



United States
Department of
Agriculture

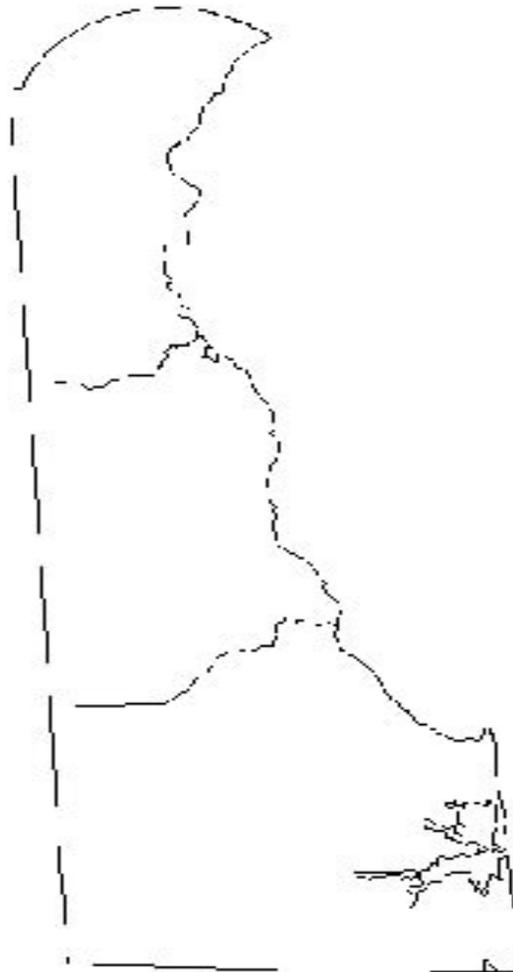
Forest Service

**Northeastern
Research Station**

NE-INF-162-03



Forest Health Monitoring in Delaware 1996-1999



DELAWARE

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 Delaware, eight FHM plots were established in 1991 (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.

All plots were visited at least once between 1996 and 1999. This report summarizes the most recent conditions.

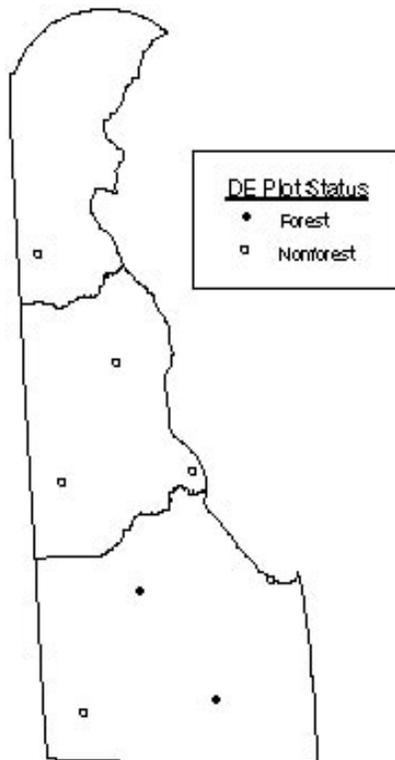


Figure 1. – Current status approximate locations of Forest Health Monitoring (FHM) plots in Delaware.

Plot Characteristics

- Two of the eight plots were at least partially forested.
- 14 percent of the eight-plot area was forested.
- One plot was 88 percent forested in a sawtimber-size stand in an oak-pine forest type.
- The other plot was one-quarter forested with seedlings and saplings in the loblolly-shortleaf pine forest type group.

Plot Structure

Seedlings

- Eight magnolia and seven sweetgum seedlings (12 inches tall, less than 1 inch diameter) accounted for 15 of the 21 seedlings on the plots.

Saplings

- Southern yellow pine and red maple saplings (1 to 4.9 inches diameter at breast height, d.b.h.) were the most abundant, each accounting for four of the 18 saplings counted.
- The five most abundant species groups collectively accounted for 15 of the saplings. They were southern yellow pine, red maple, white oak, black cherry and tupelo/blackgum.

Trees

- Red maple trees (5 inches d.b.h. or greater) were the most abundant, accounting for 11 of the 22 trees counted.
- Three species groups accounted for eight of the 22 trees. They were select white oak, southern yellow pine, and other (non-select) red oak.

Tree Condition

Crown Dieback

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.

- 82 percent of the trees had low dieback ratings; average plot dieback was 5 percent.

Foliage Transparency

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.

- 91 percent of all trees had normal transparency ratings; average plot transparency was 19 percent.

Crown Density

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.

- More than 95 percent of trees had high density ratings; average crown density was 52 percent.

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).

- 77 percent of trees had no significant damage and the remaining 23 percent had one damage.
- Four of the five damages recorded were decay.

Summary

Most of the trees sampled are healthy, with full crowns (low transparency and high density), little dieback and little damage. However, it should be noted that this conclusion is based on sampling limited numbers of trees on two partially forested plots. The number of FHM plots in Delaware has been increased and future reports will present a more complete picture of the state's forests.