

Mainstreaming the ecological values of street trees in northern California cities, 1980-2008

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Introduction

Municipal agencies and nonprofit organizations have engaged in policies, programs, and activities that are increasingly characterizing street trees by the ecosystem functions they can provide; this is what I call the *ecological street tree*. This dissertation examined the role of municipal and nonprofit actors, scientific research, and local factors (geography, climate, infrastructure, and culture) in the ecological characterization of street trees in the planning and policy arena of three northern California cities between 1980 and 2008. During this time period, the discourse of ecosystem services such as carbon sequestration, stormwater runoff management, criteria air pollutant reduction, avoidance of energy use/energy savings and thus reduction in power plant emissions, and wildlife habitat provision has been applied to street trees.

I asked **six questions** in this dissertation:

- Has there been a rise in the ecological characterization of the street tree?
- What is the role of the urban forest nonprofit?
- Has the concept of the ecological street tree been mainstreamed through the nonprofit's newsletter?
- How is the production of research evidence implicated in mainstreaming the ecological street tree?
- If different services are salient to different cities, what factors account for this difference?
- What strategies are used by different actors, in different cities to capture tree-based ecosystem services?

Materials and methods

A multi-city case study incorporating:

- Nonprofit newsletters (computer-aided content analysis and regressions)
- Newspaper archives (qualitative content analysis)
- Municipal and nonprofit documents such as general plans, annual reports, ordinances (qualitative content analysis)
- Interview transcripts (qualitative content analysis)



Figure 1. An issue of a nonprofit newsletter



Figure 2. Case study cities

Results

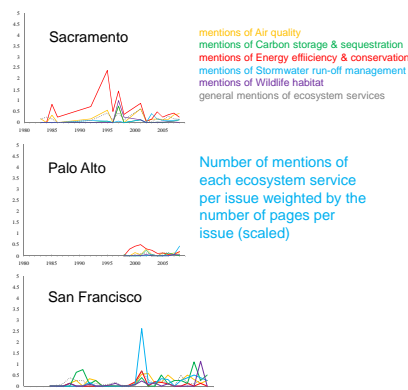


Figure 3. Textual analysis of nonprofit newsletters

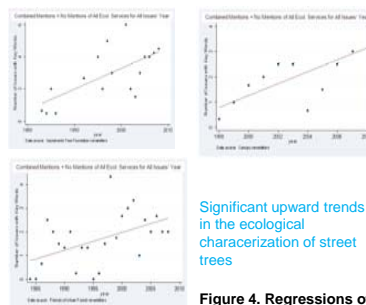


Figure 4. Regressions of mentions in nonprofit newsletters

	Sacramento	Palo Alto	San Francisco
Air quality improvement	x	x	x
Carbon storage & sequestration	x		x
Energy efficiency & conservation			
Stormwater run-off management	x		x
Wildlife habitat	x		

Figure 5. Ecosystem services that were significant in the regression analysis of the nonprofit newsletters

The legwork that they [Center for Urban Forest Research] have done to actually quantify to an economic basis is absolutely critical to all of this so we can actually boil it all down and say 'Trees give back two bucks for every one buck spent. After all of everybody's salaries are paid for, all of this \$2M budget is done, trees give back twice'...twice the benefit. And that can only be verified by virtue of the urban forest research station. What they have done is absolutely probably the biggest paradigm shift, the biggest shift, leapfrog in urban forestry...I consider the biggest advance in urban forestry in a hundred years is because of UFORE* because they've been able to quantify what we've all known and felt in our gut for years and years the benefits of these trees. But now the stormwater management aspects, flooding, all of the benefits, long-term benefits can be quantified. It's absolutely huge. (Palo Alto participant)

* Urban Forest Effects software

The fact that I am working closely with them [Center for Urban Forest Research] gives this program credibility, not only here in the company, locally, but also nation-wide. Like we posted tree benefit estimator, [sic] people asked where did you get those numbers and we tell them it came from the Center for Urban Forest Research and it's immediately treated differently. (Sacramento participant)

Figure 6. The significance of scientific evidence in legitimating the ecological street tree

Conclusions

My analysis has led me to conclude that:

- Between 1980 and 2008, there was a rise in the ecological characterization of street trees in all three cities (see Figures 3, 4).
- The urban forest nonprofit has played a role in mainstreaming the ecological street tree, but this role varies in strength among the cities. Also, the nonprofit has not acted alone. Municipal agencies are part of the network of actors advancing the ecological value of street trees.
- The newsletter is not the nonprofit's primary mode of communicating the ecosystem benefits of street trees; it is one mode among a "landscape of communications".
- The production and dissemination of urban forest research was critical to legitimizing the ecological street tree (see Figure 6).
- Different services were salient to different cities (see Figure 5) and contributing factors included climate, geography, infrastructure, culture, funding, and the history of urban forestry development in each city.
- Different strategies such as policies, program development, research collaboration were used capture street tree-based ecosystem services.

Selected literature

- Nikolic, Sara, and Tomas M. Koontz. 2008. Nonprofit organizations in environmental management: A comparative analysis of government impacts. *Journal of Public Administration Research and Theory* 18: 441-463.
- Yin, Robert K. 2009. *Case study research: Design and methods*. Thousand Oaks, California: Sage Publications.

Acknowledgments

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Map source:
<http://www.srcsd.com/images/environment/sacwatermap.gif>

For further information

Please contact georgia@localecology.org. More information on this and related projects can be obtained at www.localecology.org.