

Research Project Ideas for Harvard Forest REUs

1 Effects of Urbanization on Tree Growth and Climate Sensitivity

1.1 **Question:** How does urbanization affect tree growth rates and growth sensitivity to temperature and other climatic factors?

1.2 **Approach:**

Focal species: Choose 5-10 tree species that occur at both Harvard Forest and Bussey Brook Meadows and other unmanaged urban forests around Arnold Arboretum. These species could include: *Betula allegheniensis*, *Betula papyrfera*, *Fagus grandifolia*, *Quercus alba*, *Quercus rubra*, *Pinus strobus*, *Populus deltoides*, *Tsuga canadensis*. Add nonnative tree species, too?

Field work at Harvard Forest: Core trees. Could collect additional data, such as soil nitrogen and other soil characteristics.

Lab work (could be at Harvard Forest or Arnold Arboretum): Mount, sand, and analyze cores. Gather climate data from Harvard Forest. Correlate growth to climate data (temperature precipitation) and compare growth rates and climate sensitivity to those of trees at/near Arnold Arboretum (many have already been collected, but some additional cores may need to be collected in Boston, depending on the focal species selected). `##### HEAD`

References: Need to add a few relevant ones, like O'Brian et al 2012.

2

2.1