

Tree talks: our aging urban forest.

Willowbank County Service Area (WCSA)

Meeting: 7PM, Wednesday, January 16, 2019

Our community is aging. We aren't replacing our population. I'm talking about our trees....

This has come up recently in more than one context.

- Discussions with concerned citizens about the age and condition of the trees in our venerable neighborhoods like College Park, Parkside Drive, and others.
- Risks associated with some of our very old oaks in town.
- The Willowbank area and some of the 'number' streets losing their hackberries to vascular disease.
- Village Homes replacing some Chinese pistache that succumbed to verticillium wilt.
- Recent op-ed by TREE Davis directors: city is removing trees faster than we are planting them.

Defining an urban forest

The population of trees and their associated lower plants (and animals) that make up a local plant community. Can include native and non-native species.

Urban trees provide many benefits.

- Moderate the local climate, break up wind, provide shading and cooling.
- Conserve energy by direct cooling of buildings, and by reducing the 'urban heat island effect' of solar radiation onto hard surfaces.
- Filter gaseous and fine particle pollutants from the air.
- Known to be many psychological, social, and cultural benefits as well.
- And they provide a link to our history because they span generations. The lifespan of a tree species can vary from 50 to 200 years or more.

Whether they live that long depends on species selection, good stewardship, protection, and a little bit of luck.

This means that decisions made by today's inhabitants are felt for 2 – 3 generations, sometimes more.

Or, looking at it another way, we are enjoying the benefits – or paying the price – for decisions made 50 to 75 years ago.

Stress factors

Like a non-urban forest, the tree population is subjected to changing environment over time, including stress factors. Some of those are more extreme than what a 'normal' forest deals with.

- drought: weakens older trees, curtails establishment of young ones.
- freeze: short- and long-term damage to marginal species
- floods: possible damage to roots, spread of vascular diseases
- invasive species that threaten to displace planted and native trees.
- invasive diseases and pests
- added stress factors: housing and road development (paving that reduces water infiltration), grading changes, landscape irrigation

So, in that context, how is your neighborhood doing?

- Is there a mix of species and ages, developing at different paces and interacting in ways that will continue to provide benefits decades from now?
- Is tree planting continuing, or is there just a cohort of older trees aging and, perhaps, declining?
- Have the hazards been identified and the risks evaluated?
- Have the older trees of value for history and size been identified and protected?
- Do you have a replacement plan? Trees have life spans, new pests and diseases can affect certain species.
- If your neighborhood is solar, do you have a tree planting plan for the open common areas where larger trees could be planted to compensate for the restrictions caused by solar access needs?

The importance of diversity

.... in your tree replacement plan. Most shade trees take about ten years to provide significant shade. Focus on diversity, a mix of growth rates and species, and avoid known pests and diseases that weaken the trees or shorten their lifespans.

Examples of significant pests and problems

Eastern U.S.:

- emerald ash borer presently killing and threatening millions of ash trees.
- Dutch elm disease. Elms used to predominate in many cities but died out.
- Callery pear (Bradford etc.) proved invasive, weak-structured.

California, including here:

- clearwing moth: California white alder, Arthur St.
- ash/lilac borer: Raywood and Moraine ash, 1980's
- Sudden oak death in California's coastal zones
- polyphagous shot hole borer in Southern California
- Chinese hackberry: Asian woolly hackberry aphid (<http://redwoodbarn.com/aphidhackberry.html>)

Diversity

- the 10 / 20 / 30 rule (species/genus/family)
- modifications: 5 / 10 / 20 (adopted by Portland OR), the 5 / 10 / 15 rule

Sometimes this is measured by the number of individual trees, other times by the tree size (as measured by basal area aka dbh). For tree planting projects, number of trees is probably the best and simplest measure.

Basic rule of thumb in urban forestry that no single species should account for more than 10% of the population.

This helps mitigate the risk from new pests and diseases. In extensive surveys, hardly any city met this goal by either method of measurement, and none met or even approached the tighter guidelines. So it's a useful guide, arbitrary but helpful to reinforce the need for diversity.

What matters is what the population and percentages are for your community or neighborhood. So a corollary has been added: the "look around rule." Look around: see a lot of one species on your block? Plant something else!

A simpler implementation is to provide a list with as diverse a selection of species as possible, species that are suitable for our climate and soil, within the range of what people prefer and what is available in the nursery trade.

Community and committee discussions about desirable tree species can often turn into fruitless quests. Consult with nursery professionals and be flexible within your range of choices.

Caring for aging trees

- Arborist visit every 3 – 7 years or so.
- Minimize pruning except to remove diseased wood or dangerous branches.
- Consider augmenting irrigation during drought years. Provide very deep soakings every few weeks during the growing season of drier years. Be aware of the greater extent of the root zone than most people expect.
- Use care when changing the landscape around an existing tree:
 - drainage
 - irrigation
 - compaction
- Monitor for pests: scale, aphids, borers. Treat only when the tree's health is threatened or the mess is unacceptable.

Dealing with the hackberry aphid.

- Imidacloprid applied as soil drench to the area immediately around the trunk.
- Not closely associated with colony collapse disorder of the European honeybee.
- Some evidence of harm to native bee species.
- Minimize exposure and use only as needed.
- Hackberry is wind-pollinated, so exposure of pollinator bees to the flowers is minimized.
- flowers for a brief period during late winter or early spring.
- Takes 30 days or so to fully distribute in the tree (1' a day). In the tree for full growing season.
- Applied early, least likely to enter the flowers.
- Imidacloprid is harmful to soil organisms at the point of application.
- Avoid applying where roots of flowering plants can take it up.
- No organic alternatives. The aphid is considered a 'nuisance pest' and doesn't appear to weaken the trees. Beneficial insects do feed on the aphid, but not in sufficient numbers to reduce mess.

A plan of action

- Know your urban forest: consider doing an informal survey, make a tree count and species list.
- Google Earth can be a very useful tool for assessing the distribution of larger, older trees and identifying gaps in the canopy.
- Set goals for tree plantings each year and decade. Full replacement of your oldest trees within your lifetimes?
- Provide information resources to your neighbors about tree choices.
- Identify and work to remove invasive tree species where they compete with new plantings.
- Consider a community-wide tree planting with TREEDavis.
- Work with Hedgerow Farms to plant more native species where appropriate.
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→ *Leave a legacy of new trees and a plan for stewardship.*

Tree selection

The process is like sorting a database – choosing and ranking the sort fields. This valuation is subjective.

Examples:

- shade density
- seasonal color
- root distribution
- branch structure and risk
- native
- minimal pest issues
- habitat enhancement
- growth rate
- drought tolerance
- allergy

A note about native species:

- we don't have very many native tree species here to choose from
 - may prove to be susceptible to introduced pests and diseases (SOD is killing native species)
 - some may not be suitable in developed landscapes (CA Black walnut, white alder, Fremont cottonwood)
 - consider native species within the context of a well-balanced 'tree portfolio' overall
 - work to add riparian species where you share habitat along Putah Creek.
 - Valley oak (*Quercus lobata*) is our large native oak species with a long history of pest and disease resistance and good drought tolerance
- Pat Reynolds of Hedgerow Farms is willing to help with design and planting plans for Valley oaks as replacements for hackberry trees in Willowbank. reynoldspatrickhenry@gmail.com.

Followup care is crucial:

- the first five years make the biggest difference in establishing healthy root distribution and safe branch structure.
- expand irrigation outward with the growth of the tree
- Additional irrigation is often necessary.
- Adopt trees for their early years.

Planning for succession

- Spatial awareness: know the height and spread of each new tree.
- Plan for the tree's spread. Give each tree 30 to 40 feet of space.
- Don't shy away from slow-growing species.
 - Examples: Valley oak, Ginkgo
- Lists and choices should change over time as species and varieties get re-evaluated.
- Tree planting should be an ongoing practice to develop a mix of species and ages.

Examples of some popular large tree species and cultivars, with comments

botanical name	common name	comments
Acer rubrum October Glory, Autumn Blaze, others	Maple hybrids	not drought tolerant
Ginkgo (male cultivars such as Autumn Gold)	Maidenhair tree	slow growing
Pistacia chinensis Keith Davey	Chinese pistache	widely planted
Platanus racemosa Roberts	California sycamore	anthracnose resistant variety, limited availability
Platanus x Columbia or Bloodgood	London plane	widely planted. disease resistant varieties
Quercus lobata	Valley oak	slow growing native species
Quercus shumardi	Shumardi oak	faster growing non-native
Tilia cordata	Littleleaf linden	fairly slow
Ulmus x Frontier, etc.	Elm hybrids	new hybrids resistant to disease, leaf beetles
Ulmus parvifolia Drake	Chinese elm	needs careful training
Zelkova serrata	Sawtooth zelkova	elm relative resistant to disease, leaf beetles

Evergreen alternatives to coast redwood:

botanical name	common name	
Arbutus x Marina	Marina arbutus	fairly new
Calocedrus decurrens	Incense cedar	narrow, upright, slow grower
Cedrus atlantica Glauca	Atlas cedar	upright, slow grower
Cedrus deodara	Deodar cedar	eventually huge, spreading
Cinnamomum camphora	Camphor tree	slow growth
Laurus nobilis	Grecian bay laurel	very upright, reseeds
Laurus x Saratoga	Laurel hybrid	broader head, male variety
Pinus canariensis	Canary Island pine	upright, fast growth
Quercus agrifolia	Coast live oak	slow growing native
Quercus lobata	Cork oak	faster-growing non-native
Schinus molle	California pepper	dense roots, needs careful training, lots of litter

Slides available here:

<http://redwoodbarn.com/Urban%20forest%20topics/>