

TRENDS IN FOREST CONDITION

Sugar Maple Health Statewide

Trends in sugar maple health from survey sites across the state (North American Maple Project plots) indicate stable conditions despite assaults from defoliating insects. Over 90% of sugar maple trees on survey plots remained healthy (low dieback) in 2004 (Figure 1), and mortality was low (0.8%). While dieback remained stable, there was a continued trend in thinner foliage (higher foliage transparency) (Figure 2). Defoliation from forest tent caterpillar, Bruce spanworm and maple leaf cutter caused significant defoliation at nearly half of these sites, and 17% of trees statewide experienced moderate to heavy defoliation (Figure 3). Some refoliation was observed. Improved crown vigor indicated a slight recovery from previous drought years.

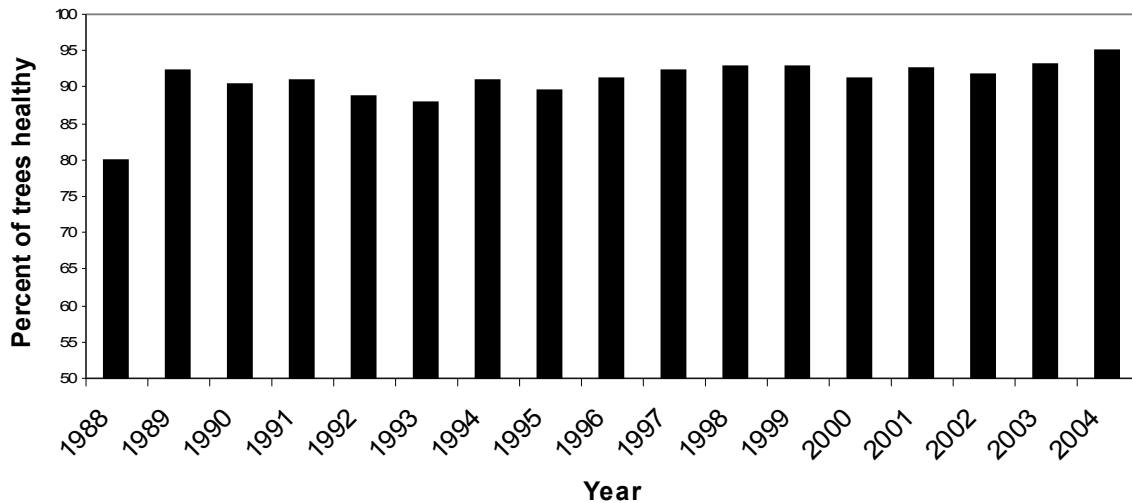


Figure 1. Percent of overstory sugar maple trees healthy (less than 16% dieback) on 38 North American Maple Project plots in Vermont, 1988-2004.

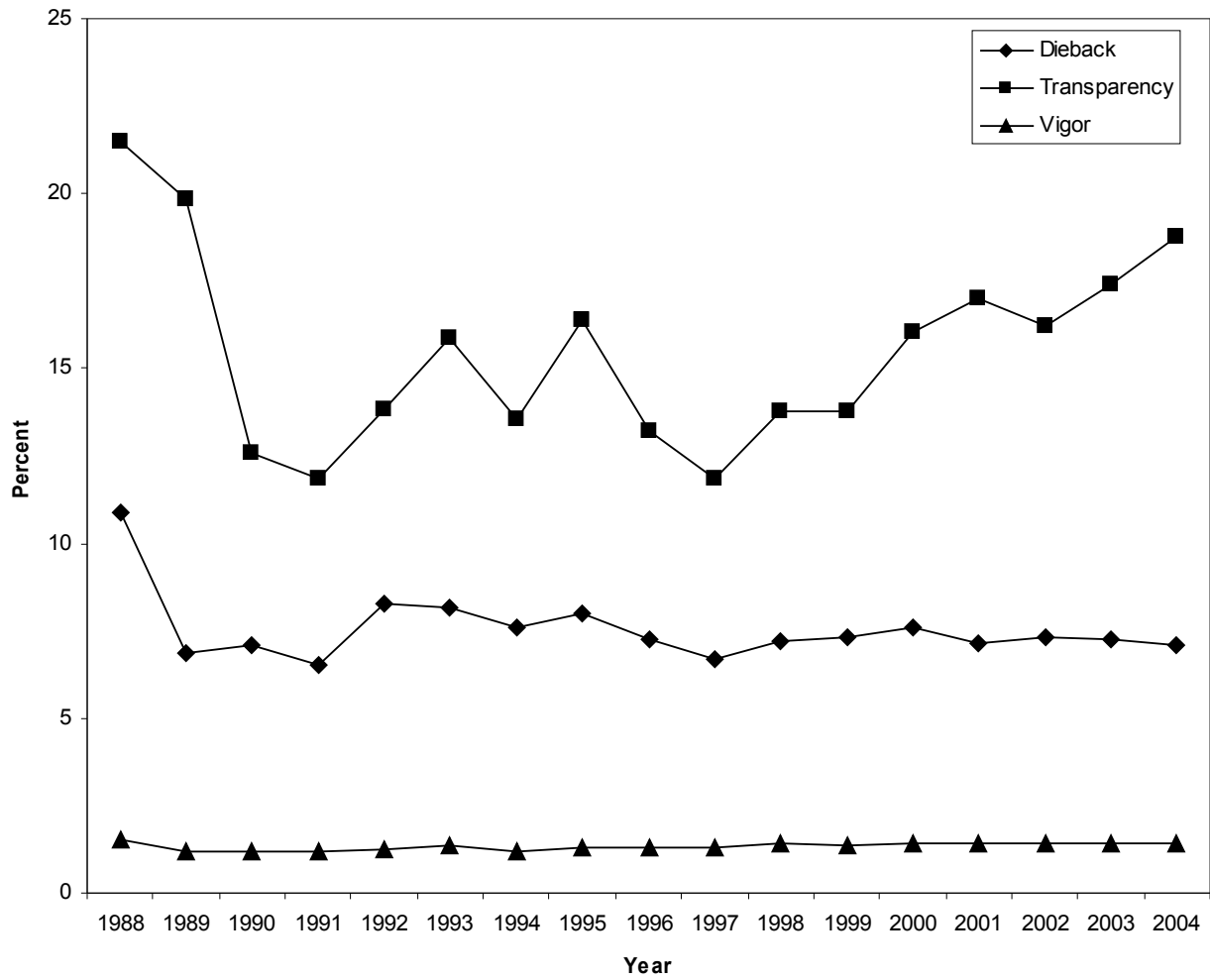


Figure 2. Trend in overstory sugar maple condition as measured by average dieback, foliage transparency and vigor on 38 North American Maple Project plots in Vermont, 1988-2004.

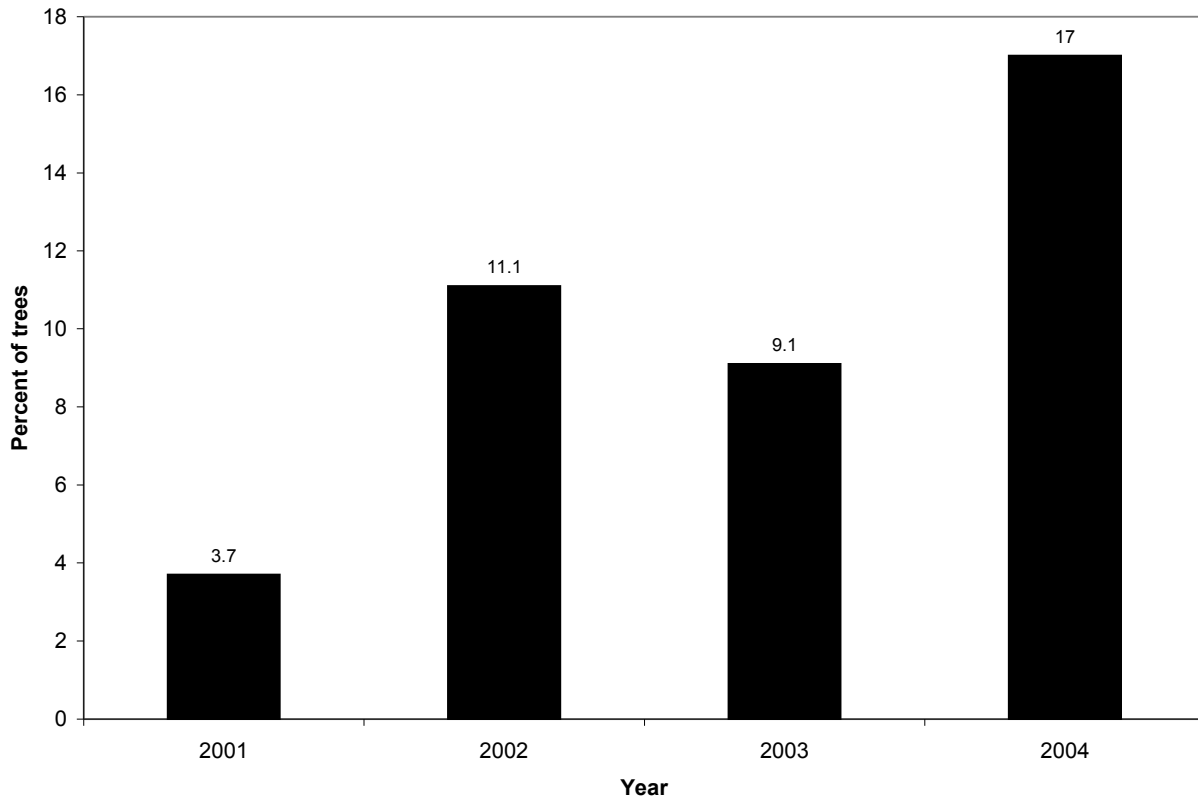


Figure 3. Trend in sugar maple defoliation (percent of trees with moderate to heavy defoliation) on 38 North American Maple Project plots in Vermont, 2001-2004.

Other Hardwood Species Health Statewide

Trends in tree health of 4 additional tree species that are common on North American Maple Project plots include: red maple (Figure 4), yellow birch (Figure 5), white ash (Figure 6), and American beech (Figure 7). Overstory red maple tree health remained stable. Yellow birch foliage transparency increased again in 2004 to a high of over 20%, following a trend that began in 1997 and 1998. White ash showed a significant jump in foliage transparency this year, a result of forest tent caterpillar defoliation in southern sites. Beech health remained poor, with average dieback nearly 15% (compared to 5-7% in other species). However, dieback and vigor ratings improved from past years and may indicate the start to tree improvement. In comparing unhealthy trees of different species for 2004, a significant number of ash trees had thin foliage (45% of overstory trees) and all indicators showed unhealthy beech trees (30-42% of overstory trees) (Figure 8). There was no new mortality of overstory trees for any of these species.

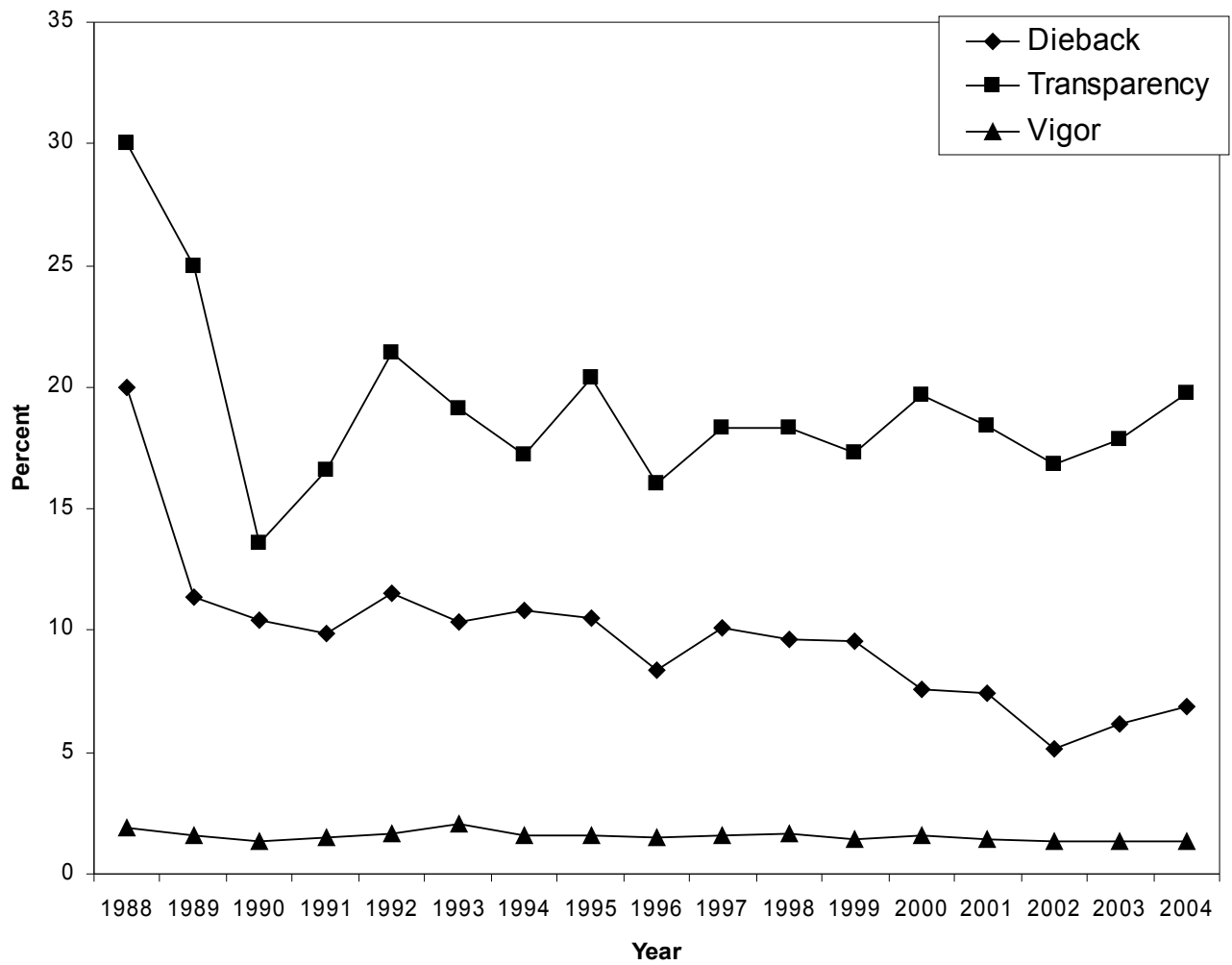


Figure 4. Trend in overstory red maple condition as measured by average dieback, foliage transparency and vigor, on 38 North American Maple Project plots in Vermont, 1989-2004.

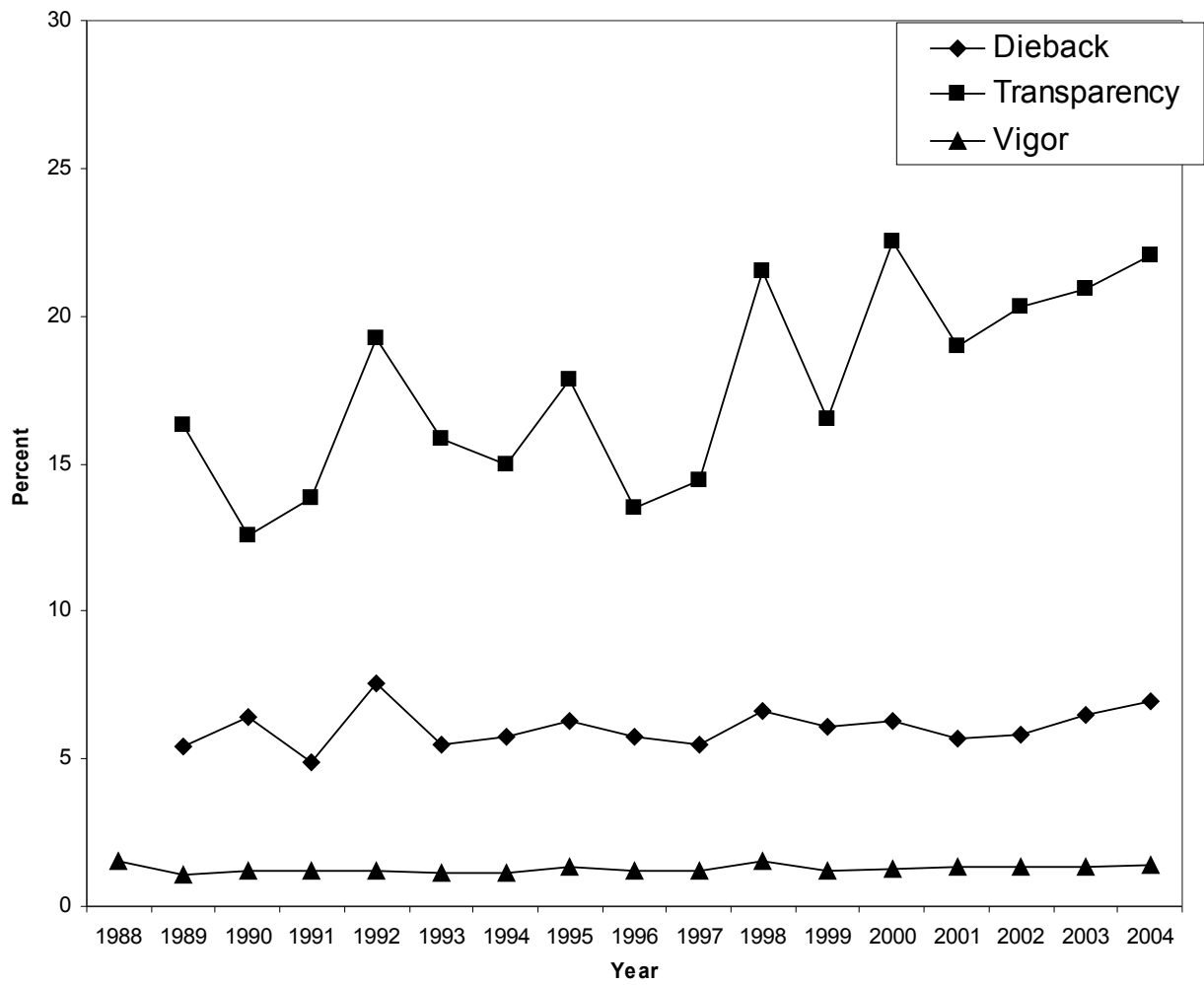


Figure 5. Trend in overstory yellow birch condition as measured by average dieback, foliage transparency and vigor, on 38 North American Maple Project plots in Vermont, 1989-2004.

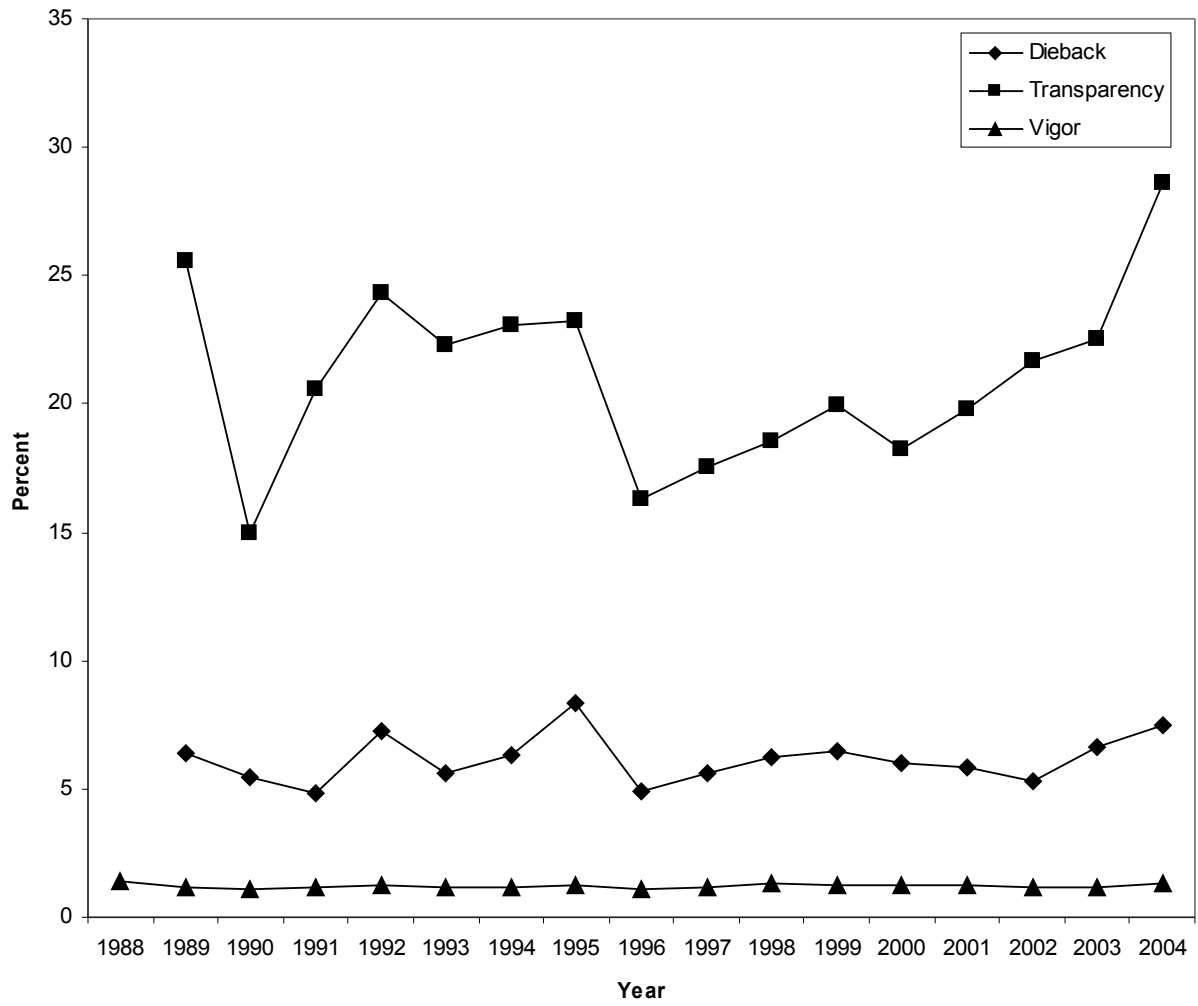


Figure 6. Trend in overstory white ash condition as measured by average dieback, foliage transparency and vigor, on 38 North American Maple Project plots in Vermont, 1989-2004.

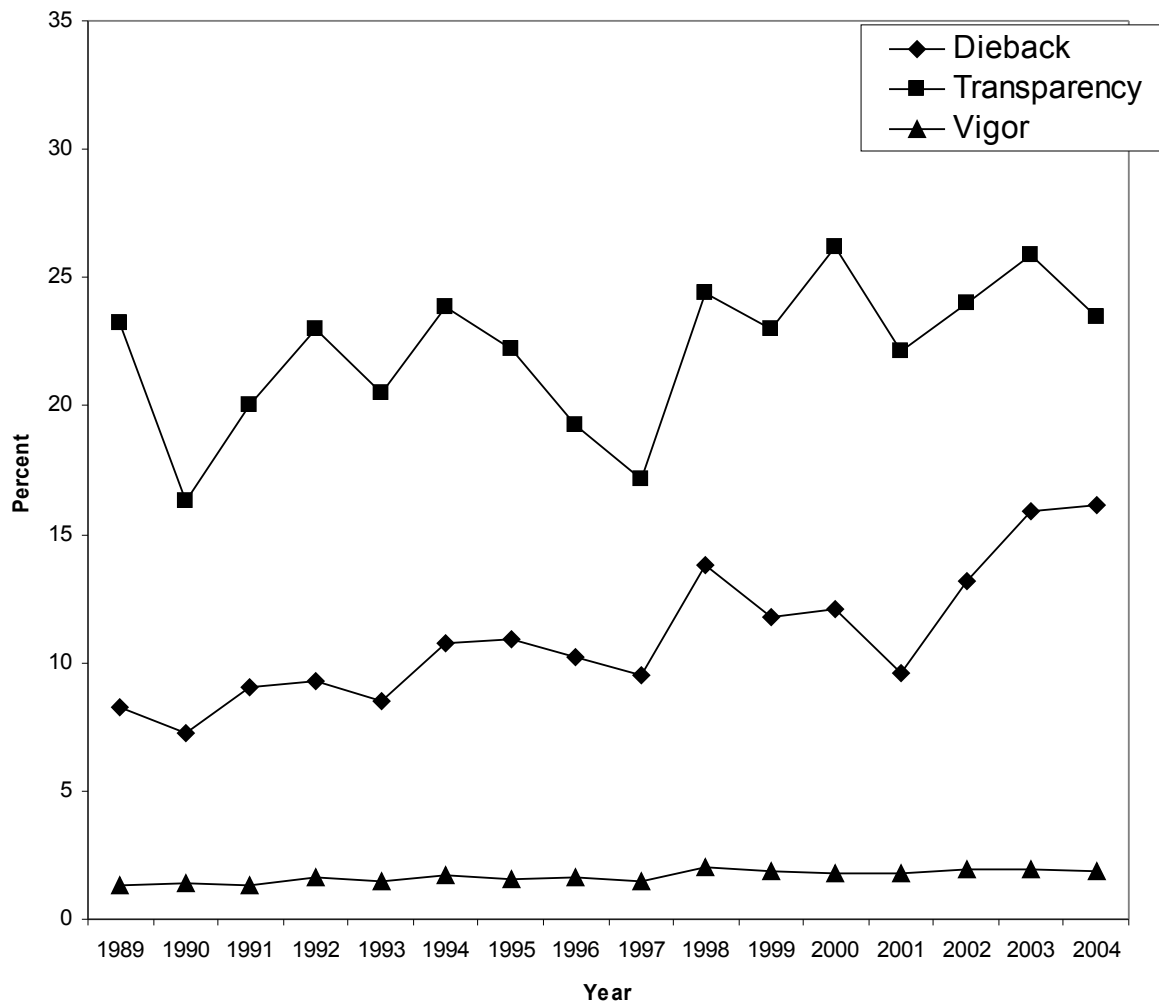


Figure 7. Trend in overstory beech condition as measured by average dieback, foliage transparency and vigor, on 38 North American Maple Project plots in Vermont, 1989-2004.

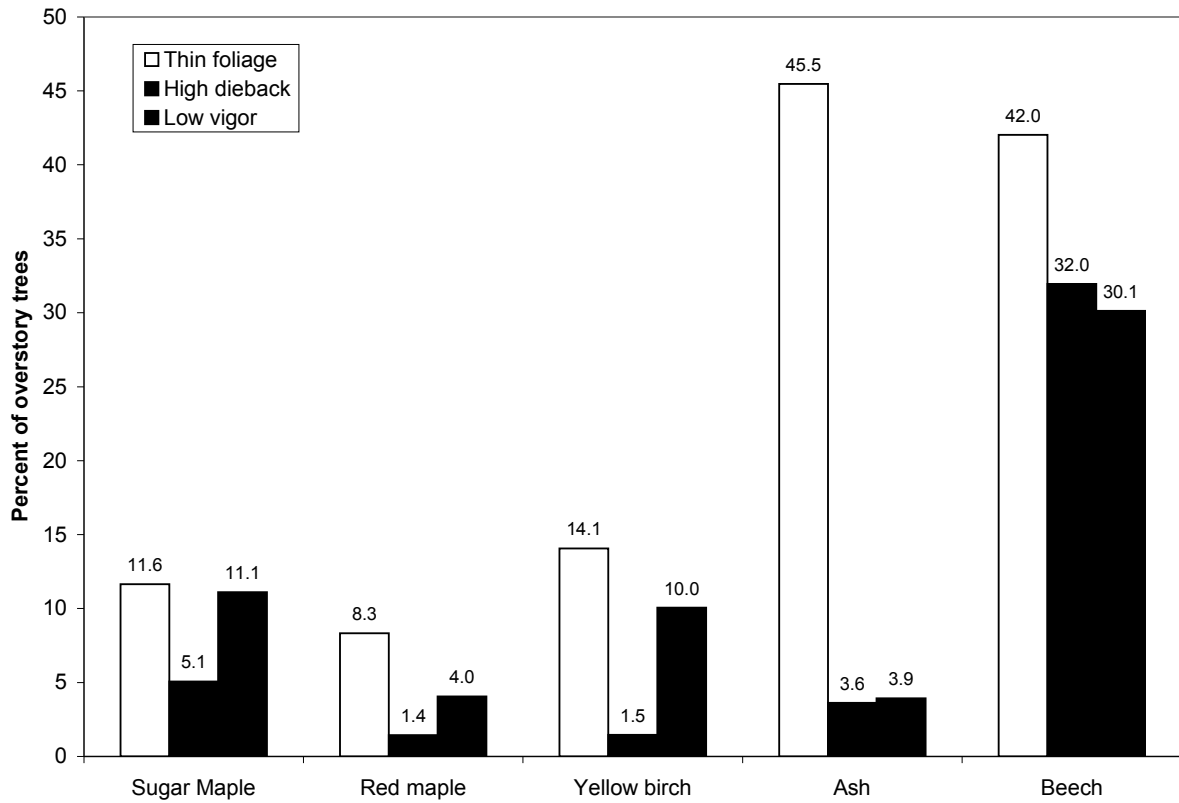


Figure 8. Comparison of health indicators between species on North American Maple Project plots in 2004. Results shown as percent of overstory trees with thin foliage (>25% foliage transparency), high dieback (>15% dieback) and low vigor (moderate to severe decline).