Street Trees: The Struggle for Survival,

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What Makes a Good Street Tree?

- Native vs. Non-native: one hears a lot about using native trees for street planting as though the urban street was a native habitat and that native trees out-perform non-native trees. The issue for street trees is *survival under existing conditions*, including introduced pests and pathogens. Nothing is native to the city!
- Bottomland vs. Upland: river corridors & floodplains provide an abundance of highly disturbed, high-light habitats characterized by fluctuating water levels and heavy soils. The trees that grow there are *preadapted* to do well on urban streets where the soil is *compacted* and low in oxygen. Examples of native bottom-land species that grow well as street trees include: silver maple, river birch, green ash, honey locust, sweetgum, pin oak, and the once ubiquitous American elm.
- Hybrid trees typically outperform either of their parents in *novel ecosystems*. These species have been selected by horticulturists for their performance in cultivated landscapes. Famous examples include: London plane tree (*Platanus x acerifolia*), the saucer magnolia (*Magnolia x soulangeana*), hybrid poplars, elms, lindens, yews, maples, crabapples and cherries.

Ecological Services of Trees

Everyone talks about the role trees can play in mitigating climate change by absorbing CO2, but in an urban context the most important services that trees provide help make cities more livable for all their inhabitants—both human and not human. They do this in multiple ways:

- **Providing animals with food and habitat**
- **Erosion control on slopes**
- **Stream, lake & river bank stabilization**
- **Storm water infiltration & water quality protection**
- **Temperature reduction via shade production & transpiration**
- **Improve the aesthetics of the urban environment**
- Unfortunately, urban trees also provide some disservices including clogging drains and damaging foundations, lifting sidewalks, taking down power lines & damaging property during storms, and causing allergies.

Structural Soils and Urban Infrastructure

- Giving trees adequate soil volume is key to their longevity in urban areas. This is often a problem because most developers want to give as little land as possible to trees. Over the past 40 years, several systems have been developed to make the space under the sidewalk available to trees and minimize soil compaction.

- Some of the systems involved filling the space with "structural soils"—mostly sand or gravel—that remain porous after they are compacted to support pavement. Other systems involve suspending the pavement over the planting area that is filled with loam. These are pretty much the only options one has when planting trees on top of urban infrastructure or in areas with heavy foot traffic. Comparing them in terms of expense and ecology would take an entire lecture.

Take Home Messages

- Select species based on their ability to tolerate existing site conditions rather than on their nativity. **Nothing is native to the city street.**
- Climate change issues plus increasing pressure from pests and pathogens has dramatically shortened the list of reliable street trees. **We need help wherever we can get it.**
- Trees need adequate soil volume in order to **survive—make tree pits bigger and connect them whenever possible.**
- Better to plant 1,000 well-maintained trees than 2,000 we don't take care of. Trees need to grow for about 20 years before they begin to pay for themselves in terms of providing ecological services. They won't make it to that age if we don't **take care of them when they're young.**
- Soil compaction is a big killer of urban trees. Do everything possible to keep people off the tree root zone. **Give Me Drainage or Give Me Death!**