

Cris Falco

Plant Health Care Coordinator

West Coast Arborists



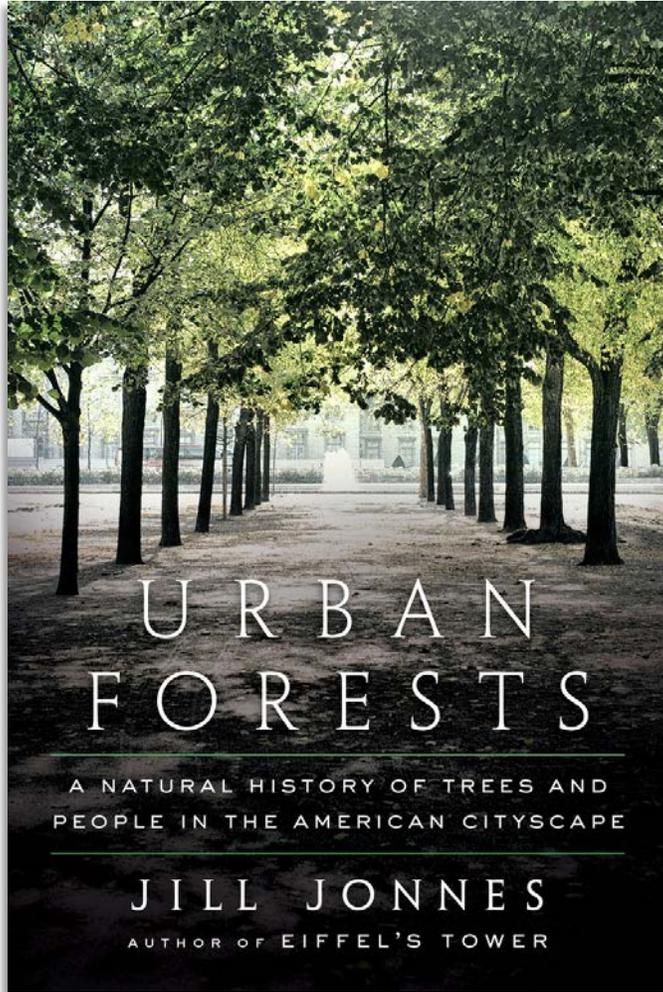
On the Benefits of Trees

Our Urban Forest

An aerial photograph showing a vast, dense urban forest. The trees are mostly green, with some autumnal colors visible. The forest covers a large area, extending towards a city skyline in the distance. The sky is bright blue with many white, fluffy clouds. The overall scene is a mix of nature and urban development.

In 2010 California was home to 37.3 million residents. Urban areas covered 5% of the land base and contained 95% of the state's population.

~ U.S. Census Bureau, 2012



NEW FROM AUTHOR & HISTORIAN, JILL JONNES

URBAN FORESTS

A NATURAL HISTORY OF TREES AND PEOPLE IN THE
AMERICAN CITYSCAPE

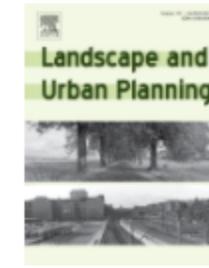
A celebration of urban trees and the Americans—presidents, plant explorers, visionaries, citizen activists, scientists, nurserymen, and tree nerds—whose arboreal passions have shaped and ornamented the nation's cities, from Jefferson's day to the present





Landscape and Urban Planning

Volume 15, Issues 1–2, June 1988, Pages 153-164

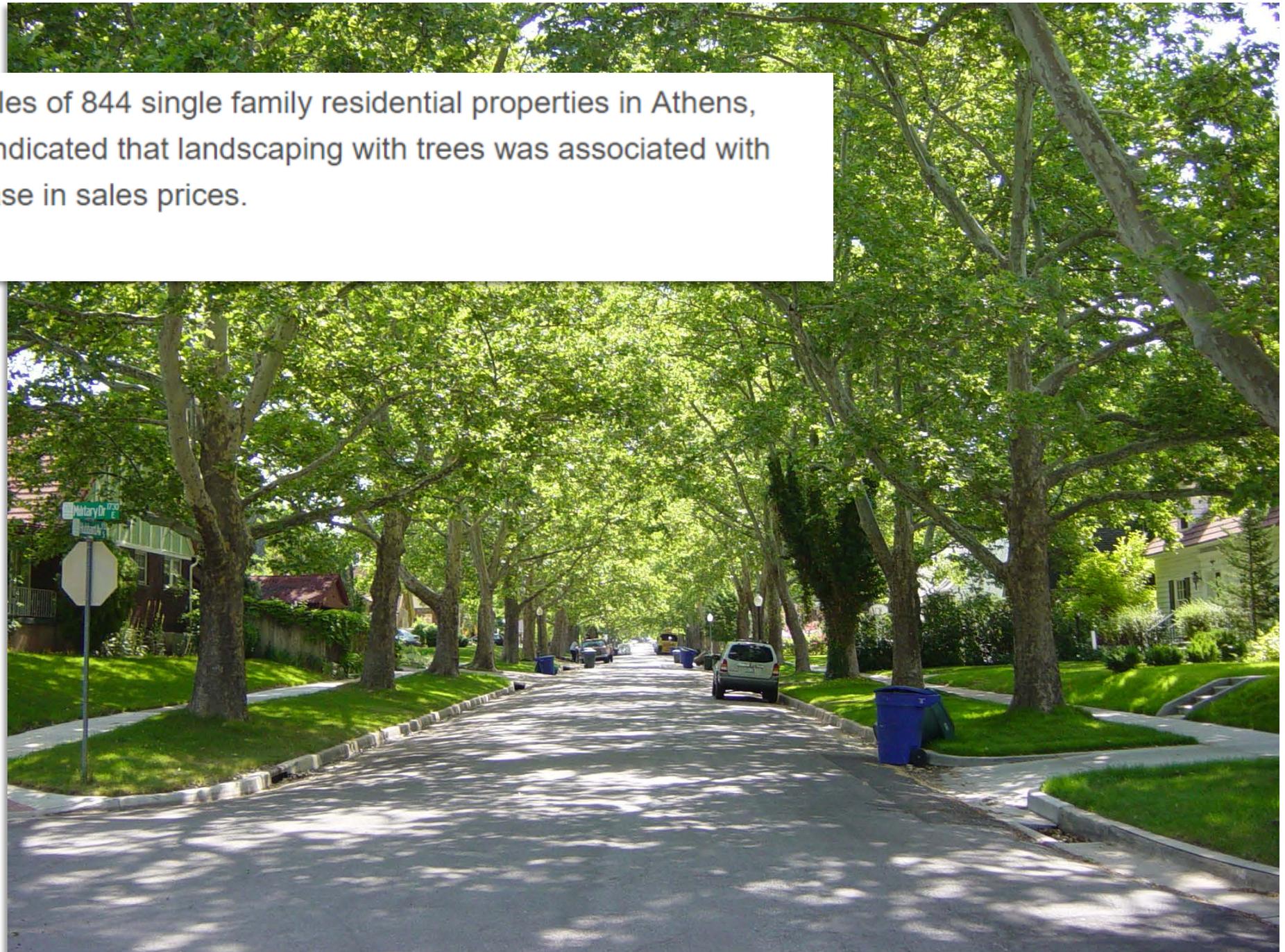


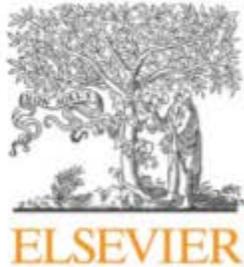
Influence of trees on residential property values in Athens, Georgia (U.S.A.): A survey based on actual sales prices

L.M. Anderson, H.K. Cordell



A survey of the sales of 844 single family residential properties in Athens, Georgia, U.S.A., indicated that landscaping with trees was associated with 3.5%–4.5% increase in sales prices.

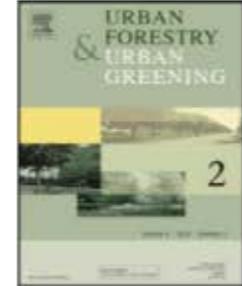




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Urban Forestry & Urban Greening

journal homepage: www.elsevier.de/ufug



The effect of urban trees on the rental price of single-family homes in Portland, Oregon

Geoffrey H. Donovan^{a,*}, David T. Butry^{b,1}

^a USDA Forest Service, PNW Research Station, 620 SW Main, Suite 400, Portland, OR 97205, United States

^b National Institute of Standards and Technology, 100 Bureau Drive, Mailstop 8603, Gaithersburg, MD 20899-8603, United States



Few studies have estimated the effect of environmental amenities on the rental price of houses. We address this gap in the literature by quantifying the effect of urban trees on the rental price of single-family homes in Portland, Oregon, USA. We found that an additional tree on a house's lot increased monthly rent by \$5.62, and a tree in the public right of way increased rent by \$21.00. These results are consistent with a previous hedonic analysis of the effects of trees on the sales price of homes in Portland, which suggests that homeowners and renters place similar values on urban trees.

U
W
I

Urban Wildland Interactions

team

Photo credit: Guy Kramer

- Home
- Team Members
- Projects
- Green Cities Research Alliance



**Green Cities:
Good Health**



Dr. Geoffrey Donovan

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My research is in two main areas: the economics of wildfire management and, more recently, the economics of urban forestry. My research in wildfire economics has covered a range of topics including the optimal deployment of suppression resources, the costs of agency and contract crews, decision making under uncertainty, the effect of wildfire risk on the housing market, the effect of newspaper coverage and political pressure on wildfire suppression costs, and the interdependence of homeowners' wildfire risk. In my urban forestry research, I have estimated the impact of trees on house prices, rental prices, crime, energy use, and birth outcomes. Future studies will focus on the effect of urban trees on public health and storm-water management. For more details on specific studies, click on the publications link below. In addition, please contact me if you have any questions about my work. Finally if you are interested in receiving copies of future papers, then send me your e-mail address. Please specify whether you are interested in wildfire, urban forestry, or both.

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Urban Ecosystems and Social Dynamics Program



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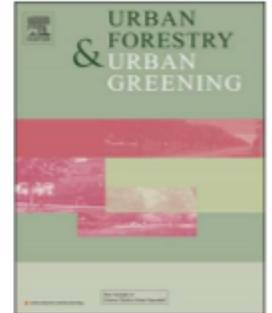
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Original article

The structure, function and value of urban forests in California communities



E. Gregory McPherson^{a,*}, Qingfu Xiao^b, Natalie S. van Doorn^c, John de Goede^d,
Jacquelyn Bjorkman^d, Allan Hollander^d, Ryan M. Boynton^d, James F. Quinn^d, James H. Thorne^d

^a USDA Forest Service, Pacific Southwest Research Station, 1731 Research Park Dr., Davis, CA 95616, United States

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^c USDA Forest Service, Pacific Southwest Research Station, United States

^d Department of Environmental Science and Policy, University of California, Davis, United States

The 173.2 million trees reported in this study is similar to the previously estimated 177.3 million trees (McPherson and Simpson, 2003),



Assuming the ratio of vacant sites to live trees found for residential land uses is unchanged from 2003 (1.36:1), there are approximately 236.1 million vacant sites. If this number is correct, 42% of all sites have trees, indicating that there is ample opportunity for new tree planting. Given that the state has 9.1 million street trees (McPherson et al., 2016a), street trees account for about 5% of California's entire urban forest.

Ecosystem services, or ecoservices, include energy conservation, air quality improvement, carbon storage, stormwater runoff reduction and wildlife habitat.



The Guide for Plant Appraisal: Overview of the 10th Edition

By Jim Clark

In 2012, the Council of Tree & Landscape Appraisers (CTLA) released a draft of *Guide for Plant Appraisal, 10th Edition*. Member organizations provided comments and suggestions. The responses resulted in a reboot of the preparation of the 10th edition, as well as several changes in Council representation. The Council looks forward to the release of a second draft in the near future. In anticipation of the new draft, the Council thought it would be valuable to review some of the goals for the new edition.

Second, the new edition will discuss the concepts that form the foundation of plant appraisal. Previous editions of the *Guide* did not cover this topic and instead focused largely on methods. Given the feedback the Council has received from member organizations, it is clear that a framework of the appraisal process is also needed. The 10th edition will bridge the gap between concept and practice with a more detailed discussion of the appraisal process, as well as identifying the purpose and use of the appraisal.

Table 5

Annual monetary value of ecoservices and total asset value (all in million \$US) by climate zone and state-wide (se) (InlEmp = Inland Empire, InlVal = Inland Valleys, NoCalC – Northern California Coast, SoCalC = Southern California Coast, SWDsrt = Southwest Desert, InterW = Interior West, Calif = California).

Ecoservice	InlEmp	se	InlVal	se	NoCalC	se	SoCalC	se	SWDsrt	se	InterW	se	Calif	se
Energy	202.8	3.2	259.3	1.7	49.8	1.7	29.1	0.3	17.8	0.8	9.9	0.1	568.6	11.1
Carbon Dioxide	14.8	0.2	32.8	0.2	34.9	1.2	17.0	0.2	1.5	0.1	1.4	0.0	102.4	2.0
Air Quality	1.7	0.01	57.9	0.03	-47.1	0.17	38.7	0.04	1.6	0.00	3.4	0.00	56.2	1.10
Stormwater	80.5	1.3	97.8	0.6	64.0	2.2	76.8	0.9	4.1	0.2	1.6	0.0	324.6	6.3
Property Value/Other	1,058.2	16.7	2,250.0	14.4	1,673.4	57.4	2,132.0	25.6	109.3	5.2	11.2	0.2	7,234.1	141.5
Ecoservice Total	1,358.0	21.4	2,697.8	16.9	1,774.9	62.7	2,293.6	27.2	134.2	6.3	27.4	0.4	8,285.9	162.1
Total Asset Value	28,980.8	456.3	49,464.7	315.5	31,915.4	1,094.7	61,558.3	740.3	8,114.3	386.5	978.3	14.6	181,012.0	3,540.7



The total annual value of all ecoservices was \$8.29 billion (\$162.1 million se), or \$47.83 per tree ($\$0.94 \text{ year}^{-1} \text{ se}$) and \$235 per capita (Table 5). When the state's urban trees were considered as a capital investment similar to other infrastructure, their asset value was \$181 billion (\$3.54 billion se) or \$1045 per tree ($\20.44 se).

The most recent state-wide survey found that annual management costs per municipal tree averaged \$19 (Thompson, 2006). Assuming that the average annual per tree management cost is \$19 and the benefit is \$47.83, \$2.52 in benefit is returned for every \$1 spent.



Extrapolating value from large front yard trees to smaller trees in less conspicuous locations is fraught with uncertainty. Estimates of property value and other benefits may be accurate within $\pm 35\%$. It is important to note that the greatest uncertainty is associated with estimates of these property value and other benefits, and they were estimated to account for 87% of total annual ecoservices.

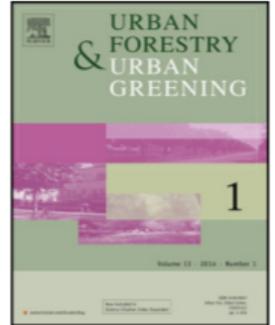


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Life cycle assessment of carbon dioxide for different arboricultural practices in Los Angeles, CA



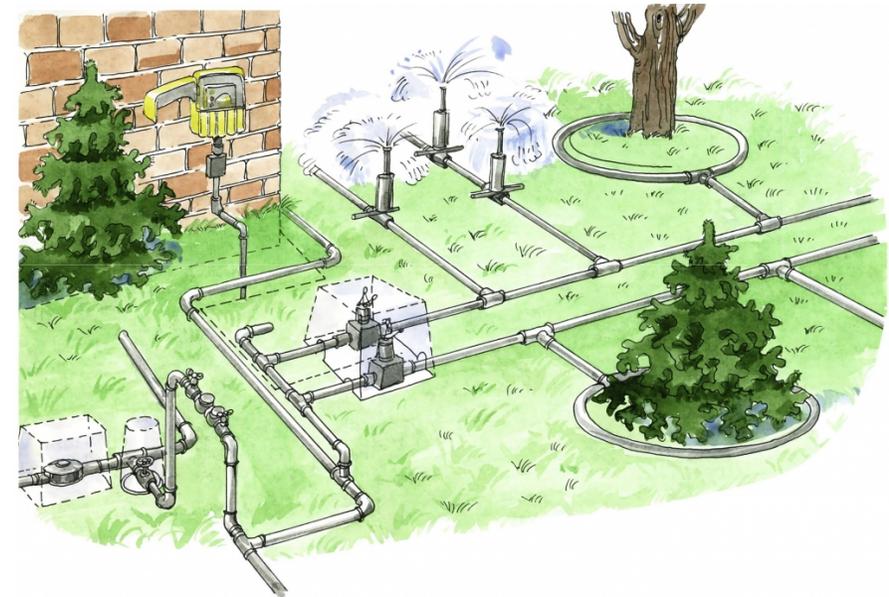
E. Gregory McPherson^{a,*}, Alissa Kendall^b, Shannon Albers^b

^a *Urban Ecosystems and Social Dynamics Program, Pacific Southwest Research Station, USDA Forest Service, 1731 Research Park Dr., Davis, CA 95618, USA*

^b *Department of Civil and Environmental Engineering, University of California, Davis, One Shields Ave., Davis, CA, 95616, USA*



For the Highest Emission Case, total emissions (9.002 t) exceeded CO₂ stored (-7.798 t), resulting in net emissions of 1.204 t. The Lowest Emission Case resulted in net removal of -3.768 t CO₂ over the 50-year period. Tree selection and irrigation water management were key leverage points in Los Angeles.



Conclusions

A key leverage point for arborists in Los Angeles is tree selection and irrigation water management. In this study CO₂ emissions for low and high irrigation scenarios accounted for 10.6% to 17.2% of the amount stored in tree biomass over the 50-year life. Because of differing employment geographies and scopes of work, not all arborists can influence tree selection and irrigation.

The Chrisman Windgap Pumps

Another Southern California iconic water infrastructure landmark are these pumps, visible on I-5 around Tejon Ranch. The Chrisman Windgap Pumps lift the water about 800 feet up to begin to cross the Tehacahpis to deliver water into Southern California.





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Scientists & Staff



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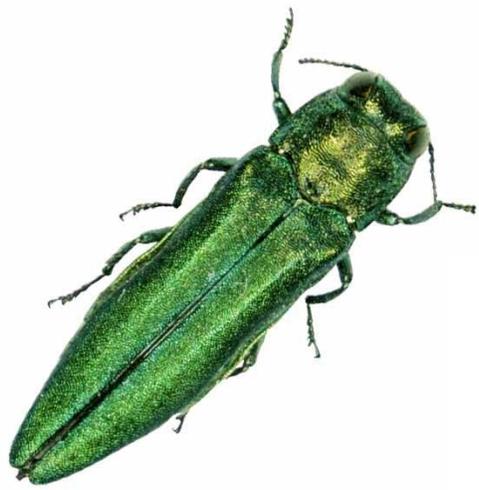
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- i-Tree 2018 Suite version 6.1.20 is now available

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Emerald ash borer (EAB), *Agrilus planipennis* Fairmaire, is an exotic beetle that was discovered in southeastern Michigan near Detroit in the summer of 2002. The adult beetles nibble on ash foliage but cause little damage. The larvae (the immature stage) feed on the inner bark of ash trees, disrupting the tree's ability to transport water and nutrients. Emerald ash borer probably arrived in the United States on solid wood packing material carried in cargo ships or airplanes originating in its native Asia. As of August 2017, it is now found in 31 states, and the Canadian provinces of Ontario and Quebec. Since its discovery, EAB has:





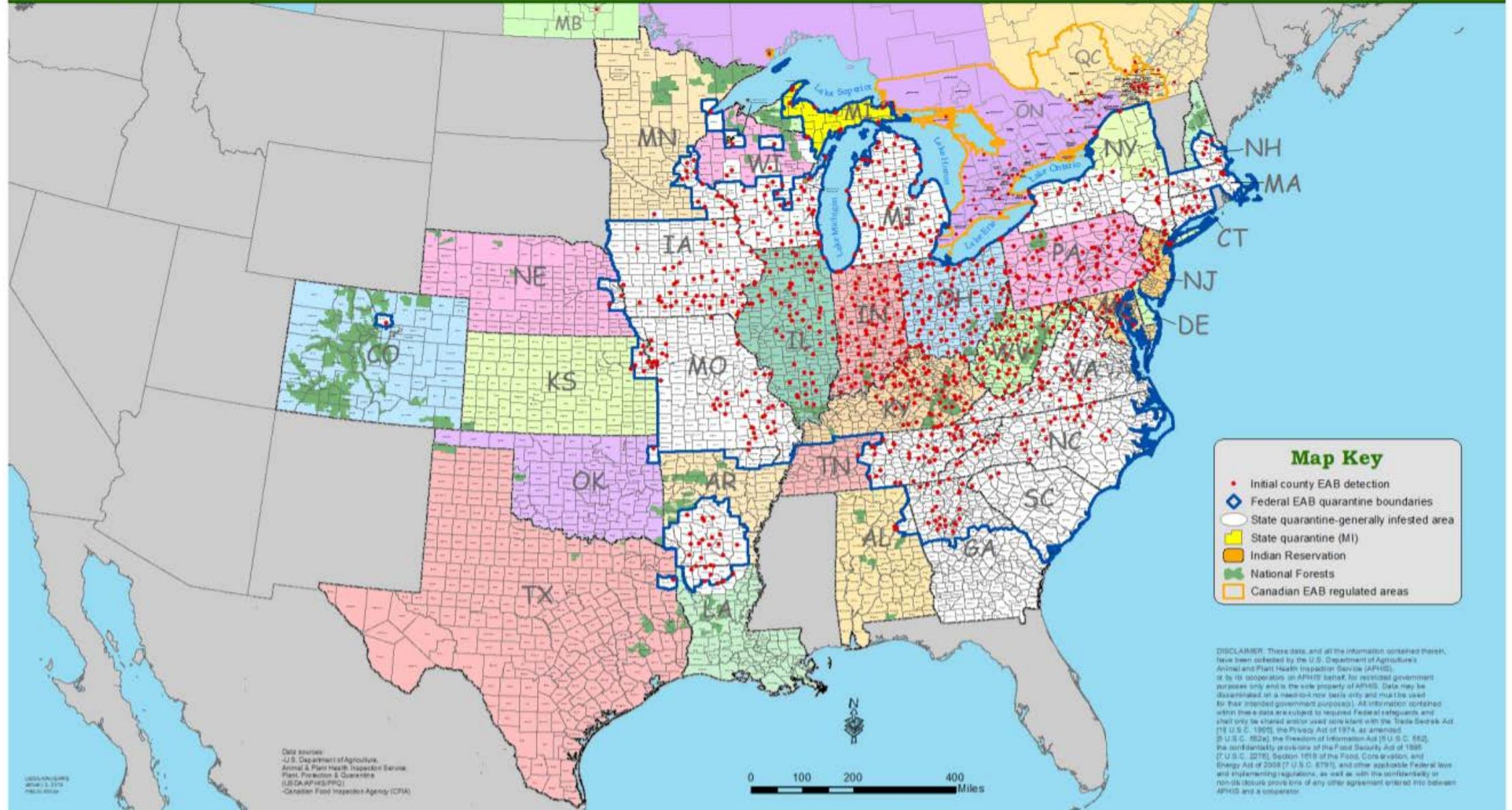
- Killed hundreds of millions of ash trees in North America.
- Caused regulatory agencies and the **USDA** to enforce quarantines and fines to prevent potentially infested ash trees, logs or hardwood firewood from moving out of areas where EAB occurs.
- Cost municipalities, property owners, nursery operators and forest products industries hundreds of millions of dollars.



Cooperative Emerald Ash Borer Project

Initial county EAB detections in North America

January 2, 2018



UWI

Urban Wildland Interactions

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Photo credit: Guy Kramer

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**Green Cities:
Good Health**



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The Relationship Between Trees and Human Health

Evidence from the Spread of the Emerald Ash Borer

Geoffrey H. Donovan, PhD, David T. Butry, PhD, Yvonne L. Michael, ScD,
Jeffrey P. Prestemon, PhD, Andrew M. Liebhold, PhD,
Demetrios Gatzliolis, PhD, Megan Y. Mao

Conclusions: Results suggest that loss of trees to the emerald ash borer increased mortality related to cardiovascular and lower-respiratory-tract illness. This finding adds to the growing evidence that the natural environment provides major public health benefits.

(Am J Prev Med 2013;44(2):139–145) Published by Elsevier Inc. on behalf of American Journal of Preventive Medicine

And this
is how
we repay
them?



When Trees Die, People Die

The curious connection between an invasive beetle that has destroyed over 100 million trees, and subsequent heart disease and pneumonia in human populations nearby

LINDSAY ABRAMS

JAN 22, 2013

HEALTH



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TEXT SIZE



View through a window may influence recovery from surgery.

by Roger S. Ulrich



The records showed that patients with window views of the trees spent less time in the hospital than those with views of the brick wall: 7.96 days compared with 8.70 days per patient [Wilcoxon matched-pairs signed-ranks analysis, $T(17) = 35$, $z = 1.965$, $P = 0.025$].

View through a window may influence recovery from surgery.

by Roger S. Ulrich



The wall group, therefore was given many more doses of potent narcotics, whereas the tree group more frequently received such drugs as aspirin and acetaminophen.

In summary, in comparison with the wall-view group, the patients with the tree view had shorter postoperative hospital stays, had fewer negative evaluative comments from nurses, took fewer moderate and strong analgesic doses, and had slightly lower scores for minor postsurgical complications.

Nature and Health

Terry Hartig,¹ Richard Mitchell,² Sjerp de Vries,³
and Howard Frumkin⁴

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²Centre for Research on Environment, Society and Health, Institute of Health and Wellbeing, University of Glasgow, Glasgow G20 0TY, United Kingdom; email: Richard.Mitchell@glasgow.ac.uk

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Pathways Through Which Contact With Nature Relates to Health

- Air Quality
- Physical Activity
- Social Cohesion
- Stress Reduction



Air Quality

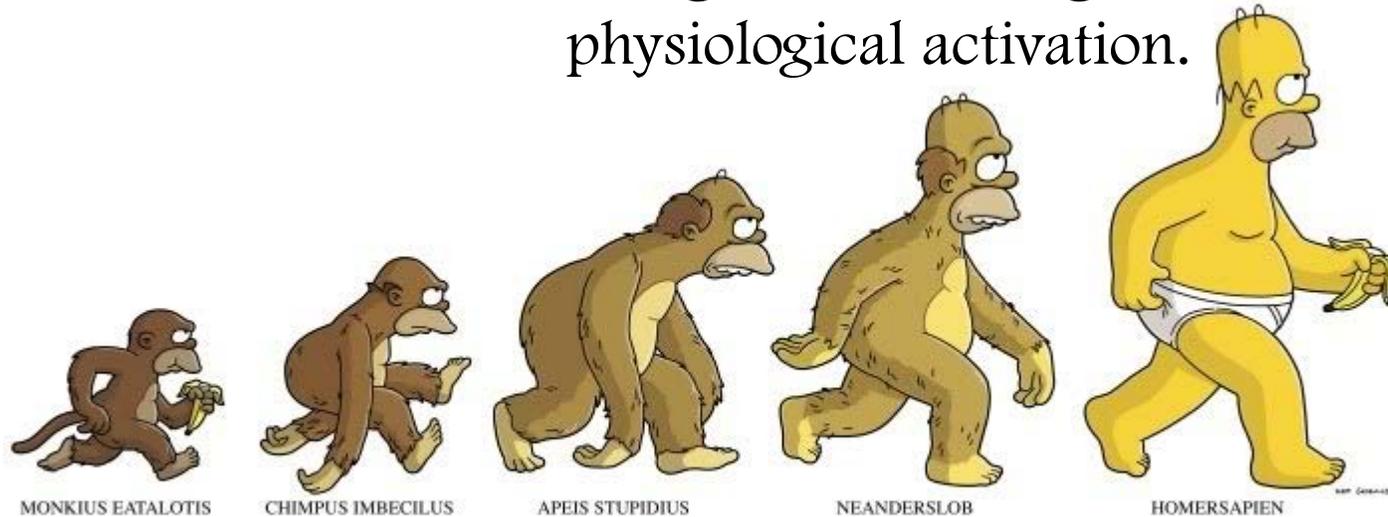
Trees may reduce levels of some pollutants, including gases and particulate matter.

They may also contribute to air pollution by releasing hydrocarbons and allergens.



Stress Recovery

Psychoevolutionary theory holds that, for a person experiencing acute stress, nature contact can very rapidly evoke positive affect, which in turn blocks negative thoughts and feelings and fosters reduction of physiological activation.



HOMERSAPIEN

Evolution purportedly conserved this functional aesthetic response because more rapid recovery from acute stress would have helped proto-humans better prepare for the next survival task.

Attention Restoration

Attention restoration theory holds that effortless attention engaged by intrinsically interesting aspects of nature enables rest for a fatigued neurocognitive inhibitory mechanism engaged when willfully direction attention.



People must inhibit task-irrelevant stimuli as they direct their attention at work and in my other circumstances. Fatigue of this directed attention capability occurs commonly, undermines effective action, and can increase susceptibility to stress.

Evidence suggests that contact with nature has a small effect on health and well-being in comparison to structural characteristics such as income, employment, or education, and behavioral characteristics such as smoking.

...however, a small beneficial effect on a large number of people is a large contribution to population health.



Shinrin-yoku

*Japanese (n):
a visit to the forest for relaxation
and to improve one's health*

Blood pressure-lowering effect of Shinrin-yoku (Forest bathing): a systematic review and meta-analysis.

Ideno Y¹, Hayashi K², Abe Y³, Ueda K⁴, Iso H⁵, Noda M⁶, Lee JS⁷, Suzuki S⁸.

+ Author information

Abstract

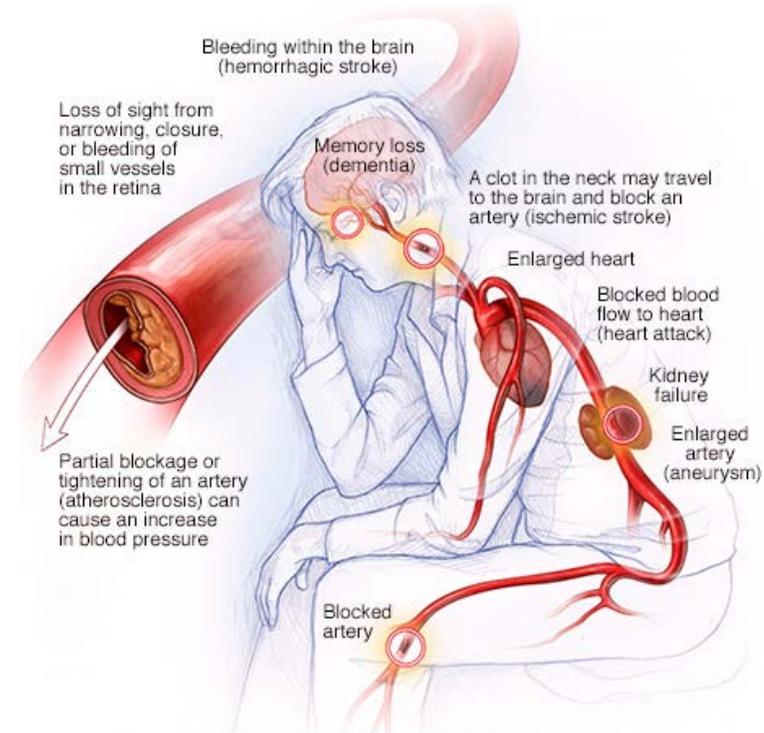
BACKGROUND: Shinrin-yoku (experiencing the forest atmosphere or forest bathing) has received increasing attention from the perspective of preventive medicine in recent years. Some studies have reported that the forest environment decreases blood pressure. However, little is known about the possibility of anti-hypertensive applications of Shinrin-yoku. This study aimed to evaluate preventive or therapeutic effects of the forest environment on blood pressure.



METHODS: We systematically reviewed the medical literature and performed a meta-analysis. Four electronic databases were systematically searched for the period before May 2016 with language restriction of English and Japanese. The review considered all published, randomized, controlled trials, cohort studies, and comparative studies that evaluated the effects of the forest environment on changes in systolic blood pressure. A subsequent meta-analysis was performed.

RESULTS: Twenty trials involving 732 participants were reviewed. Systolic blood pressure of the forest environment was significantly lower than that of the non-forest environment. Additionally, diastolic blood pressure of the forest environment was significantly lower than that of the non-forest environment.

CONCLUSIONS: This systematic review shows a significant effect of Shinrin-yoku on reduction of blood pressure.

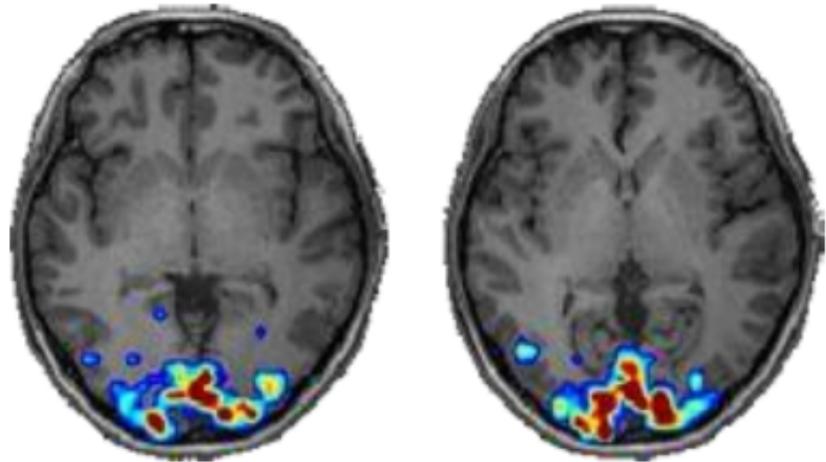




Sam Harris Podcast #111
The Science of Meditation

What is fMRI?

Imaging Brain Activity



Courtesy of Dr. David Shin, UC San Diego

In your brain the activity of the neurons constantly fluctuates as you engage in different activities, from simple tasks like controlling your hand to reach out and pick up a cup of coffee to complex cognitive activities like understanding language in a conversation. The brain also has many specialized parts, so that activities involving vision, hearing, touch, language, memory, etc. have different patterns of activity. Even when you rest quietly with your eyes closed the brain is still highly active, and the patterns of activity in this resting state are thought to reveal particular networks of areas that often act together. *Functional magnetic resonance imaging* (fMRI) is a technique for measuring and mapping brain activity that is noninvasive and safe. It is being used in many studies to better understand how the healthy brain works, and in a growing number of studies it is being applied to understand how that normal function is disrupted in disease.



Complexity?





Thank you for
your time and
attention!