

**Dr. Chris J. Peterson, Associate Professor
Department of Plant Biology
University of Georgia**

Tree, site, and soil influences on tree uprooting in forests

ABSTRACT

For trees growing on levees, there appear to be no published studies documenting effects of tree and site factors on risk of uprooting from high winds. Consequently, inferences must be derived, with appropriate caveats, from studies under other circumstances. Almost all research on the factors influencing tree uprooting has been conducted in forest settings, and therefore this overview necessarily relies upon such research. Among influences of the tree itself, risk of treefall generally increases with any factor that increases drag on the tree: increasing size, reduced streamlining, reduced limb flexibility, increased crown width and increased crown density all are likely to increase risk of treefall. However, trees may fall under high winds by either stem failure (trunk breakage) or uprooting; obviously the consequences of trunk breakage for levee integrity are much less than the consequences of uprooting. Uprooting becomes increasingly likely relative to trunk breakage with increased wood strength and decreased rooting depth. Some evidence suggests that among very large trees, increasing trunk diameter reduces uprooting relative to trunk breakage. Soil saturation, stand characteristics and topographic characteristics also influence risk of treefall. Finally, human influences documented in forests are numerous; probably the most well-documented is the increased risk of treefall along clearcut edges that are perpendicular to the wind direction, and a short term increase in risk of treefall for trees remaining when thinning operations open a stand and reduce trees' mutual support.

Dr. Chris J. Peterson, Associate Professor
Department of Plant Biology
University of Georgia
Athens, GA 30602-7271
Tel: (706) 542-3754
Email: chris@plantbio.uga.edu
Web: www.plantbio.uga.edu/~chris/chris.html

Chris Peterson is a forest ecologist in the Department of Plant Biology at University of Georgia. After earning a PhD in ecology at Rutgers University in 1992, Dr. Peterson spent two years as a postdoctoral researcher at Princeton University, and joined UGA in 1994. His research on windstorm damage and recovery in forests has been carried out in Pennsylvania, Georgia, Missouri, Minnesota and Tennessee. Peterson often participates in national and international workshops and conferences on wind damage and recovery, and is part of the scientific committee for a quadrennial "Wind and Trees" workshop in August 2007 in Vancouver, British Columbia. He has published more than twenty peer-reviewed journal articles relating to wind damage and recovery in forests, and currently is particularly interested in the influence of salvage logging after wind damage, on the recovery of forest ecosystems.