees with ≤30% transparency	99
Crown Density	
Plot Mean	48.0%
Trees with >30% density	93

Tree Condition

Crown Dieback (Table 2; Fig. 2)

Crown dieback refers to recent mortality of branches with fine twigs and is measured as a percentage of the tree crown. Low dieback ratings (5 percent or less) are considered to be an indicator of good health. High dieback ratings indicate poor health.

- 95 percent of the trees had low dieback ratings; average dieback was 3 percent.
- Less than 1 percent of the trees had high dieback ratings (more than 20 percent affected crown).
- 3 percent of American beech had high dieback, as did a little more than 1 percent of red maple.

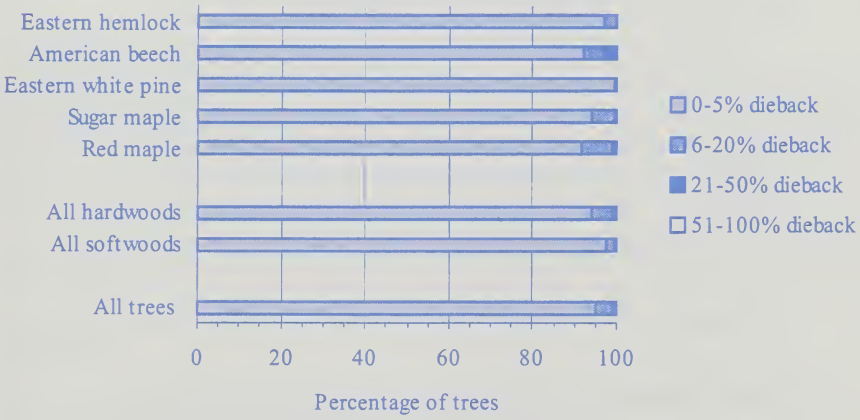


Figure 2. – Distribution of crown dieback ratings for trees in New York, 1999.

Foliage Transparency (Table 2; Fig. 3)

Foliage transparency is the amount of skylight visible through the live, normally foliated portion of the crown. Foliage transparency estimates the crown condition in relation to a typical tree for the site where it is found. Low transparency ratings (little visible skylight) indicate a full and generally healthy crown; high transparency ratings indicate a sparse crown. Transparency ratings of 30 percent or less are considered normal for most trees.

- Virtually all trees had normal transparency ratings; average transparency was 16 percent.
- All common species and species groups showed similar transparency distributions with normal transparency ratings on nearly all (more than 99 percent) trees.

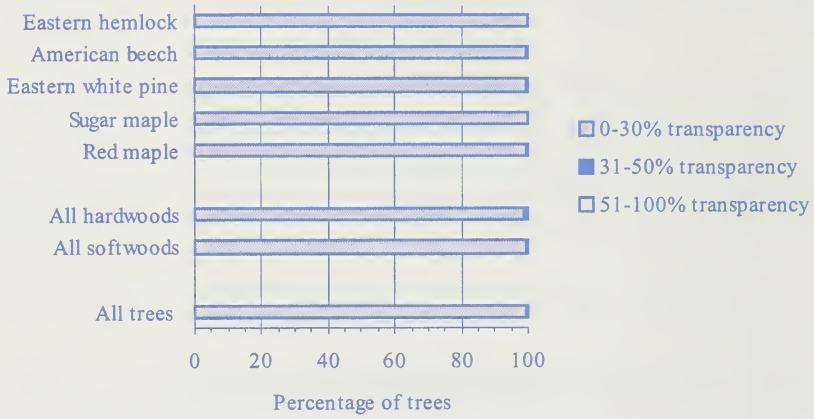


Figure 3. – Distribution of foliage transparency ratings for trees in New York, 1999.

Crown Density (Table 2; Fig. 4)

Crown density is the percentage of crown area where sunlight is blocked by crown branches, foliage, and reproductive structures. Crown density estimates crown condition relative to a typical tree for the site. Density also serves as an indicator of future growth. High density ratings (greater than 30 percent) indicate a full, healthy crown.

- 93 percent of trees had high density ratings; average crown density was 48 percent.
- 7 percent of all trees had low crown density (30 percent or less).
- 14 percent of American beech had low crown density.

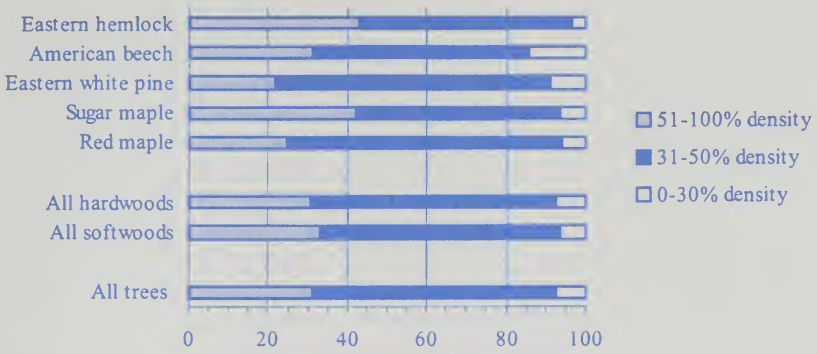


Figure 4. – Distribution of crown density ratings for trees in New York, 1999.

Tree Damage

Signs and symptoms of damage were recorded if the damage could kill the tree or affect its long-term survival. The 11 categories of damage used in this report were: cankers and galls, decay, open wounds, resinosis and gummosis, cracks and seams, vines, dead or broken tops, broken branches, other bole and root damage, other crown damage, and other damage (not otherwise defined).

- 76 percent of trees had no significant damage, 19 percent had one damage, and 5 percent of the trees had two or more damages.
- 90 percent of softwoods were undamaged compared to 70 percent of hardwoods.
- 49 percent of damages were decay; 16 percent were dead or broken tops; and 14 percent were dead or broken branches.
- 56 percent of American beech had no significant damages. 48 percent of the damages were decay; 22 percent were dead and broken branches; and 14 percent were dead and broken tops.
- 67 percent of red maple had no significant damages. 64 percent of the damages were decay; and 10 percent were dead and broken branches.

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Summary

New York has mature forests dominated by hardwood species, but with a significant and varied softwood resource. Most of the trees are healthy, with full crowns (low transparency, high density), little dieback and little damage. American beech tends to be in poorer condition, with thin crowns, higher dieback, and more damage, especially broken and dead branches.

For more information regarding the FHM program, contact: Chuck Barnett, Northeastern Research Station, USDA Forest Service,11 Campus Blvd, Suite 200, Newtown Square, PA 19073, 610-557-4031, cjbarnett@fs.fed.us
or visit the National FHM website: www.na.fs.fed.us/spfo/fhm

Acknowledgments

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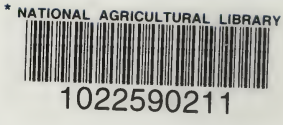
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