

Documenting Green-Down Phenological Changes in Campus Trees

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Throughout the academic year deciduous trees on college campuses undergo silent changes from bud break in the spring to leaf abscission in the fall; these major events typically go unnoticed by students. While phenological transitions can be monitored either in the spring or in the fall, changes in leaf color and abscission can be easily documented during the Fall semester. When students complete the lab, they reported the following: the length of time and stages of the green-down process, the variability among species, and the impact of the environment on the timing of the green-down processes. Students recorded the pattern and extent of foliar changes weekly from September to November from two perspectives. First, the overall canopy was evaluated by using digital images obtained from each direction (north, east, south, and west). These images provided information about the locations of color change and the extent of those color changes. ImageJ (a free software program from NIH [<http://rsbweb.nih.gov/ij/>]) was used to determine the areas of the various colors within the canopy that were then graphed using Excel. On a smaller scale, weekly changes of color and leaf abscission on each of three twigs were also analyzed. Leaf colors were determined using the Globe Plant Color Guide® (available from Forestry Suppliers, Inc. at <http://www.forestry-suppliers.com>). Student reports describing the events of green-down included graphs showing temporal changes in the canopy, in the loss of green pigment from leaves, and in rate of abscission. Students also graphed the weekly average high and low temperatures and day lengths and correlated those with the green-down process.

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Citing This Article

Ford, Rosemary H. 2014. Documenting Green-Down Phenological Changes in Campus Trees. Page 348 in *Tested Studies for Laboratory Teaching*, Volume 35 (K. McMahon, Editor). Proceedings of the 35th Conference of the Association for Biology Laboratory Education (ABLE), 477 pages. <http://www.ableweb.org/volumes/vol-35/?art=27>

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