Loss of structure and diversity may lead to - Loss of plant species - Changes in/loss of native ecosystems - Loss of canopy - Changes in midcanopy openness - Changes in views **Vegetation Structure** - Loss of carbon sinks and Diversity **Trees Tree of Heaven** (Ailanthus altissima) **Charismatic Bird Diversity and Abundance** Historic Structures Historic Landscape

- Allelopathic compounds in Ailanthus found to impact extension growth and biomass of red maple (A. rubrum), sugar maple (A. saccharum), and northern red oak (Q. rubra), potentially leading to loss of species richness or change in community composition (Gomez-Aparicio & Canham, 2007).
- Ailanthus found to outcompete tulip poplar (L. tulipifera), a native species known to have → habitat and foraging value for squirrels and deer, in a comparison growth study (Kota et al., 2007).
- Allelopathic compounds of Ailanthus have been found to negatively impact the growth of close neighbors. Due to this, Ailanthus often occurs in clusters, potentially leading to changes in views (www.nps.gov/plants/alien/pubs/midatlantic/toc.htm).
- → Under greenhouse conditions, allelopathic compounds found to have a greater negative impact on transplanted individuals previously unexposed to Ailanthus in the field, than on those who had been exposed in the field (Lawrence et al., 1991). This may lead to greater species loss in newly invaded areas.
- Ailanthus is a better competitor than black locust (R. pseudoacacia). Root, stem, shoot, and leaf dry weight of R. pseudoacacia were negatively affected by interspecific competition between the two plants in greenhouse experiments (Call & Nilsen, 2005). Effects may lead to change in species compsition or richess.
- Presence of Ailanthus has been shown to increase soil total nitrogen, significantly decrease the C/N ratio, and increase soil pH, therefore reducing species diversity (Vila et al., 2006).
- Ailanthus grows into dense stands that outcompete native communities leading to changes in ecosystem structure (www.natureserve.org).
- Sucessional state of forest can have major impact on carbon sequestration. If trees are harvested, C sequestration is maximized in fast-growing early successional species such as Ailanthus. However, in parks where trees are not harvested, late successional, slow-growing trees will sequester more carbon over time (Capsersen & Pacala, 2001). Therefore, loss of the living tree carbon sink may occur in forests dominated by Ailanthus.
- Native bird species characteristic of pine barren communities shown to be more frequent and abundant in areas of New York woods not invaded by fire-intolerant deciduous species
 → (Beachy & Robinson, 2008). Although Ailanthus was not one of the study species, effects are thought to be similar as Ailanthus is also a fire-intolerant deciduous species capable of invading pine barren communities.
- In Georgia, invasion of two native trees, water oak and sweetgum, led to reduced abundance of several shrubland species of high conservation value (Red-cockaded woodpecker, Bachman's sparrow, brown-headed nuthatch, Northern Bobwhite etc.) Invasion impacts were similar to exotic invasion (reduction in critical nesting habitat and foraging habitat) (Klaus & Keys, 2007)and Ailanthus has similar capacity to invade shrubland.
- Archaeological sites in Italy: Ailanthus spreads aggressively on both ancient and modern buildings, and is a concern because of its rapid growth, and vigorous roots that damage stone and concrete. Also, wind dispersal of seeds means trees are capable of reaching high spots that are difficult to treat (Celesti-Grapow & Blasi, 2004).
- Also, because Ailanthus impacts historic structures (Celesti-Grapow & Blasi, 2004), it may change the landscape structure.
- → Ailanthus roots can break asphalt and enter wells/sewers (Kowarik & Saumel, 2007)
- Allelopathic compounds make Ailanthus capable of outcompeting/killing native plants
 → (www.natureserve.org)
- Ailanthus does not fit within the historic landscape of NPS parks (NPS personal comm.).