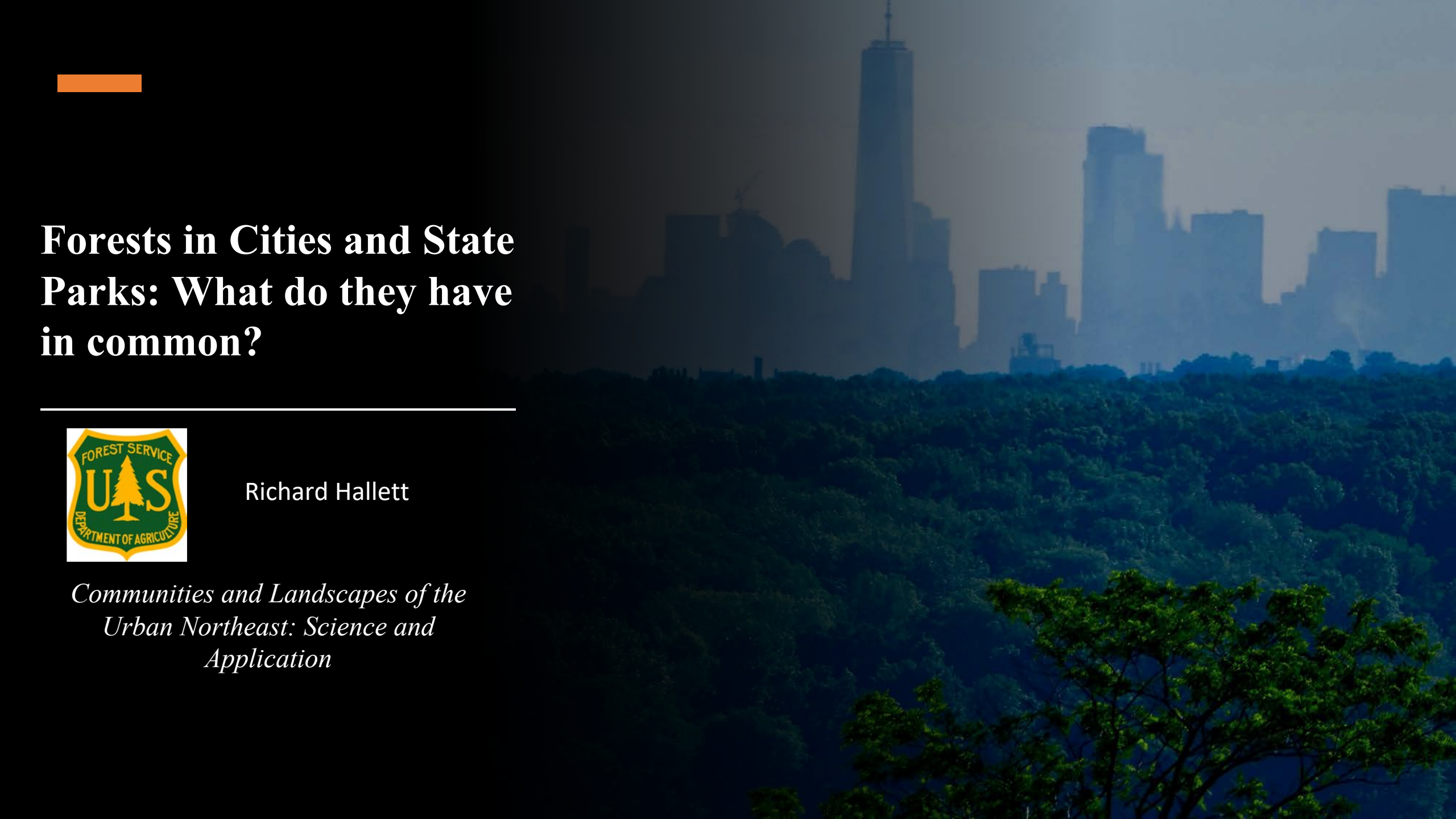
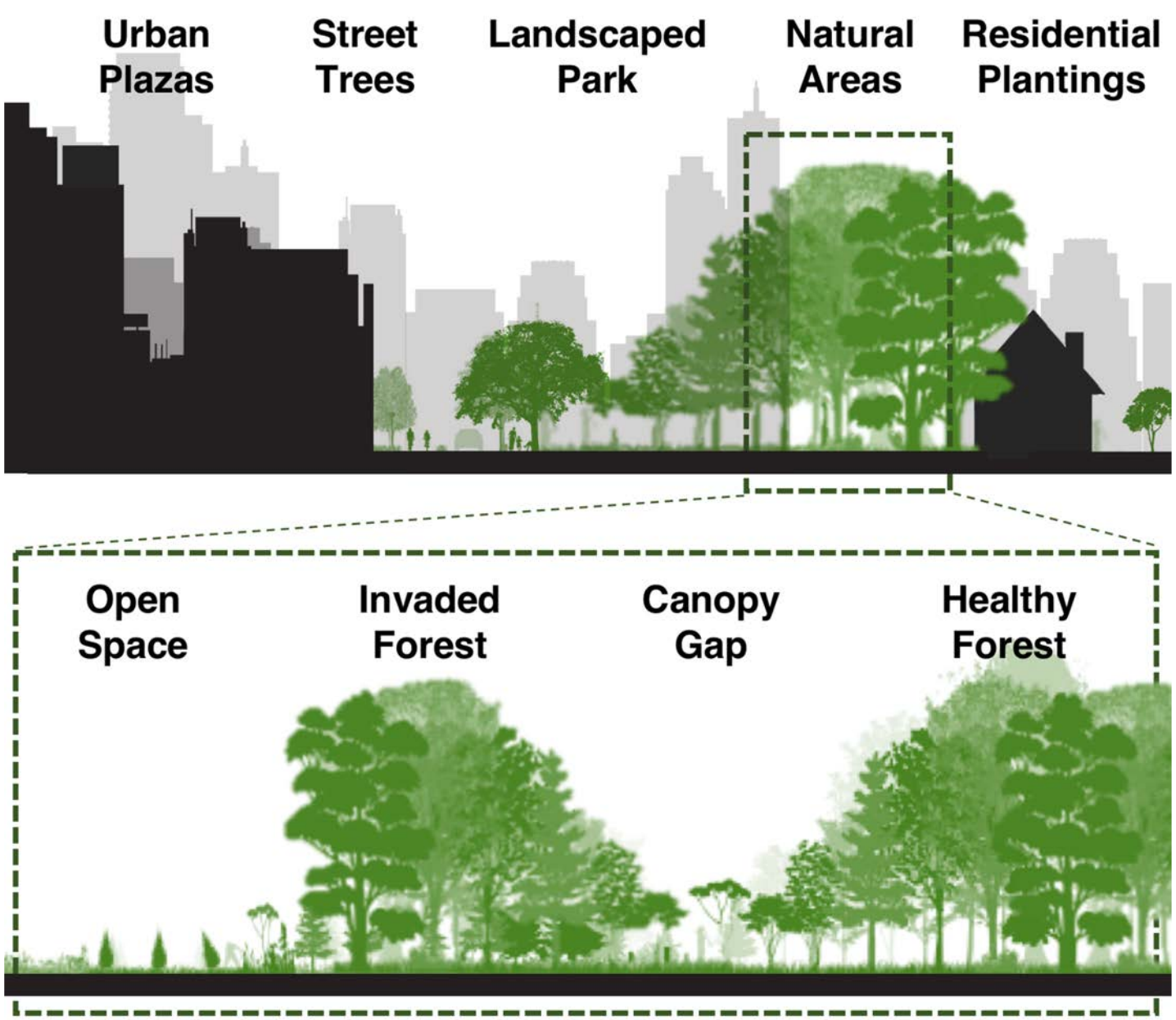
Forests in Cities and State Parks: What do they have in common?

Richard Hallett

Communities and Landscapes of the Urban Northeast: Science and Application



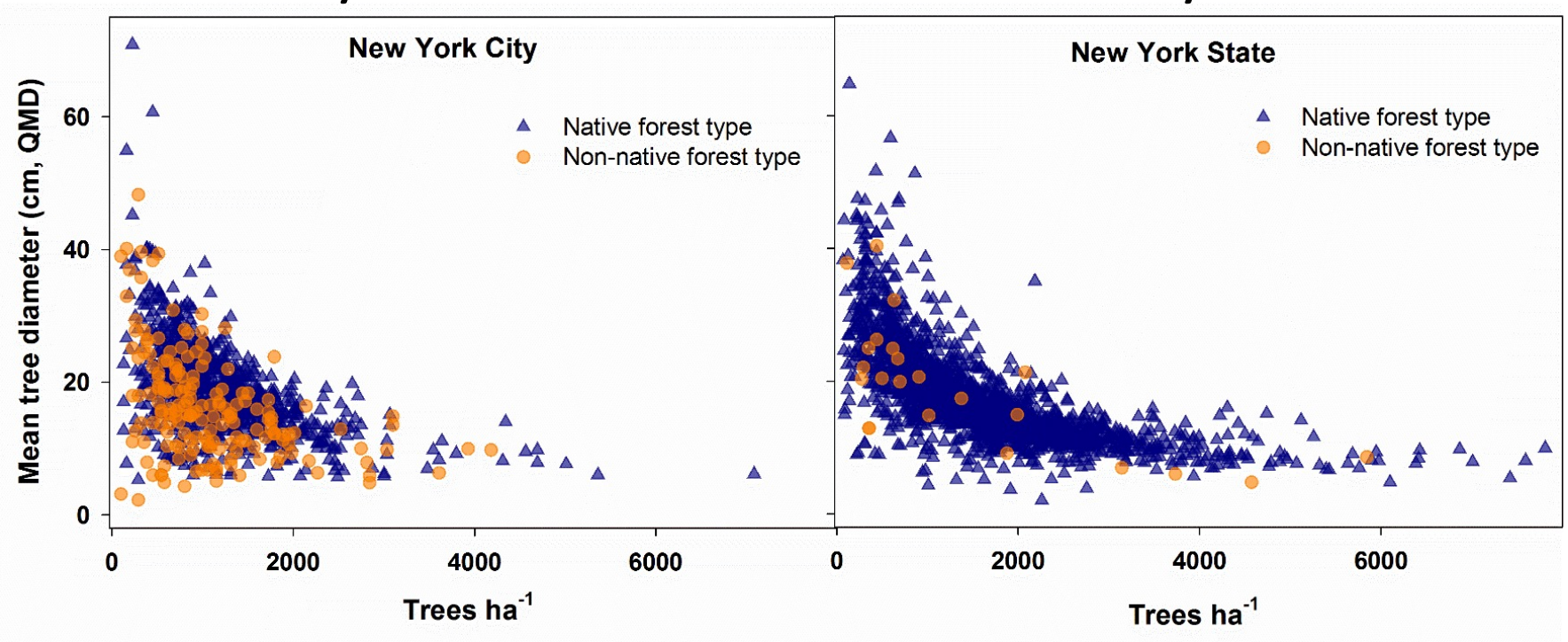


Piana, M., Pregitzer, C., Hallett, R.A., In Press. Advancing management of urban forested natural areas: toward an urban silviculture? Frontiers in Ecology and the Environment.

The urban forest includes all trees within a city, from street trees to natural areas. These greenspace types are not the same and require distinct management strategies.

City Forest

Country Forest



Urban forested natural areas are more similar to rural forests than other urban greenspaces. As a result, traditional ecological management approaches may be appropriate.

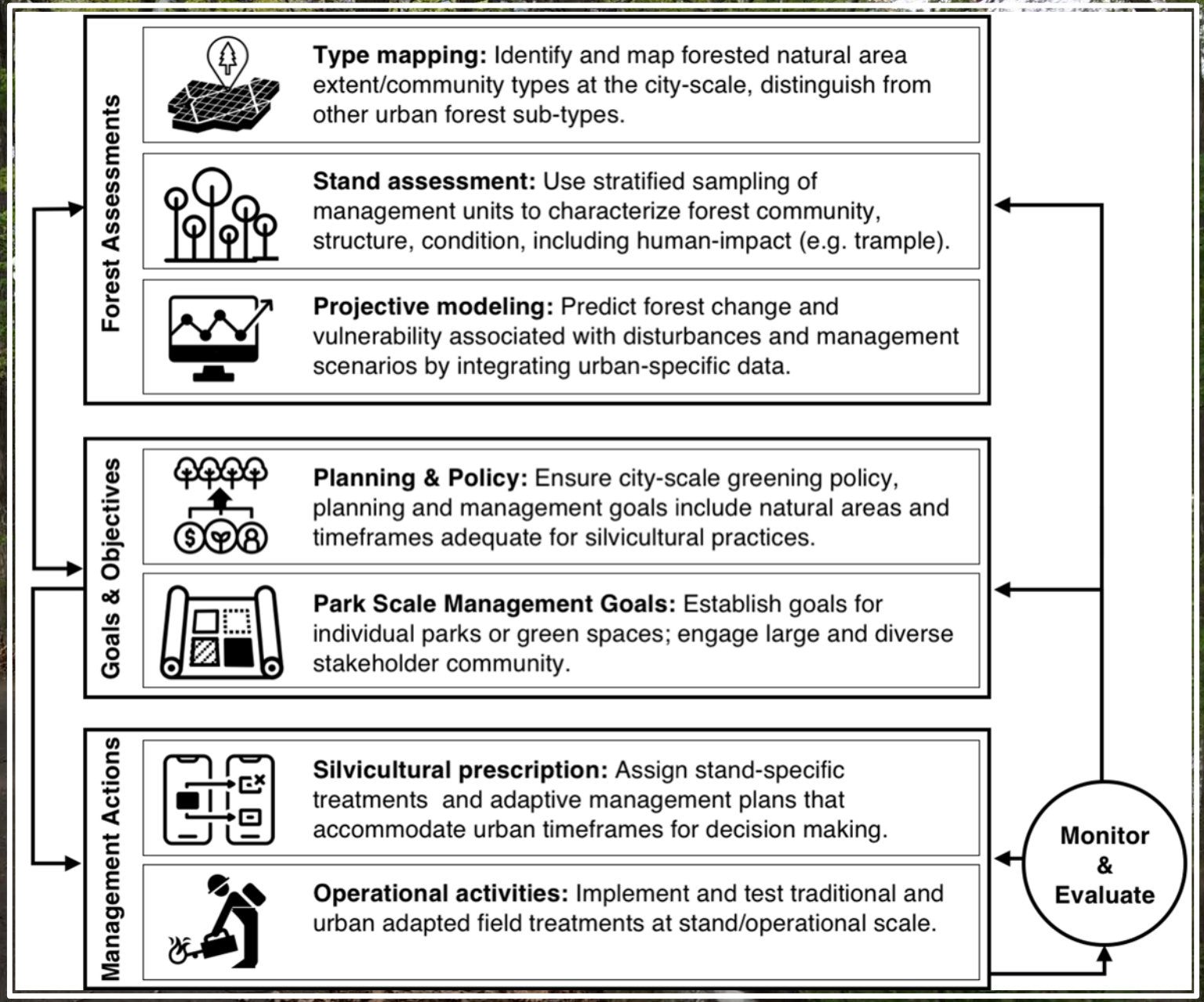
Pregitzer, C. C., Charlop-Powers, S., Bibbo, S., Forgione, H. M., Gunther, B., Hallett, R. A., & Bradford, M. A. (2019). A city-scale assessment reveals that native forest types and overstory species dominate New York City forests. In Ecological Applications (pp. 1–11).

Moving towards an urban silviculture.

Silviculture

Silviculture is the art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands to meet the diverse needs and values of landowners and society such as wildlife habitat, timber, water resources, restoration, and recreation on a sustainable basis. This is accomplished by applying different types of silvicultural treatments such as thinning, harvesting, planting, pruning, prescribed burning and site preparation. Intermediate treatments (thinning) are designed to enhance growth, quality, vigor, and composition of the stand after establishment or regeneration and prior to final harvest. Regeneration treatments (harvesting) are applied to mature stands in order to establish a new age class of trees. Regeneration methods are grouped into four categories: coppice, even-aged, two-aged, and uneven-aged.

dynamics of cities, traditional forest assessments, objectives, and management strategies may need to be modified and novel silvicultural tools created.

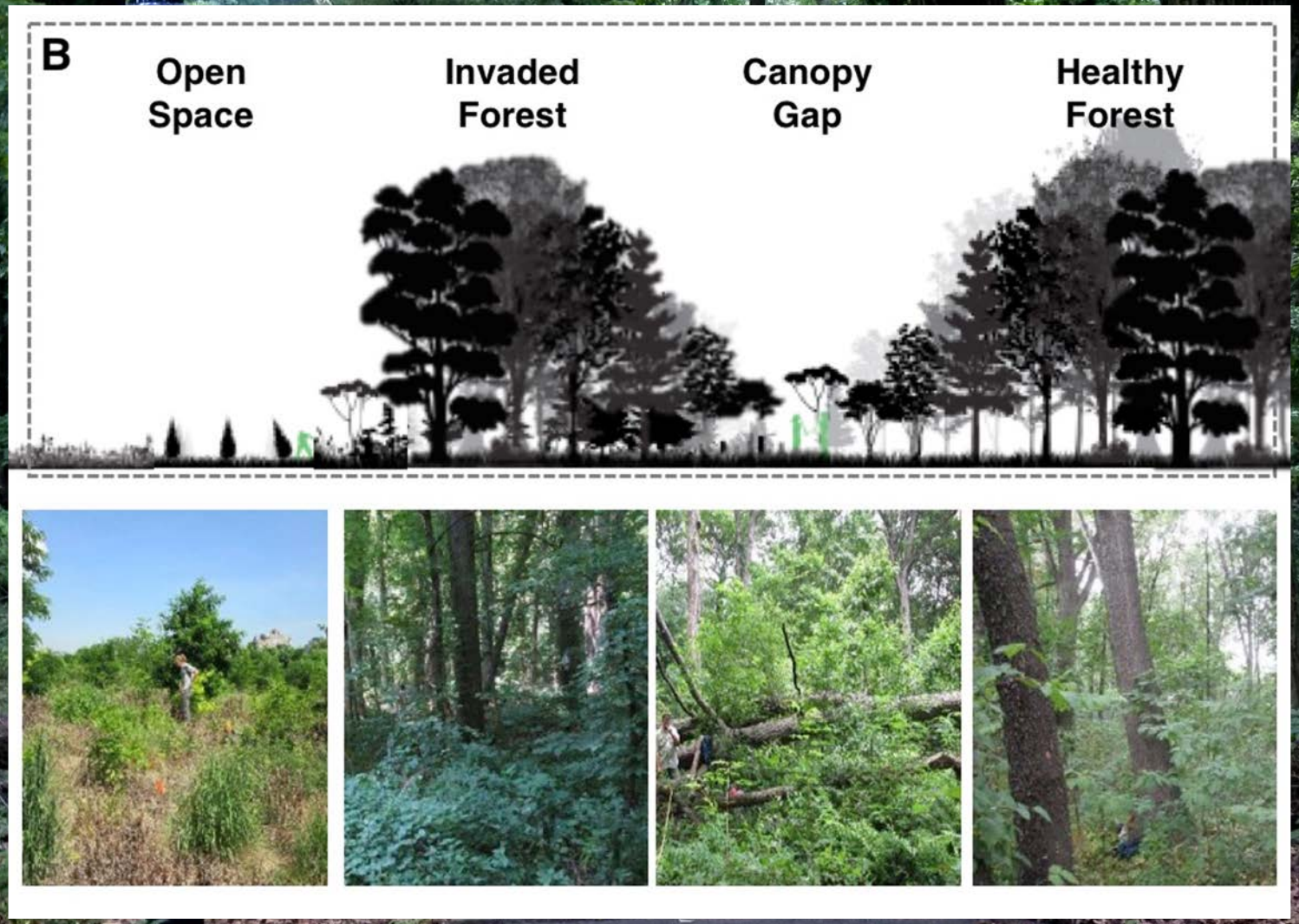


MANAGEMENT ACTIONS

- **Silvicultural prescription:** Assign stand-specific treatments and adaptive management plans that accommodate urban timeframes for decision making.

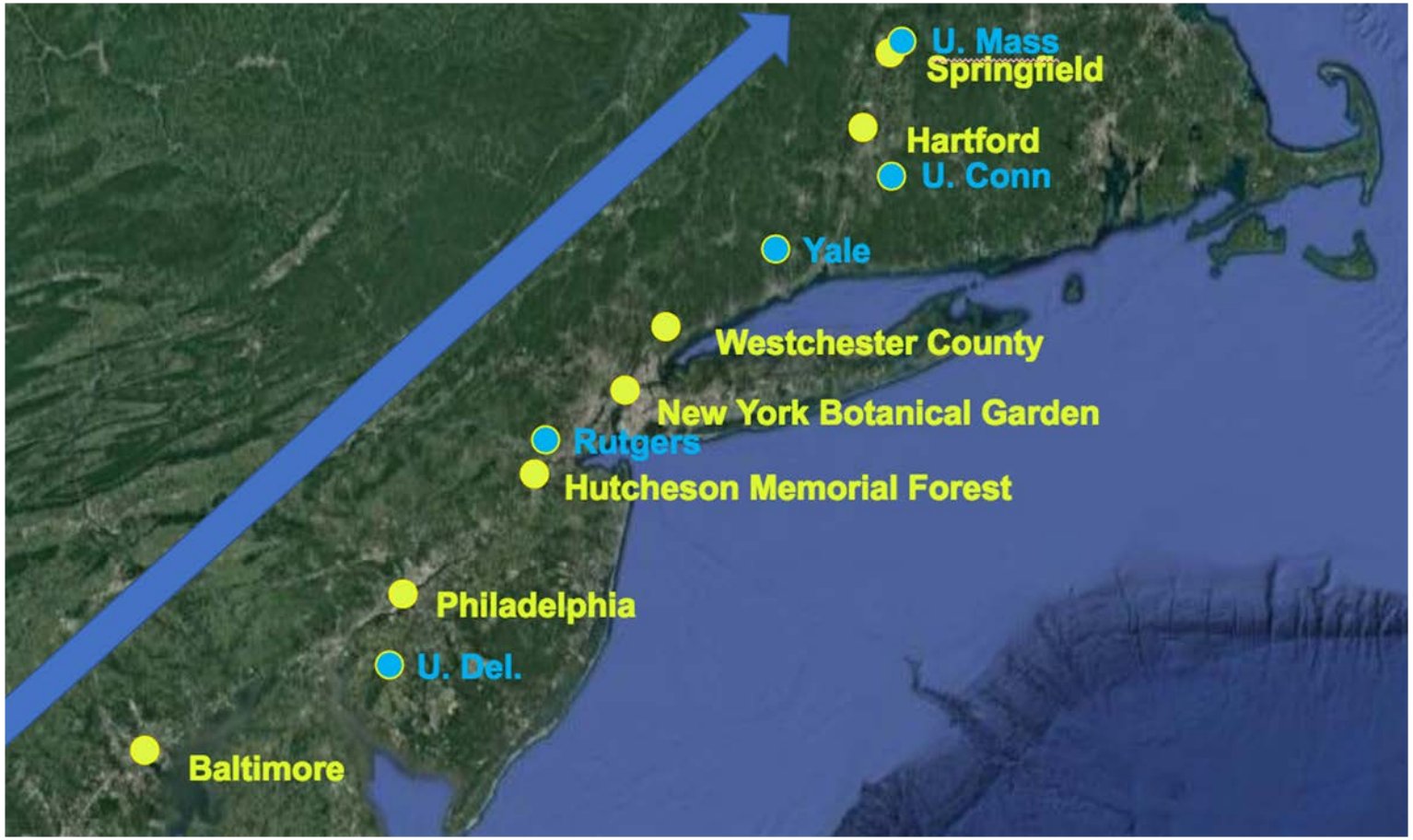
- **Operational activities:** Implement and test traditional and urban adapted treatments at stand or operational scale.

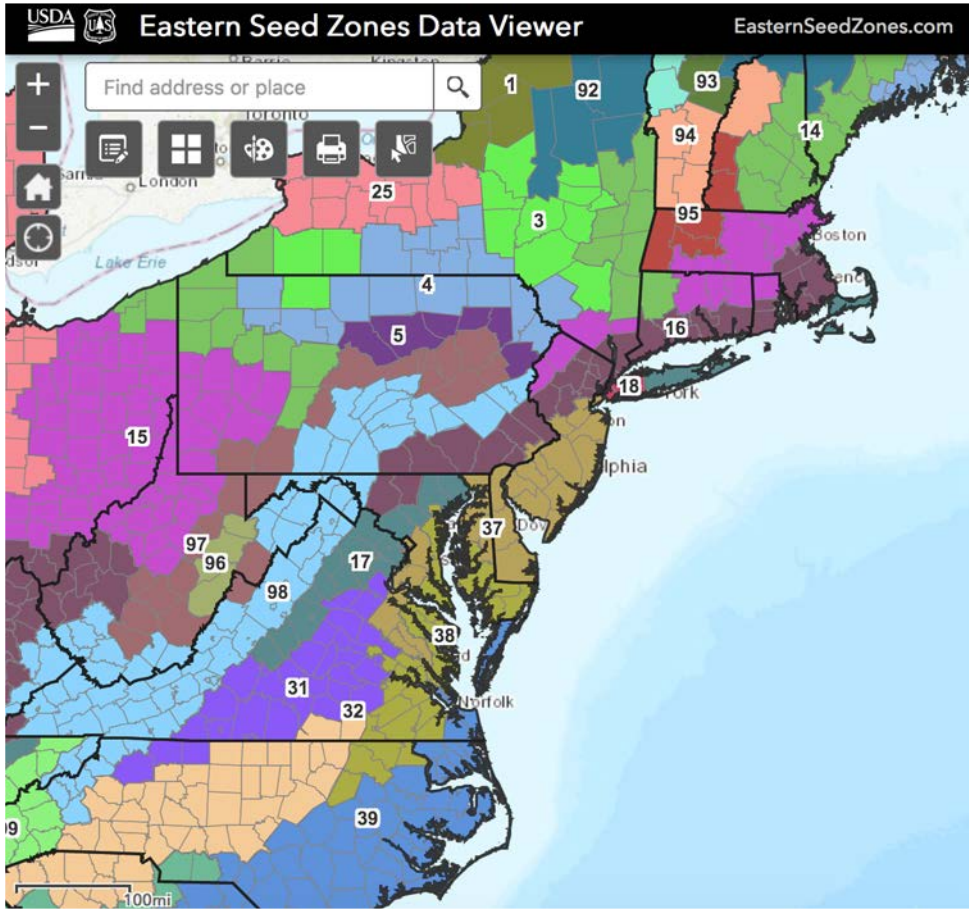
- Implement monitoring and evaluation plans for adaptive management



Gap Experiment: Assisted Migration

Do southern provenances of red and white oak outperform local genotypes and/or safeguard against future climate change?

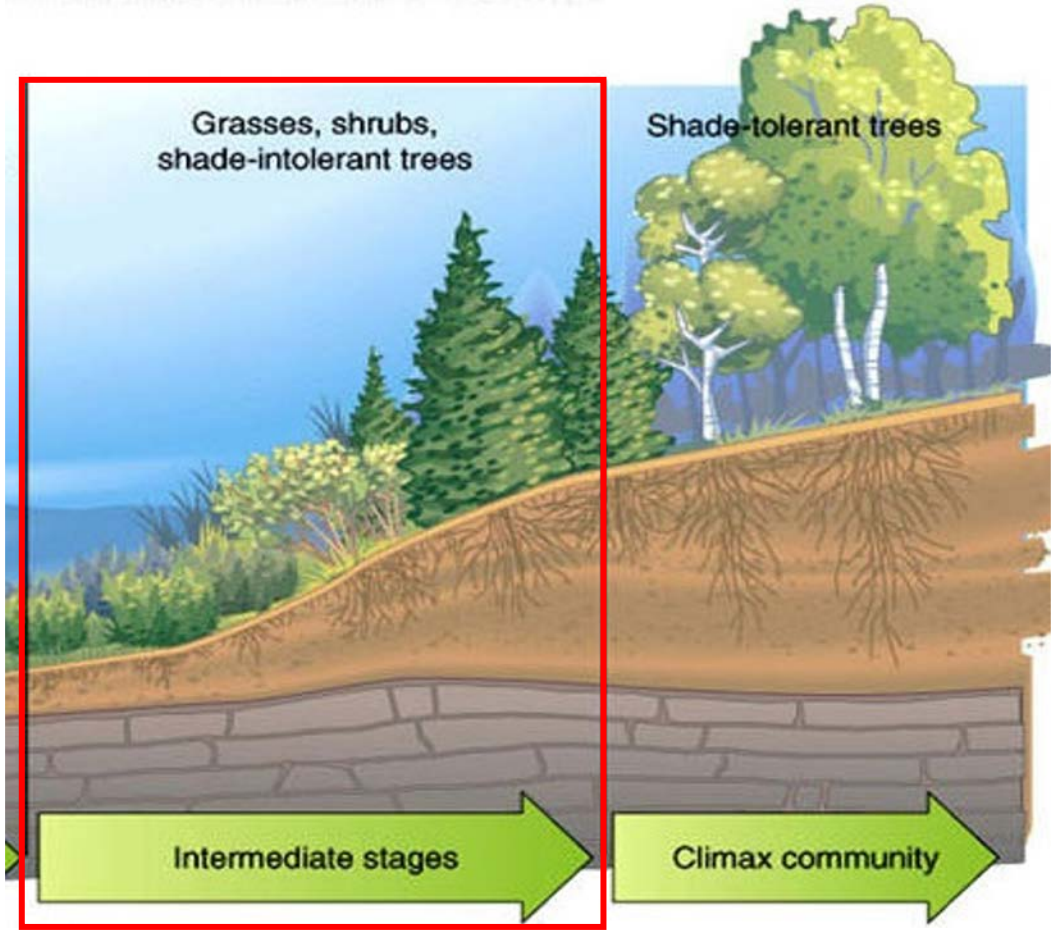




Gap Experiment: Applying Anthropogenic Succession

Can nurse tree plantings facilitate establishment and reduce biotic invasion in canopy gaps?

Can we blend natural succession into our restoration/afforestation practices by planting fast growing early successional species that may be better equipped to compete with exotic invasive vegetation?



Once the early successional species capture the site we can introduce thinning and planting protocols that release target tree species.

Will this reduce the amount of human intervention required to achieve the desired result?

Gap Experiment: Disease American Chestnut

Can we reintroduce american chestnut through urban oak forest restoration and silviculture?

Pinchot et al. 2018

BC_3F_3 American chestnuts two years after planting in a removal harvest on the Allegheny National Forest.

Highbridge Park, NYC
Chestnut 3 years after planting.

Are chestnut a viable species to maintain functional diversity in urban oak forests?

Workforce Development Stillmeadow Church Peace Park

Baltimore, Maryland

Emerald Ash Borer made the property unsafe…….


Urban-adapted silviculture and restoration techniques can help prepare rural forest managers for future conditions.
Urban Forest Knowledge
SILVICULTURE
Rural Forest Knowledge
Traditional silvicultural techniques can provide a starting point for urban forested natural area management.

Questions & Discussion