

Use of aerial surveys to map and treat *Ailanthus altissima* trees on large forested landscapes in Ohio.

Joanne Rebbeck¹, jrebbeck@fs.fed.us, Todd Hutchinson, thutchinson@fs.fed.us, Louis Iverson, liverson@fs.fed.us, Daniel Yaussy, dyaussy@fs.fed.us, Robert Boyles²,
Bob.Boyles@dnr.state.oh.us, and Michael Bowden³, mike.bowden@dnr.state.oh.us

¹USDA Forest Service, Northern Research Station, 359 Main Road, Delaware, OH 43015, ²Ohio Department of Natural Resources, Division of Forestry, 345 Allen Avenue, Chillicothe, OH 45601, ³Ohio Department of Natural Resources, Division of Forestry, 1855 Fountain Square Court H-1, Columbus, OH 43224

Ailanthus altissima is a highly invasive non-native tree that is present in many forested landscapes in Ohio. Managers often observe an expansion in *Ailanthus* populations following forest disturbances such as harvesting and prescribed burning. A single female *Ailanthus* tree can produce 350,000 seeds, which are commonly wind-disseminated distances exceeding 100 to 200 meters. A cooperative research project was initiated to study the distribution and abundance of *Ailanthus* within Tar Hollow State Forest located in southeastern Ohio. We employed geo-referenced digital aerial sketch mapping technology in a low-flying helicopter to identify female trees (seed-producers) and patches (non-seeders) of *Ailanthus* in winter 2008, when persistent seeds were highly visible. This winter survey method was effective in detecting seed-producing *Ailanthus* across a landscape. During a two-hour flight, 98 seed-bearing females and 42 patches, ranging in size from 0.18 to 13.4 ha were identified within a 3885 ha (9600 acre) area. Seventy percent of the aerially-identified females were ground-truthed using hand-held GPS units; 4.3% were either misidentified or not located. In summer 2009, sampling of individual trees as well as a systematic grid was initiated to quantify *Ailanthus* abundance and demography in relation to management practices such as harvesting and prescribed fires and landscape/stand attributes, to better understand and model the key factors related to the presence, abundance, and spread of *Ailanthus*. Research plots were also installed to study the direct effects of prescribed fire and herbicide treatments on *Ailanthus* demography and spread. Herbicide-stem injections (hack-n-squirt with imazapyr) of these geo-referenced trees began in the autumn of 2009. Treatment effectiveness and subsequent woody plant regeneration will be monitored over time.