

## Trend in Forest Condition

### North American Maple Project (NAMP)

#### Sugar Maple Health

Sugar maple plots were surveyed for the 18<sup>th</sup> year in 2005 and although 92% of trees were healthy, tree health problems were detected at some locations (Figure 1). Average foliage transparency, a measure of current year stress, was the highest on record, 23% (Figure 2). Defoliation by forest tent caterpillar caused significant defoliation on a third of the 38 plots (16 plots) and resulted in higher foliage transparency ratings. Most trees were able to re-foliate later in the summer. Average dieback remained steady, indicating that no long-term tree health effects are noticeable on NAMP plots, although other defoliated sugar maple stands have seen tree decline. Lecanium scale surveys were conducted on NAMP plots to learn about the distribution and abundance of scales around the state, and to compare to current and future tree health (see Lecanium section).

Tree species diversity may be important to the resiliency of forests under the current forest tent caterpillar outbreak. NAMP plots were originally selected based on a high sugar maple component, so may not represent all sugarbushes or maple-dominated forests. Currently, the majority of NAMP plots have over 75% sugar maple (Figure 3). The NAMP plots with the most extensive defoliation by FTC were those where most trees were sugar maple (Figure 4). There have been improvements in diversity over the past 10 years, with 37% of NAMP plots increasing in diversity (Figure 5).

NAMP plots were surveyed for exotic plant species using the protocols developed for the Vermont Hardwood Health Survey (HHS) in 2001. An updated list of species of concern was developed (Table 1). Exotic plants were found on 26% of plots surveyed. During the 2001 survey on HHS plots, only 18% of sites sported exotics. Buckthorn, honeysuckle, barberry and multiflora rose were the 4 species found growing on plots, in order of abundance. Most species were not abundant on plots (trace), but buckthorn and honeysuckle were abundant on some plots (light or moderate) (Figure 6).

Changes in tapping methods are reflected on NAMP plots, with 77% of landowners now using health spouts (7/64") (Figure 7). There was also a 10% decrease in number of sites that are tapped for syrup production. When established, 50% of NAMP sites were active sugarbushes, whereas in 2005, only 40% of sites were active sugarbushes.

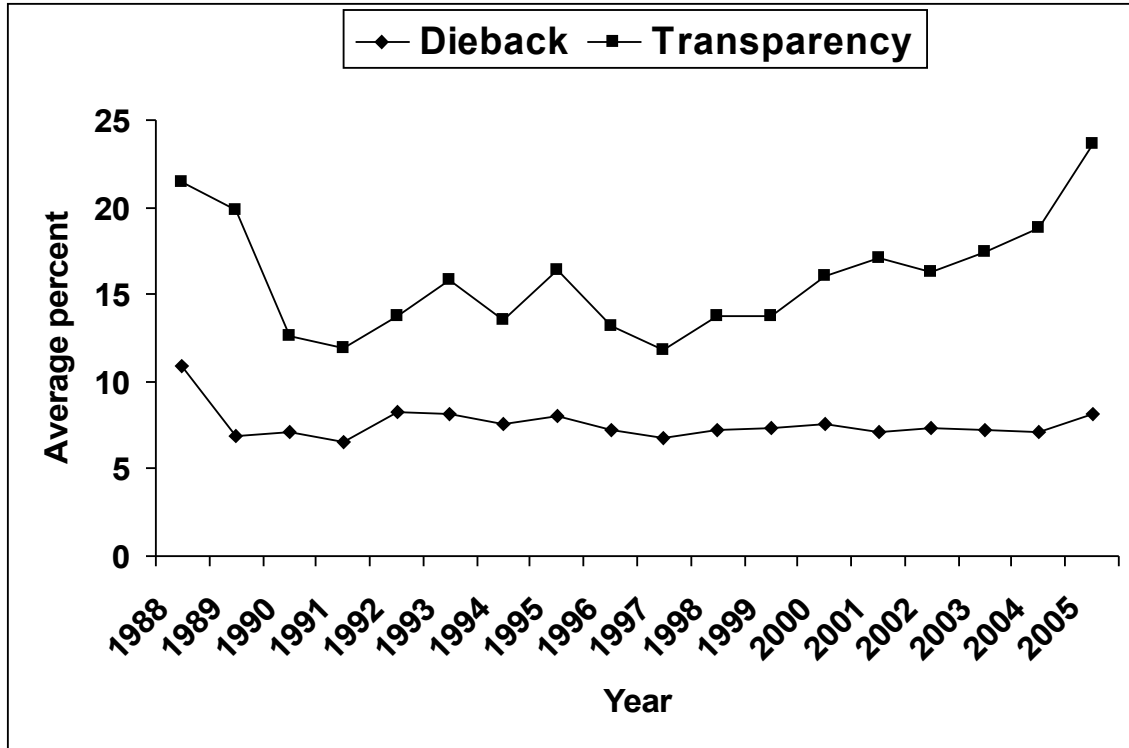


Figure 1. Trend in overstory sugar maple condition from 1988 to 2005.

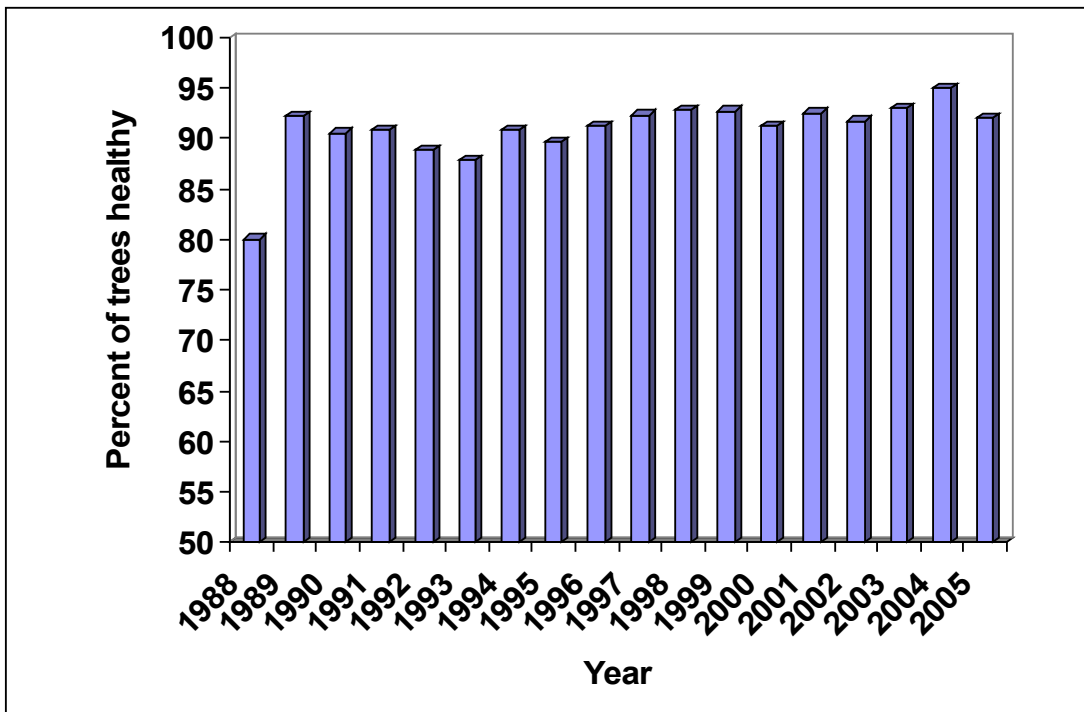


Figure 2. Trend in healthy overstory sugar maple trees on NAMF plots. Health based on trees with less than 15% dieback.

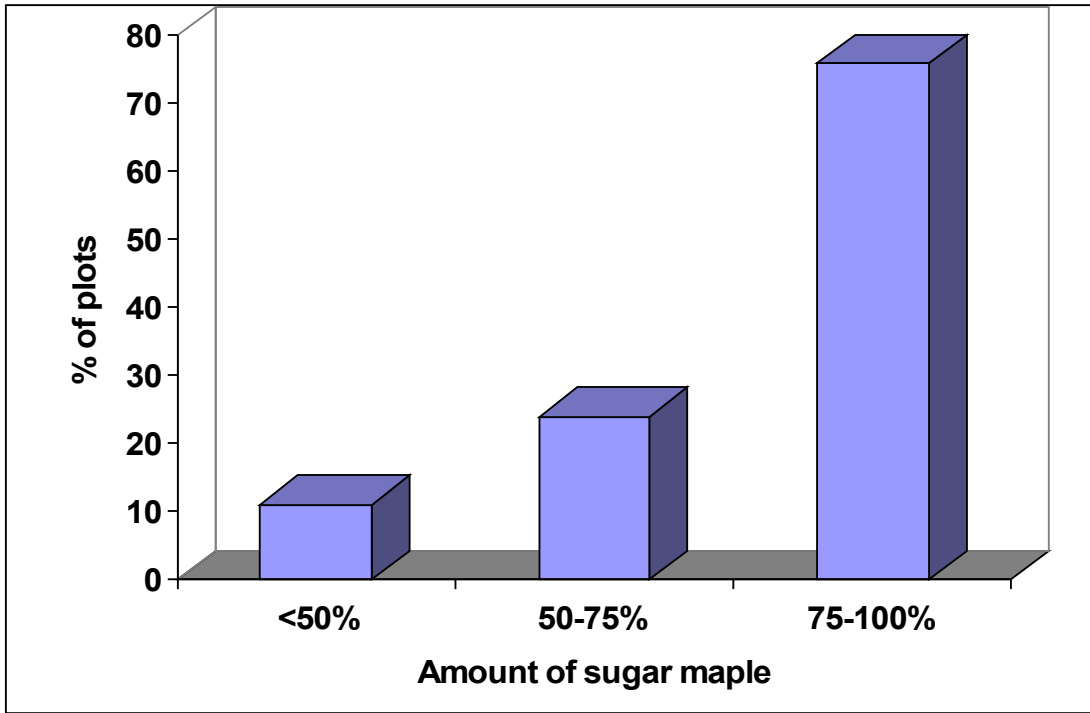


Figure 3. Abundance of sugar maple on NAMP plots in 2005.

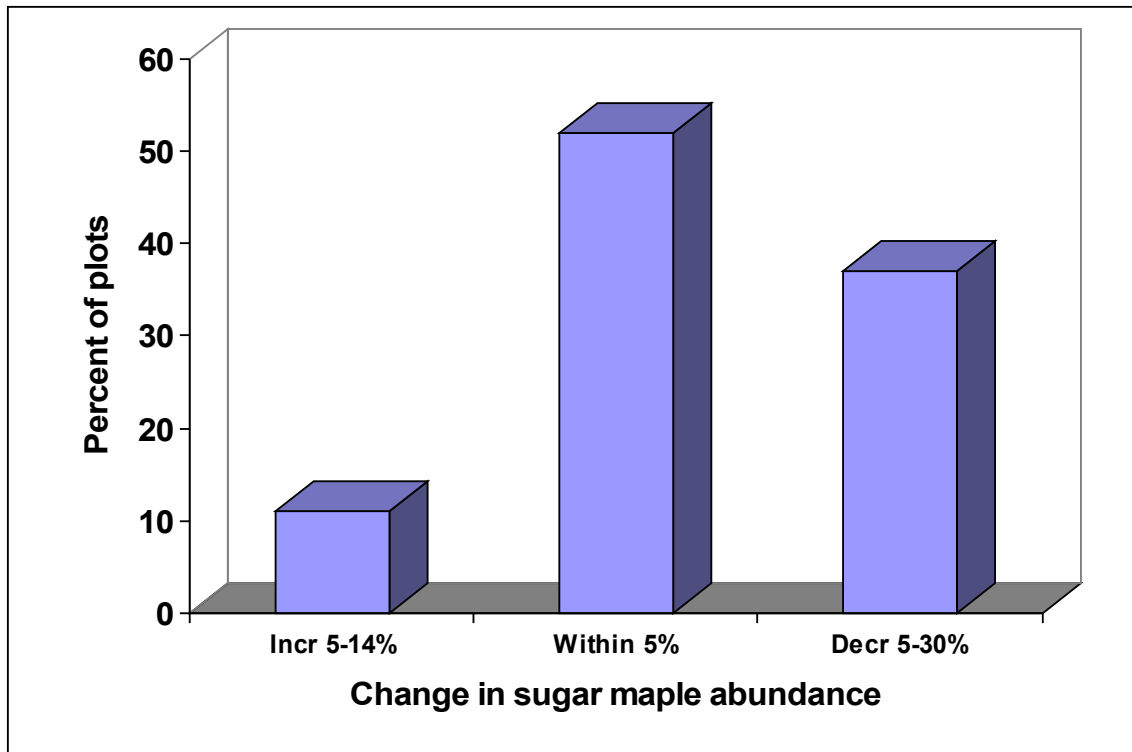
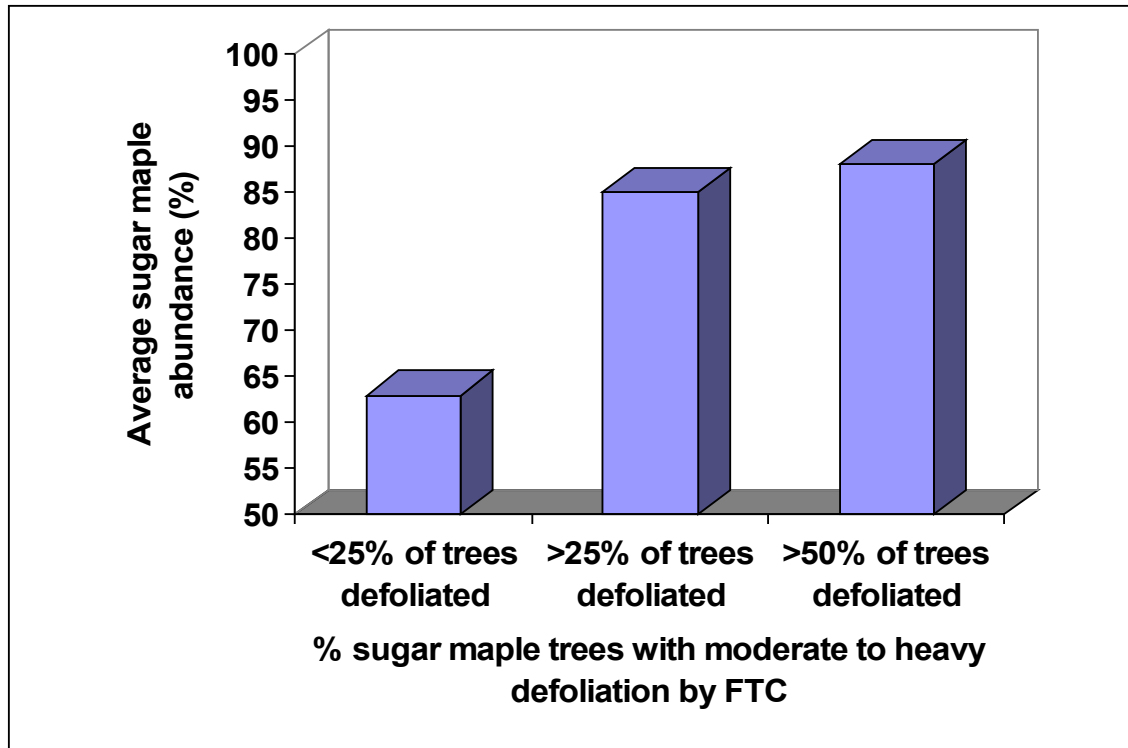


Figure 4. Abundance of sugar maple on NAMP plots defoliated by forest tent caterpillar in 2005.



**Figure 5.** Change in sugar maple abundance on NAMP plots over a 10 year period: 1995-2005.

**Table 1.** Exotic plant species included in the 2005 surveys on NAMP plots.

| <b>Common Name</b>                                     | <b>Latin Name</b>  |
|--|--|
| Barberry, Japanese and common                          | <i>Berberis thunbergii</i> , <i>B. vulgaris</i>  |
| Buckthorn: common or glossy                            | <i>Rhamnus cathartica</i> , <i>R. frangula</i>   |
| Bittersweet, oriental                                  | <i>Celastrus orbiculatus</i>   |
| Honeysuckle: Bell, Japanese, Amur, Morrow or Tartarian | <i>Lonicera X bella</i> , <i>L. japonica</i> , <i>L. maackii</i> , <i>L. morrowii</i> , <i>L. tatarica</i> |
| Multiflora Rose  | <i>Rosa rugosa</i>   |
| Norway Maple   | <i>Acer platanoides</i>  |
| Autumn Olive   | <i>Elaeagnus umbellata</i>   |
| Japanese knotweed                                      | <i>Fallopia japonica</i> ( <i>Polygonum cuspidatum</i> )   |
| Garlic Mustard   | <i>Alliaria petiolata</i> ( <i>A. officinalis</i> )  |
| Privet   | <i>Ligustrum vulgare</i>   |
| Tree of Heaven   | <i>Ailanthus altissima</i>   |
| Wild Chervil (cow parsnip)                             | <i>Anthriscus sylvestris</i>   |
| Burning Bush or winged Euonymus                        | <i>Euonymus alatus</i>   |
| Goutweed   | <i>Aegopodium podagraria</i>   |
| Amur Maple   | <i>Acer ginnala</i>  |
| Russian Olive  | <i>Elaeagnus angustifolia</i>  |
| Other (please specify)                                 |  |

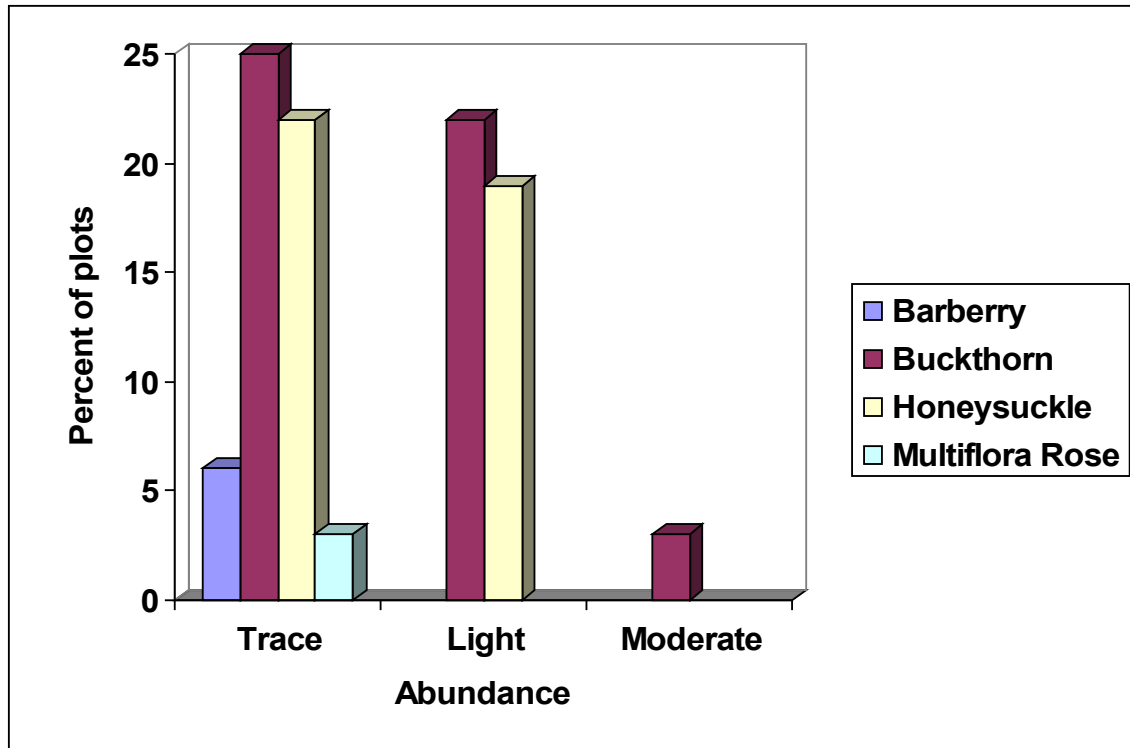


Figure 6. Abundance of exotic plant species on NAMP plots in 2005.

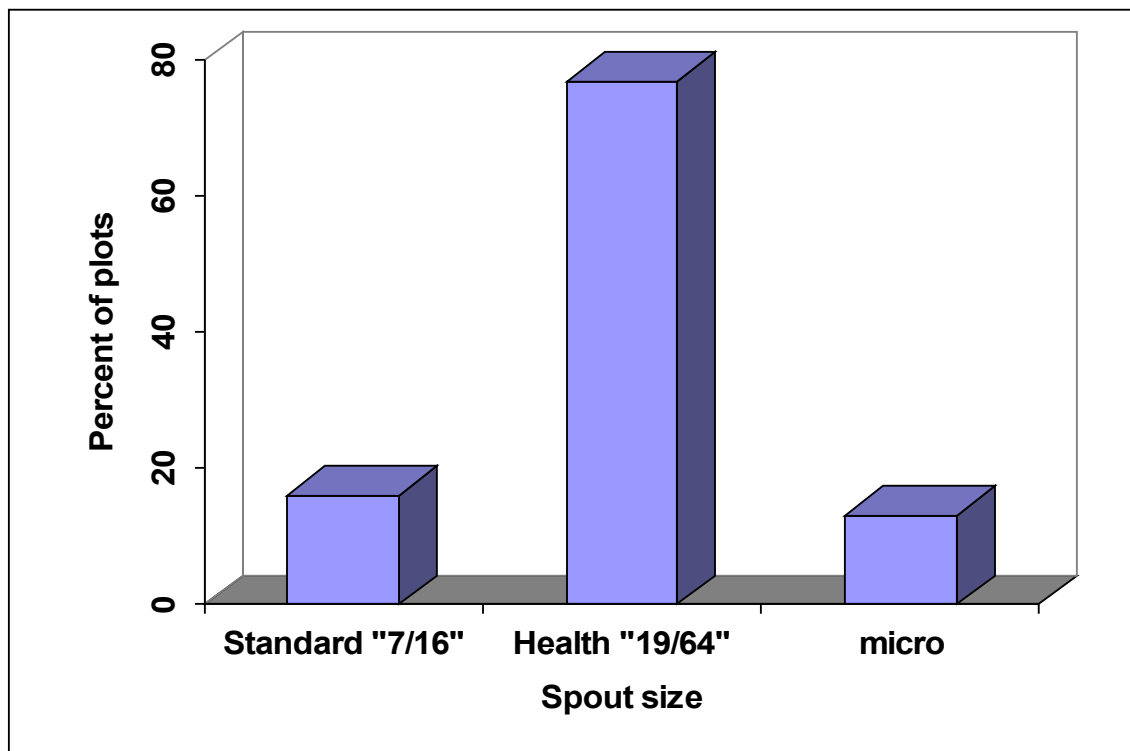


Figure 7. Spout sizes used on NAMP plots in 2005.