

This is a quick guide to recording tree health variables on individual trees. There are five metrics in this set (discoloration, defoliation, crown dieback, vigor and transparency). Best practices would have two field staff take measurements independently and then compare before settling on a final score for a metric.

### Fine Twig Dieback

Fine twig dieback measures the percent dieback in a tree's crown area. Self-pruning (natural dieback in the lower portion of the crown) is not included. Instead, estimate fine twig dieback as a percentage of the live crown area, including the dieback area and excluding pruned sections of the crown.

Class	% Dieback	Class	% Dieback
1	0-1%	55	51 to 55%
5	2 to 5%	60	56 to 60%
10	6 to 10%	65	61 to 65%
15	11 to 15%	70	66 to 70%
20	16 to 20%	75	71 to 75%
25	21 to 25%	80	76 to 80%
30	26 to 30%	85	81 to 85%
35	31 to 35%	90	86 to 90%
40	36 to 40%	95	91 to 95%
45	41 to 45%	100	96 to 100%
50	46 to 50%		



Fine twig dieback of a London plane tree. Area pruned for powerline is not included.

### Discoloration

Foliar discoloration is the proportion of the canopy with different coloration than a healthy tree of the same species. Possible symptoms include dark spots on leaves, leaves that are yellow, brown, or even lighter in color than a healthy tree of that species. For instance there are some horticultural varieties of trees where the normal healthy leaf color is bronze or dark red. The rating applies to the total proportion of the canopy that is impacted. If 100% of the leaves have a small dark spot on them the discoloration rating is not 100%. The discoloration rating is recorded in the following broad categories.

Class	Definition
1	0-1% (trace)
2	2 to 25%
3	26 to 50%
4	51 to 75%
5	76 to 100%



Discoloration of London plane leaves.

### Defoliation

Defoliation applies to the proportion of the canopy with defoliation (holes in leaves or missing portions of leaves). The rating applies to the total proportion of the canopy that is impacted. If 100% of the leaves have defoliation the defoliation rating is not 100%. The defoliation rating is recorded in the following broad categories.

Class	Definition
1	0-1% (trace)
2	2 to 25%
3	26 to 50%
4	51 to 75%
5	76 to 100%

## Vigor

Vigor is a measure of overall tree health. For this metric, we use a 5-class scale using the guidelines below.

Class	Definition
1	Tree appears to be in reasonably good health with no major branch mortality or large broken branches. <b>Less than 10% cumulative</b> defoliation, discoloration, and crown dieback is present.
2	<b>10-25% cumulative</b> defoliation, discoloration, and crown dieback is present <b>and/or</b> crown area missing based on visual evidence of large broken (not pruned) or dead branches <b>less than 26%</b> .
3	<b>26-50% cumulative</b> defoliation, discoloration, and crown dieback is present <b>and/or</b> crown area missing based on visual evidence of large broken (not pruned) or dead branches <b>less than 50%</b> .
4	<b>More than 50% cumulative</b> defoliation, discoloration, and crown dieback is present <b>and/or</b> crown area missing based on visual evidence of large broken (not pruned) or dead branches <b>more than 50%</b> .
5	Tree is dead. Either standing or down, but greater than 4.5 feet tall.

## Tree Picture

This is a photograph of the whole tree. Make sure to move far enough away so you get a nice portrait of the tree.



## Canopy Light Exposure (CLE)

- Number of crown sides receiving full light from above
  - 5 sides total
  - At least 1/3 of the side must receive light in order to count
- Class 0: No full light
- Class 1: 1 out of 5
- Class 2: 2 out of 5
- Class 3: 3 out of 5
- Class 4: 4 out of 5
- Class 5: 5 out of 5

