

SPRUCE BUDWORM RETURNS TO NORTHEAST

WHAT DOES IT MEAN FOR THE NORTHERN FOREST? PART 1 OF A TWO-PART SERIES

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Thinking of the Northern Forest brings to mind spruce/fir (S/F) forests, cool climates, and high elevations; not to mention fishing and canoe trips;

however, spruce and fir are also very important to the northern timber economy and rural development. Considering new concerns over the spruce budworm, an update on the status of this critically important forest resource is timely.

The distribution map for the spruce-fir forest-type group based on Forest Inventory and Analysis (FIA) plots, emphasizes its wide distribution across the northern tier of the region (Figure 1). Spruce and fir logs and pulpwood drove northern forest industries for generations, after the white pine business largely passed to Pennsylvania and then the Lake States following the Civil War. These species remain

Figure 1. Location of the spruce-fir forest-type group (including tamarack and northern white-cedar).



Table 1. Area of core S/F type by State, Northern Forest States, 2012.

State	Forest Land (Acres)	Timberland (Acres)	(Percent)
Maine	4,862,359	4,643,316	95
New Hampshire	459,455	365,598	80
New York	604,447	331,152	55
Vermont	274,519	258,848	94
Total	6,200,810	5,598,914	90

important to the region's industry, but impending outbreaks of spruce budworm are now a concern because it has been so long since the last major epidemic of the 1970-1980 period. Maine Forest Service Entomologist, Dave Struble, expects an outbreak "in the next three to five years, but not the next big one." He predicts that a 1970's type outbreak could occur over the next 12-17 years. A fresh look at the resource will highlight how much spruce-fir there is, where it is located, and what there is to lose.

This article summarizes current FIA results for Maine, New Hampshire, New York, and Vermont (2012) in a two-part series. Part 1 (this month) focuses on the acreage of the "core" S/F forest type excluding the tamarack and northern white-cedar forest types that FIA typically includes in the major grouping. Future trends and the outlook for timber supply are discussed. Part 2 (May issue) will examine the inventory volume, growth, and harvest for spruce and fir across all forest types.

Core Spruce Fir Type

The four Northern Forest states contain 6.2-million acres of core S/F forestland (Table 1). A very minor amount of higher elevation land in the Mt. Greylock area of western Massachusetts is classified as S/F type, but is not included here. Maine has more than three-quarters of the S/F forest land, followed by New York, New Hampshire, and Vermont.

Ninety percent of the core S/F forest land is classified as timberland, considered the "working" S/F forest. Timberland is a subset of forest land capable of growing at least 20 cubic feet of wood per acre per year at the culmination of mean annual increment (MAI) for fully stocked stands, and is not in public reserve where harvests are excluded. Although the S/F timberland occurs in northerly areas, higher elevations, and on wetter sites, it is not necessarily a low productivity forest. According to FIA classification, about one in five acres of S/F timberland is capable of growing a cord per-acre per-year. Half of the type's area is capable of growing between 0.6 and 1.0 cord.



Indian Lake, in the Adirondacks, typifies the spruce-fir landscape in that region. Photo by Richard Widmann, USFS.

of the 1970s and 1980s that most heavily affected the resource in Maine. This surplus of S/F acres represents a prospective expansion in future harvest. One issue for forest managers is the need for a more balanced age-class distribution.

Conclusions

This assessment cannot fully address important regional

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Figure 2. Area of privately owned core S/F forest land (excludes tamarack and northern white-cedar) by ownership and age class, Northern Forest states, 2012.

Table 2. Area of core S/F type by ownership, Northern Forest States, 2012.

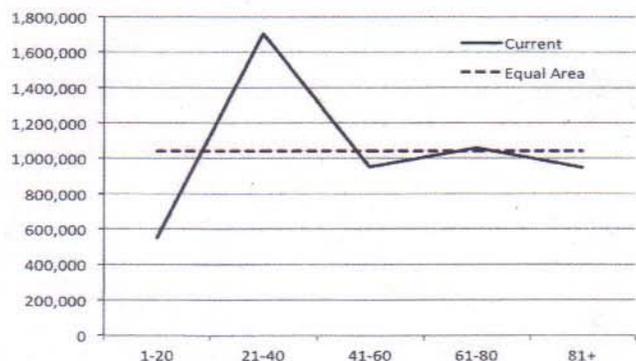
State	Forest Land (Acres)	(Pct.)	Timberland (Acres)	(Pct.)
National Forest	238,036	4	142,910	2
Other Federal	55,297	1	37,375	1
State and Local	687,234	11	326,537	6
Private	5,220,243	84	5,092,092	91
Total	6,200,810		5,598,914	

Ownership

About 90 percent of S/F type timberland is privately owned (Table 2). State agencies own six percent and all federal agencies combined have three percent. As a side note, about half of the S/F forest land in New York is in the Adirondack Forest Preserve. Public forests typically have higher volumes of growing-stock inventory because of a more recent history of limited cutting. (FIA uses the term "growing stock" to identify trees capable of growing a useable log and excludes rough and rotten, or cull trees).

Sustainable Age-Class Distribution

Public S/F forest is typically older, with about two-thirds 60 years and older. Private S/F forest is skewed toward younger age classes with nearly 70 percent 60 years or younger. One way foresters assess sustainability of is by comparing the existing distribution of forest land by age class to a theoretical equal-area harvested over a given-year rotation (100 years shown as an example in Figure 2). The distribution of private S/F forest is characterized by a spike in the 21-40 year age class. This reflects past cutting histories and the spruce budworm outbreak



important trends are apparent. The S/F forest type remains important to the region's industry and will be increasingly so in the future because availability from nearby Canada has declined, likely permanently, due to land-use decisions on Canadian-government owned lands. Loggers and mills are adapted to the smaller sizes of trees in most areas of the region. This means the industry is well poised to capture opportunities for harvesting small timber. It seems that the budworm will have something to say about this.

In northern Maine, experts are predicting a supply rebound as stands regenerated during the post budworm days are growing into economic maturity. Elsewhere, market opportunities are improving for the spruce-fir forests, which should have potential to support higher harvests in the future.

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For more information, comprehensive reports are available for Northern Forest states for previous years. Current results are available annually on the Northern Research Station, Forest Inventory and Analysis website: www.nrs.fs.fed.us/fia.