

Fall 2000

SACRAMENTO TREE FOUNDATION

# STATE OF THE TREES REPORT

A Call to Action for the Sacramento Region





In January 1999, the Board of Directors of the Sacramento Tree Foundation approved a special project to: (a) research and identify the priority needs of Sacramento trees and (b) set the agenda for community action to meet those needs.

This State of the Trees Report represents the thinking and vision of our board and staff, members of the scientific community, urban foresters and arborists, and civic and elected leaders from throughout the region.

# EXECUTIVE SUMMARY

*"The trees have taken exceptional care of Sacramento over the years. The very least we can do is return the favor."*<sup>6</sup>

— *The Sacramento Bee*

Trees are Sacramento's crowning glory. Anyone who has strolled beneath the cooling, soothing canopy of towering elms and sycamores knows the city is graced by a special relationship with trees. In Sacramento, at the heart of California's great Central Valley, our tree-lined boulevards, parks and residential foliage evoke far more than an appreciation for natural beauty. They represent 150 years of commitment to trees based on a profound understanding of the economic, social and civic benefits that trees bequeath.

People take for granted that Sacramento will always be blessed by its magnificent trees. But in fact, the city's urban forest is the result of a unique set of people and circumstances. Today, Sacramento's urban forest - comprising six million trees<sup>1</sup> - faces significant threats. In the downtown area, thousands of aged plane trees, mature oaks and elderly elms are losing their battle with time and neglect. Seedlings planted a century ago now form a geriatric forest whose venerable members are dying. Each death leaves a gap. While many young trees are being planted, they are predominately species that can never replace the stature and girth of the old ones.

It's not just age that is taking its toll. The city and county departments that shoulder the responsibility for tree care are strapped by staff and budget restrictions. As the region's growth increases, these public agencies have more trees to tend and fewer resources with which to do it. Although civic pride can muster volunteers to patrol for disease and damage, the public agencies - with their current resources - cannot maintain a pruning schedule or disease and pest eradication program worthy of Sacramento's street and park trees.

Ironically, this under funding of tree care services comes at a time when mounting scientific evidence shows that planting thousands of new trees each year will effectively reduce

the Sacramento region's energy needs, improve air quality, and bolster public health. In fact, our existing tree canopy returns over \$50 million in environmental benefits annually. New studies show that planting three to five million additional trees will result in dramatic improvements in air quality – and help bring the Sacramento region into compliance with state and federal air quality standards.<sup>2</sup>

This report describes current conditions and benefits of the urban forest. It outlines challenges and opportunities. It recommends actions to sustain and improve what many citizens call our most precious natural resource.<sup>3</sup> Finally, this report calls on the Sacramento region to develop a shared vision and regional tree management plan.<sup>4</sup> This plan should 1) set targets for planting millions of more trees over the next thirty years. It should 2) quantify the benefits and the investment needed. It should 3) define consistent tree planting and tree care policies. Most importantly, it should 4) explain to the public why it should invest heavily in developing an urban forest that can sustain a high quality of life in the region for generations to come.



## City Street & Park Trees Fail to Keep Pace with Population Growth<sup>5</sup>

YEAR	POPULATION	SQ. MILES	TREES	TREES/ CAPITA
1940	106,000	14	60,000	.56
1955	170,000	38	100,000	.58
1995	394,000	111	155,000	.39

# HISTORY

*“At the verge of the (Sacramento River) banks, oaks of immense size were plentiful. These appeared to form a band on each side, about three hundred yards in depth, and within they were to be seen disposed in clumps, which served to relieve the eye, wandering over what might otherwise be described as one level plain or sea of grass.”<sup>7</sup>*

— Captain Edward Belcher, 1837

Trees were once the exception to Sacramento’s landscape. Before the arrival of the European settlers, the rivers flowing from the foothills contained the densest populations of trees: willow and cottonwood, Oregon ash and sycamore, California black walnut and valley oak. Beyond these riparian belts, grasslands dotted with blue and interior live oak stretched east and west toward the mountains bounding the valley. The rest of the nearly level valley floor was so uniformly covered by grasses that the community of Sacramento, settled in 1839, soon became known as the City of the Plains.

John Augustus Sutter, Jr. and other early settlers of the City of the Plains valued the beauty, bounty and shade of these native trees. In 1849, when Sutter laid out the 900-block grid of streets that became the city of Sacramento, he designated 12 public squares as city parks. Three years later, James L. Warren issued a nursery catalog offering fruit and ornamental trees for sale from his New England Seed Company. By 1857, The Sacramento Bee editor James McClatchy lauded “the thousands of trees that (were) being planted” and predicted that “in a few years . . . our city (would) almost appear a forest.”

The first trees to be intentionally planted along Sacramento’s streets were California sycamores planted in the 1850s along J Street. In the 1870s, civic leaders launched a planting program that introduced the American and English elms that still grace downtown streets with their arching, and now aged, branches. Landscaping of the Capitol grounds began in 1870, when the California State Agriculture Society planted 800 trees and flowering shrubs representing 200 varieties from all over the world. In 1877, at the recommendation of the president of the Board of Health, 4,000 exotic eucalyptus trees from Australia were planted to dry up low-lying areas of stagnating water in order to reduce the habitat for disease-carrying mosquitoes.

Early in the 20th century, a flourish of civic engagement with trees, parks and gardens resulted in a city gardener position, a street tree ordinance, a parks board, and a \$1 per person tree fee. The tree boosters responsible for this impressive public commitment included C.K. McClatchy, editor of The Sacramento Bee from 1883 to 1936. McClatchy was such an outspoken advocate of trees that he published front-page obituaries for individual specimens killed by vandals.

A 1936 survey compiled by the city Department of Parks inventoried a total of 60,000 public trees. Of these, approximately 35,000 were street trees, 24,000 in parks and cemeteries, and another 1,000 classified as alley trees. Between 1940 and 1955 the number of city street and park trees nearly doubled to 100,000. The ratio of approximately one tree for every two residents easily bettered Paris, whose world-renowned street trees amounted to a mere one tree for every 10 residents.

## Trees improve air quality

Planting trees to shade parking lots can reduce automobile hydrocarbon emissions by 2 percent a day – at a cost equal to or less than currently-funded air pollution control programs – according to the U.S. Forest Service.<sup>8</sup> Preliminary results indicate that planting 3 to 5 million more trees in the Sacramento region will contribute to a 2-3 °F reduction in afternoon air temperatures and a 7 percent reduction in peak ozone concentrations.<sup>9</sup> The Sacramento Tree Foundation’s vision is to plant one million trees a decade for the next five decades.



An 1889 proposal for a horticultural gateway along Capitol Mall.

Despite these bragging rights, funding for the city's tree program began a gradual fiscal decline that continues today. The City Council allocated 2 percent of its budget to trees in 1940, but only 1.75 percent in 1955.<sup>10</sup> By 1991, city tree programs received 0.87 percent of the city budget, and for fiscal year 2000, the city's allocation is 0.65 percent of the city budget.<sup>11</sup>

Behind those numbers lie some other troubling trends. In 1991, the city was caring for a total of 155,000 trees. But faced in 1992 with a budget crunch, the city released 57,500 street trees from its responsibility, transferring them to private property owners.<sup>12</sup> The care of these trees is now unregulated and unpredictable. Although the total dollars spent has remained relatively unchanged in the past decade – \$3,337,000 in 1991 compared to \$3,348,187 in fiscal 2000 – the actual number of trees under city supervision has declined by nearly 40 percent.

On top of dwindling public funds, the number of public trees planted in the city began to slide after the 1950s. The combination of fewer funds and fewer trees, along with the first signs of Dutch elm disease and the advancing age of many street trees, sounded an alarm in the 1990s among the city's tree devotees.

Trees in unincorporated Sacramento County fared no better during the post-war period. As the area urbanized in response to an expanding population, the county widened its streets, giving up most public easements. This drastically curtailed county maintenance of existing street trees and left little space for new street trees. Today, only one out of every 20 public trees in the county gets regular maintenance – 9,200 of a total 172,000.<sup>13</sup>

During this same period, park districts acquired open space land and created public parks that often had native oak stands supplemented with new trees. These districts are largely dependent on the county for funding. When budget cuts occur, it reduces maintenance and operational budgets resulting in inadequate tree care.

The combination of fewer funds and fewer trees was accentuated by the passage by California voters of Proposition 13 in 1978. This tax limitation measure forced state, city and county administrators to prioritize their services.

Tree and park maintenance was typically given low priority.

After witnessing several years of drastic budget cuts to their park and street trees, in 1981 City of Sacramento Mayor Phil Isenberg joined with County Supervisor Illa Collin and other concerned citizens to create a new non-profit organization dedicated to the protection and planting of trees, the Sacramento Tree Foundation.

In 1989, the Sacramento Tree Foundation was asked to launch a bold and visionary campaign to enlist the community-at-large to plant one million trees in the Sacramento region by the year 2001. With support from business and civic leaders and local governments, the campaign was launched in early 1990. The Sacramento Municipal Utility District (SMUD) responded to the call for action with a pledge to plant up to 500,000 energy saving shade trees. This partnership would grow to become the largest shade tree program in the nation. To date, it has engaged SMUD customers in planting a total of 275,000 trees on private land in nine years, resulting in a total energy savings estimated at nearly \$18 million.<sup>14</sup> To help plant the remaining

725,000 trees, the Sacramento Tree Foundation has established community outreach programs such as Community Shade and NeighborWoods.

The planting of the one millionth tree will be celebrated on National Arbor Day, April 28, 2001.

## Budgets: City Street & Park Trees

	1940	1955	1985	2000
Public Trees	60,000	100,000	155,000	160,000*
Public Trees Under City Care	60,000	100,000	155,000	92,500
Percent City Budget	2%	1.75%	.87%	.65%



\* Estimate by City Arborist Martin Fitch

In 1996 Dr. E. Gregory McPherson, a USDA Forest Service research forester, used Sacramento as a case study for the most comprehensive report on the development and structure of any urban forest in the country. The Sacramento Urban Forest Ecosystem Study analyzed the full spectrum of benefits of Sacramento's trees – from energy savings, air pollutant uptake and carbon reduction as well as general health, wildlife and property benefits.

These analyses provided data for the Sacramento region's first State of the Urban Forest Report, developed in 1996 by the Sacramento Tree Foundation with contributions from city, county, state and federal agencies. This report summarized the collective knowledge and current condition of the trees, their benefits and investments.

To further establish a baseline of scientific information, in the spring of 1998, the Sacramento Tree Foundation enlisted the National Aeronautics and Space Administration (NASA) to record the surface and ambient air temperatures of the Sacramento region. On a clear June day, a NASA jet aircraft used a variety of sensors and imaging techniques to map the region from an altitude of 16,000 feet. Data from this project will give the Sacramento region a comprehensive inventory of surface and ambient air temperatures and potential planting sites; it can also be used to develop a long-term tree planting and management plan to improve air quality, reduce energy use, cut greenhouse emissions, reduce ultraviolet radiation exposure, and control storm water runoff.<sup>15</sup>

Despite the noble beginning and recent efforts, the current management of Sacramento's urban forest remains a piecemeal effort. The city adopted an urban forest management plan in 1992 that called for, among other things, a six-year care cycle for every public tree. Yet to date, the city has failed to provide adequate funding to achieve the plan's goals or even describe a timetable for its implementation.

In Sacramento County, there are heritage tree preservation ordinances and landscape zoning code requirements for new trees, but there are no comprehensive urban forest management plans – nor have they ever been considered. Similarly, the cities of Folsom, West Sacramento, Citrus Heights, Elk Grove, Galt, Isleton and the adjacent counties of Placer, El Dorado and Yolo all have different tree management and preservation strategies. Within Sacramento County there are nineteen park districts applying their individual tree policies. All entities are experiencing continuing growth and increasing demands for public services.

Set in this theater, there is no unifying recognition of the value of the urban forest nor is there a vision of how to manage it in the future. As a result, the vast majority of trees in the Sacramento region remain at the mercy of a management philosophy that can at best be charitably described as laissez faire, at worst as haphazard and neglectful.

### Trees reduce skin cancer

Planting trees over school playgrounds, parks, rest areas, and other outdoor places where people congregate will reduce skin cancer and drive down health costs, according to the California Department of Health Services. Trees absorb up to 90 percent of the UV radiation, providing a natural form of sunscreen – an equivalent between 10 to 20 SPF.<sup>16</sup>



This NASA image, recording surface and air temperatures of the Sacramento region, will assist our community in strategically planting new trees.

# BENEFITS BEYOND BEAUTY

*In Sacramento "people suffer and sweat, and swear, morning, noon, and night, and wear out their staunchest energies fanning themselves."*<sup>17</sup>

— Mark Twain

## Trees reduce storm water runoff

Trees capture and store rainfall on leaves and branches, thereby reducing runoff and reducing the risk of flooding. Root growth reduces soil erosion and also increases the rate of water absorption.

Trees are a natural wonder. They produce oxygen and store carbon dioxide, contributing to a natural balance of atmospheric gases. Trees are one of the planet's natural resources for moderating the influence of climate. Their leafy branches shade and cool, and absorb harmful ultraviolet rays. Their roots store water. Trees in heavily populated areas play an important role because they significantly reduce the demand for energy.

Trees are particularly valuable in warm, sunny populous areas like Sacramento because they reduce what is known as the "urban heat island effect." Heat islands can be seen as reverse oases. They are created by dark, impervious surfaces such as pavements and roofing. The dark surfaces absorb heat during the day, raising temperatures and triggering chemical reactions that contribute to unhealthy air. The heat absorbed during the day is released into the atmosphere at night, exacerbating air quality problems and increasing energy usage.

In the Sacramento region, where the Mediterranean climate routinely drives summer temperatures to 100 degrees and above, studies have shown that shade trees save approximately 12 percent of the total annual air conditioning energy costs. That amounts to approximately \$18.5 million in savings annually.<sup>18</sup> Sacramento County alone has as many as 470,000 additional planting sites<sup>19</sup> for energy-saving shade trees. If trees were planted in each of these sites, it could result in an additional energy savings of nearly \$30 million annually.<sup>20</sup>

## Trees Reduce Demand for Electricity

	Per Day (peak summer demand)	Yearly Total
Reduction in energy demand due to Sacramento County's existing trees. <sup>22</sup>	6.1 % percent of total energy use	11.6 % percent of total energy use

In fact, the Sacramento region is uniquely positioned to capitalize on the benefits of trees. For example, scientists have shown that Sacramento's six million trees reduce atmospheric carbon dioxide levels by storing around 238,000 tons of carbon dioxide as woody and leafy biomass each year. Another 76,000 tons of carbon emissions are avoided annually due to energy savings from trees. Although Sacramento's trees release 9,400 tons of carbon dioxide annually as they die, that total is a mere 3 percent of the amount sequestered and avoided through reduced energy use. The result is a net removal of 334,400 tons of carbon dioxide annually by the urban forest, an amount valued at \$3.3 million annually.<sup>21</sup>

Reduced air temperatures slow down the formation of ozone (smog) in the Sacramento region. Studies show that Sacramento’s existing canopy delivers \$29 million in benefits each year through uptake of air pollutants. Planting an additional 3 to 5 million trees in the Sacramento region will lower average temperatures by 2 to 3 °F in the summer and reduce peak ozone by 7 percent – providing tens of millions of dollars in benefits in improved air quality.<sup>23</sup>

Trees could provide millions of dollars in air quality benefits to the Sacramento region in another way – by reducing the amount of NOx, a component of smog. The Environmental Protection Agency has established a specific target for NOx reduction that Sacramento must reach and maintain by 2003. Otherwise, the region will lose billions of dollars in federal transportation funding.

## Trees Reduce NOx

	Per Day <small>(peak)</small>	Yearly Total
NOx uptake by existing trees in Sacramento County <sup>25</sup>	0.6 tons	148.4 tons
Total NOx uptake with one million new trees in Sacramento County <sup>26</sup>	0.8 tons	197.8 tons

Many measures must be taken to reach that level, but one long-term strategy is literally over our heads. Each year, trees remove 148 tons of NOx in Sacramento. There are enough planting sites for several million additional trees in the Sacramento metropolitan area.<sup>24</sup> Over time, with a comprehensive tree planting program, the Sacramento region would come significantly closer to meeting the required EPA air quality levels.

In addition, trees provide other social and economic benefits. They are significant contributors to storm water management. They reduce the rate of skin cancer. Trees buffer the negative impacts of new development and can revitalize blighted areas. They increase property values. The 1996 Sacramento Urban Forest Ecosystem Study documented these benefits, offering detailed analyses in terms of both environmental and financial savings.

## Annual Environmental Benefits of Sacramento’s Urban Forest <sup>27</sup>

	Annual Benefit	Total Value	Average Annual Benefit /Tree
Air Conditioning Saved	157 GWh	\$18.5 million	\$3.08
Air Pollutant Uptake	1,603 Tons	\$28.7 million	\$4.78
Carbon Dioxide Reduction	334,400 Tons	\$3.3 million	\$0.55
<b>Total Benefits</b>		<b>\$50.5 million</b>	<b>\$8.41</b>

## Trees improve business

Well-shaded retail centers attract customers that are willing to travel further, shop longer, visit more frequently and pay up to 11 percent more for products, according to a University of Washington study.<sup>28</sup>

# CURRENT CONDITIONS AND CHALLENGES

## Trees save on street repairs

Trees extend the life of street surfaces by shading them. Repaving can be deferred 10 years or more for heavily shaded streets. In Modesto, savings are currently projected at nearly \$800,000 annually.<sup>36</sup>

*"Like the aging of a familiar face, the decline in city trees has been so gradual as to be almost imperceptible."*<sup>29</sup>

— *U.S. News and World Report*

All of the assessments indicate that Sacramento's urban forest is, at best, past its prime; at worst, it is a geriatric stand badly in need of aggressive management, care and selective replacement.<sup>30</sup> Compounding the problem, the region lacks a comprehensive vision and urban forest management plan to answer questions like these: How many millions of trees and what mix of species will optimize the region's air quality and quality of life? At what point do the net benefits of planting more trees reach diminishing returns? What resources are needed each year to care for the trees planted on public streets, parks and schools? How can citizens be induced to plant more trees on private property to maximize their benefits?

In terms of numbers,<sup>31</sup> for every rural tree in Sacramento County there are more than six in suburban parts of the county, and more than seven in the city. Within the city, estimates of the number of trees range between 650,000<sup>32</sup> and 1.7 million.<sup>33</sup> In the suburban area there are an estimated 2.3 million trees. An estimated 1.9 million trees grow in the county's rural area.

Neither the city nor county are currently managing Sacramento's public trees effectively. Instead of viewing the urban forest as a generator of benefits that needs to be managed and optimized, they retain the traditional perspective of managing individual trees for their care, health and replacement, typically in a reactionary process. Instead of proactively aiming to plant millions of trees to reap the benefits of a healthy sustainable community, they aim to minimize expenses and maintain current workloads to perpetuate annual budget allocations and fiscal restrictions.

Even from that limited perspective, Sacramento city and county still fail to do an adequate job. For example, the number of years between maintenance visits directly effects the health of a tree. The 1992 Sacramento Urban Forest Management Plan identified a desirable maintenance standard as every six years. For the past eight years, the city's Tree Services Division has only achieved a 16-to-20 year care cycle.

The city's Tree Services Division does remove and replace dying trees – it removes an average of 500 trees annually and plants approximately 1,000 trees. But the trees it plants are often smaller species than those being replaced. New data suggest that a large street tree delivers nearly fifty times the net benefits of a small tree and nearly twice the value of a medium tree.<sup>34</sup> And all too often the new street trees planted don't match the existing trees,

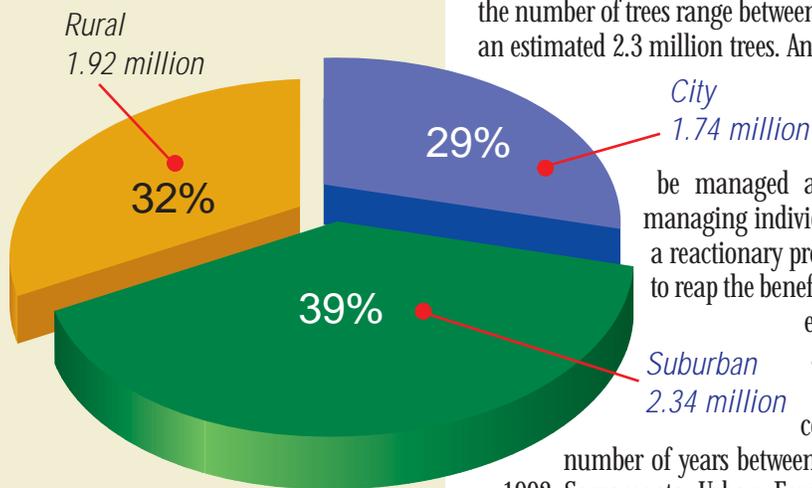
resulting in urban streetscapes without consistency, neighborhood character or defined purpose.

The Sacramento Urban Forest Management Plan identified 78 percent of the city's public trees as mature to over-mature. These trees are desperately in need of more frequent attention and care to maintain their vigor. However, the city's Tree Services Division is without budget or resources to meet this need. It meets its obligations by responding primarily to emergency calls for trimming, removal and disposal.

The city and county continue to lose the remaining members of its heritage and native tree population. Due to old age and the impacts of new growth and redevelopment activities, the number of majestic oak, sycamore, cottonwood

## Tree Locations

Relative distribution of trees in the city of Sacramento and the suburban and rural areas of Sacramento County



## Average Annual Net Benefits\* by Tree Location and Size<sup>35</sup>

	Small Tree	Medium Tree	Large Tree
Public Street and Park Tree	\$1	\$26	\$48
Residential Yard Tree	\$10	\$39	\$65

\* Net benefits are calculated for strategically placed trees 20 years after planting.

and black walnut continues to decline. The city and county have yet to inventory their heritage trees or develop a tree management plan for their remaining natural open spaces, riparian corridors or native tree groves.

The magnificent and stately elms, which account for nearly 10 percent of the street trees in the city, are showing the most worrisome signs of disease and decay. Due to tight budgets, as old age and Dutch elm disease take their toll, city crews too often replace them with smaller canopy trees like Chinese pistache and Chinese elms. Over time, this policy will permanently change the character and image of the city.

The public trees in the county fare worse than the city public tree population. The county has primarily relied upon land use requirements and ordinances to promote the protection of trees. It has never developed a master urban forest plan or undertaken a native tree or street tree inventory.

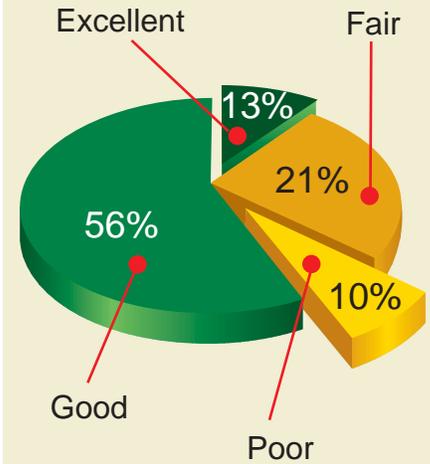
Since 1982 the Sacramento Tree Foundation has been the county's designated agent to promote the importance of trees, provide educational services, and promote tree-planting opportunities in public places. But the Sacramento Tree Foundation lacks the funds to assure that trees in the county receive adequate care or to take advantage of the many opportunities for planting additional trees.

Care for street trees in Sacramento County is the responsibility of the Department of Public Works. Most maintenance work on their estimated 150,000 tree inventory<sup>37</sup> is limited to trimming trees for vehicle clearance along county roads. Public trees that are dead or dying are removed. However, these trees are not automatically replaced. Some trees that are planted are short lived or susceptible to new pests and diseases. County crews are not able to provide for tree health.

The county Department of Public Works administers the county's tree preservation ordinance, which requires builders to get a permit to remove a valley, blue, coastal or interior live oak. It does not, however, keep track of the number of trees removed, which can

## Health of the Trees

*Relative health of Sacramento's six million trees<sup>33</sup>*



City Street & Park Tree Health <sup>40</sup>		
CONDITION	TREE ESTIMATE	% OF POPULATION
Good	4,000	3 %
Fair	120,000	80 %
Poor	25,050	17 %

vary from one to hundreds per permit. The area of preservation jurisdiction is limited to urbanized areas and does not account for approximately two-thirds of the county.

Although the county tree preservation ordinance does not require replacing trees lost to new development, county codes do. Developers are generally required to replace the native trees they remove on an inch-per-inch basis. Felling a 100-inch-diameter valley oak, for example, would require planting 100 one-inch-diameter native trees. Enforcement has often fallen into a bureaucratic morass, divided between the county Department of Environmental Review and Assessment and the Department of Public Works. Since 1989, numerous attempts led by county staff, the Sacramento Tree Foundation and the development community to correct the regulatory confusion have failed. In 1999, the county entered into a cooperative agreement with the Sacramento Tree Foundation to provide a full service native tree replacement program. But the regulatory and enforcement problems remain.

Both the county and the city have many areas available for planting trees. The most conspicuous places are parking lots built before the parking shade tree ordinances of 1978.<sup>38</sup> In addition, space exists for as many as 80,000 street trees divided fairly evenly between the city and the county.<sup>39</sup> State and federal highway planting spaces may double this vacancy number. The majority of the school grounds and sports fields within

### Trees reduce violence

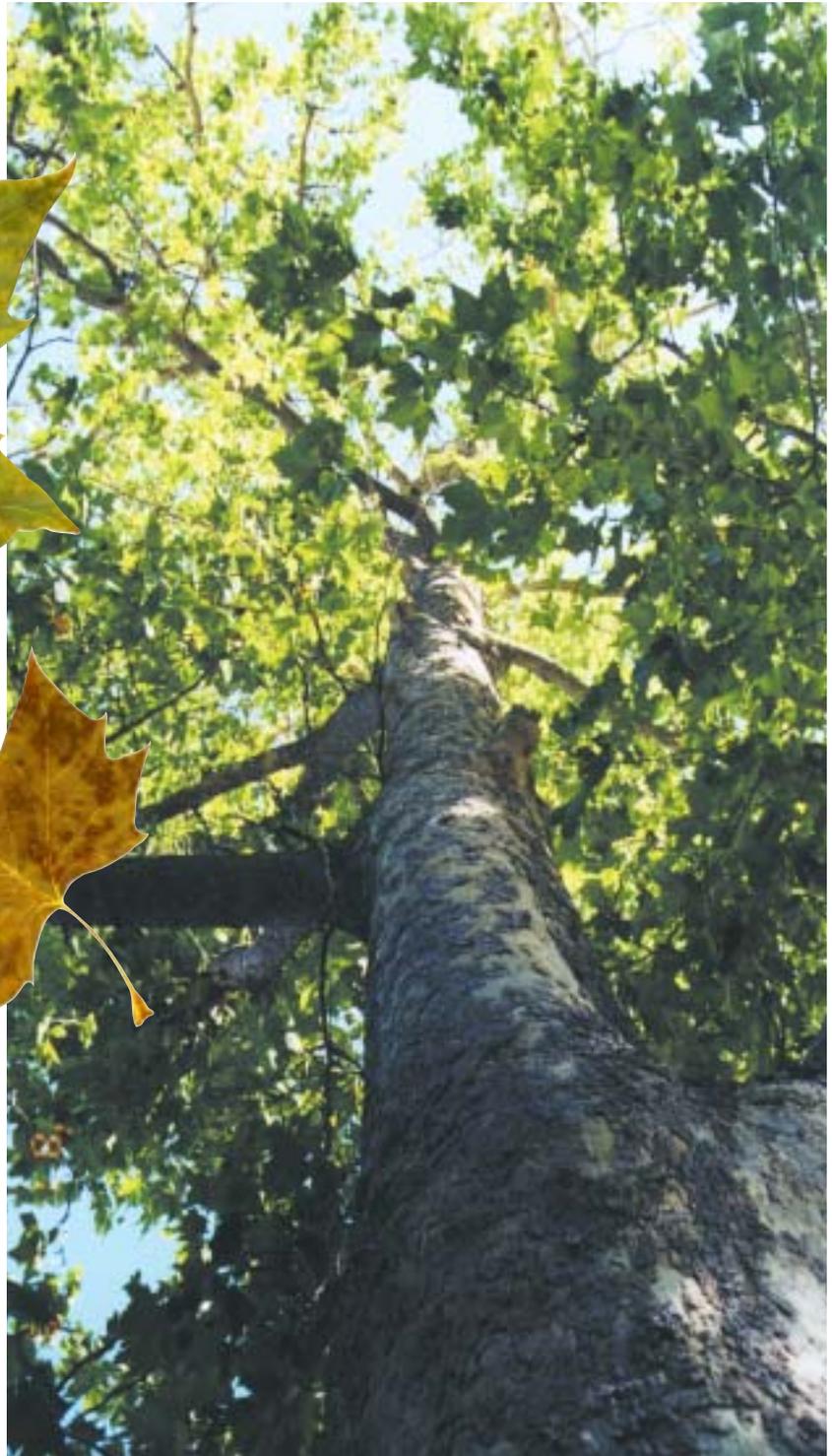
University of Illinois at Urbana-Champaign studies<sup>41</sup> report that people living in residential complexes with trees reported significantly better relationships with their neighbors, and fewer incidences of violence than those living in complexes without trees. Other findings included less graffiti, noise and litter.

### Trees save on landfills

Trees need mulch. Sacramento can divert much of its "green" waste stream, which represents 26 percent of the total solid waste stream, into tree care. Mulching provides beneficial nutrients, protects trees from drought and has been shown to reduce water use and increase water quality.<sup>43</sup>

Sacramento County are also in need of trees.<sup>42</sup> In the last decade, there has been encouraging direction by the county Board of Supervisors to include new street trees in road widening and beautification projects, and wherever opportunities exist.

It is important to recognize that local governments manage only about 10 percent of the trees, while an additional 15 percent of the trees – such as those in parking lots – are maintained by owners regulated by local ordinances, policies and code enforcement activities. This leaves almost 75 percent of Sacramento's estimated 6 million trees under the management and control of private property owners. It is safe to assume that increased education of private homeowners about the value and benefits of trees will be a crucial component of a regional vision and management plan for the region's urban forest.



# RECOMMENDATIONS

*"Just as we must carefully plan for and invest in our roads, bridges and waterlines... we must also invest in our green infrastructure."*

— *Maryland Governor Paris Glendening*<sup>44</sup>

It is the primary recommendation of this State of the Trees Report that the communities of the Sacramento region join together in supporting a common vision for the urban forest. At the core of this vision are two indisputable facts: first, that the region's long-term health and quality of life depend on investing in and optimizing the benefits of the urban forest; second, that the urban forest is not a static museum, but a complex ecosystem living in an interdependent relationship with the human beings upon whom it depends - and who depend on the canopy for the many benefits described in this report.

## First Recommendation: The Shared Vision

This report proposes the following vision to guide the management of the region's urban forest: "We, the citizens of the Sacramento region, recognize that trees are a precious resource upon which we depend for the quality of our lives. We know that Sacramento, because of its climate, reaps benefits from a healthy urban forest - particularly in improving air quality and saving energy - that far exceed the costs. Therefore, we will guide our community and neighborhood development to maximize those benefits and in so doing make the Sacramento region a model for the world for generations to come."

In order to make this vision real, this report calls on the elected officials of the region to develop and adopt a Sacramento Region Urban Forest Management Plan by Arbor Day, 2002.

## Second Recommendation: The Regional Management Approach

This report recommends that a single management plan be adopted to guide the growth and governance of the Sacramento region's urban forest. This plan should focus on the urban forest's role in improving air quality and reducing energy costs. It should revisit and update the yet-to-be implemented Sacramento Urban Forest Management Plan. It should address the following issues: How many trees, of what species, and in what priority, should be planted annually to maximize air quality and energy savings? What standards of tree care should be required of new trees, mature trees, and aging trees? What regional entities should shape, implement, and enforce this management plan? What is the expectation of private citizens in planting and caring for trees on private property? What is the expectation of city and county governments in planting and caring for public trees? How can

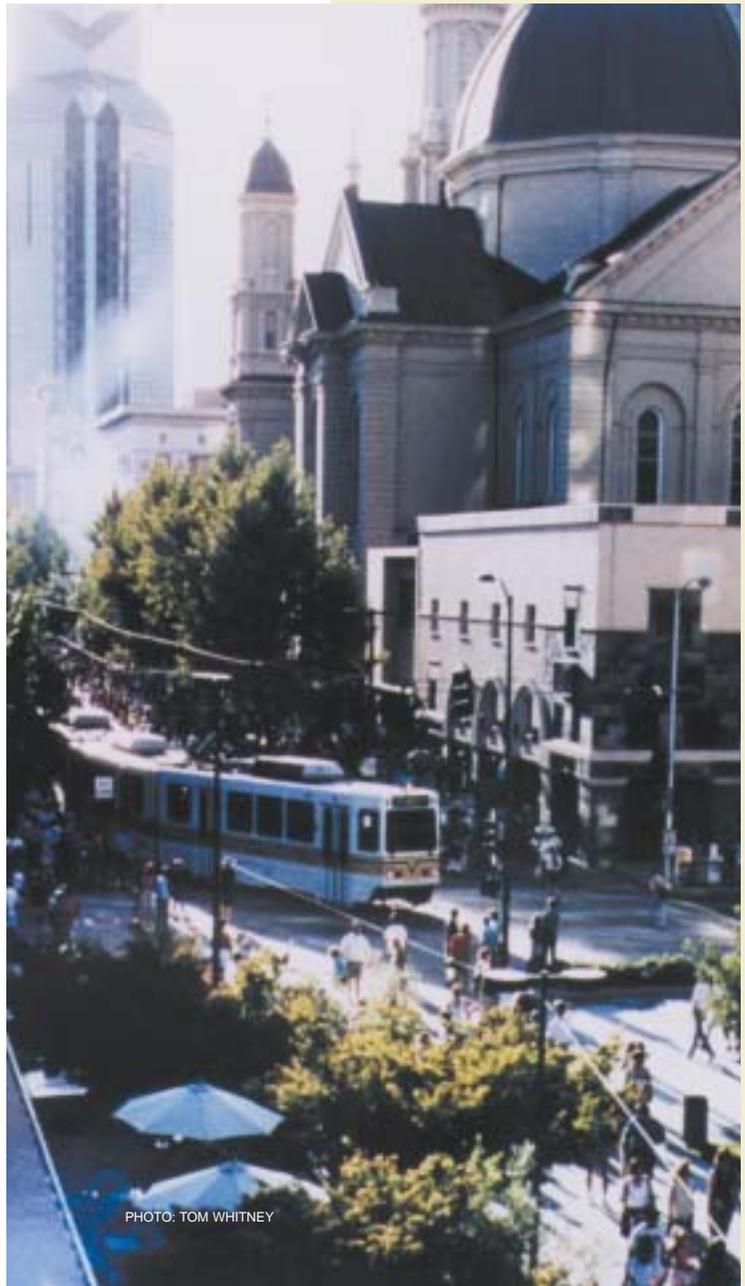


PHOTO: TOM WHITNEY

### Trees satisfy people

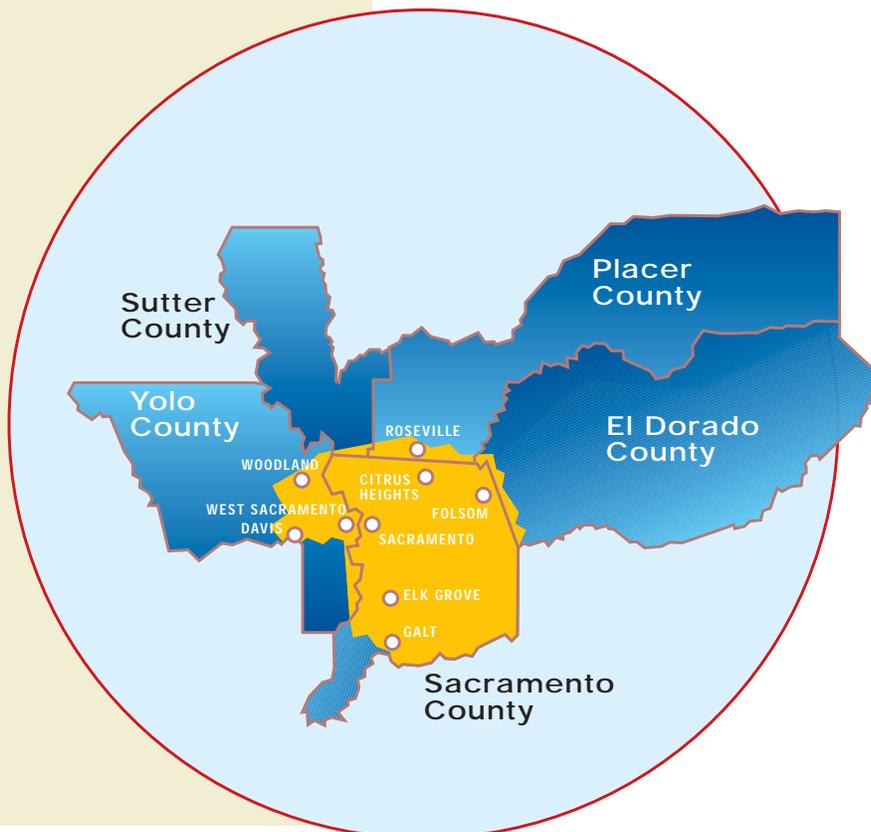
Trees impart enhanced quality of life and aesthetic values to residents at home and in their workplaces. In neighborhoods where mature trees are prevalent, property values are known to increase more rapidly.<sup>46</sup>

the Sacramento region promote continuing research into urban forestry? What new programs and partnerships are needed to maximize the benefits of trees? What role should neighborhoods play in developing and implementing local aspects of the urban forest management plan? How can private industry benefit from and contribute to the urban forest?

These questions – and more – must be addressed by a high level task force consisting of representatives from those agencies that will oversee the implementation of the plan once it is adopted. It is recommended that one representative from each of the communities that comprise the Sacramento region make up this task force.<sup>45</sup> They should be assisted in their work by paid staff or consultants supported by an adequate budget to complete the tasks outlined in this report. They should also be assisted by any and all interested parties, including the Sacramento Area Council of Governments, the Sacramento Municipal Utility District, the Sacramento Metropolitan Air Quality District, the California Energy Commission, and the Sacramento Tree Foundation. They should have access to scientific data to validate their assumptions and serve as baseline measurements to track results. They should make a reliable commitment to provide annual funding to support the long-term management of the region’s urban forest.

Given the degree to which scientific findings support an aggressive investment in trees, it is expected that the task force should complete its work within 12 months of the publication of this State of the Trees Report. These recommendations should include a set of goals and measurable milestones to be adopted by each of the governmental entities. To ensure implementation of the plan, the region should receive an annual report card on the progress of the plan; and each jurisdiction participating in the plan should be annually reviewed for its effectiveness in achieving the objectives of the plan. This review should be conducted by an independent agency.

In conclusion, this report has but one goal: to call for a renewed commitment to trees by community leaders and citizens of the Sacramento region – based on the extraordinary benefits that trees confer. It aims to galvanize a new era of spirited community action to invest in and replenish Sacramento’s legacy of trees. That legacy has served Sacramento well. Building on that legacy, the Sacramento region can provide an abundance of benefits for generations to come – and create a sustaining vision for the world.



### Proposed Urban Forest Planning Area

The proposed planning area includes the cities and counties within the highlighted area on this map.

## FOOTNOTES

1. E. Gregory McPherson, "Structure and Sustainability of Sacramento's Urban Forest," *Journal of Arboriculture*, Vol. 24, No. 4, p. 179, July 1998.
2. Haider Taha, Sheng-chieh Chang, and Hashem Akbari, *Meteorological and Air Quality Impacts of Heat Island Mitigation Measures in Three U.S. Cities (Report no. LBNL 44222)*, p. 50, April 2000.
3. Jennifer D. Franz, Ph.D., City of Sacramento, Citizen Customer Satisfaction Survey, 1996.
4. For the purpose of this report, the Sacramento region is defined as all of Sacramento County, as well as neighboring portions of Yolo, Placer, and El Dorado counties.
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9. Haider Taha, Sheng-chieh Chang, and Hashem Akbari, *Meteorological and Air Quality Impacts of Heat Island Mitigation Measures in Three U.S. Cities (Report no. LBNL 44222)*, p. 51, April 2000.
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11. Source: Martin Fitch, Parks Superintendent, City Tree Services, correspondence with Ray Tretheway, Executive Director, Sacramento Tree Foundation.
12. Wolfe Mason Associates, for the City of Sacramento, Sacramento Urban Forest Management Plan, p. 11, 1992. (The decision to relinquish responsibility for these trees was considered an "interim" step at the time, though to date no funding has been approved that would resume city service for these trees.)
13. "State of the Resources: State of the Urban Forest in Transportation Corridors," *State of the Urban Forest Report*, p. 16, 1996.
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15. The Sacramento Regional Cool Community Project is sponsored by the U.S. Environmental Protection Agency in partnership with NASA, the U.S. Department of Energy and the Lawrence Berkeley National Laboratory. Local funding came from SMUD and the Sacramento Tree Foundation.
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17. Mark Twain, Roughing it.
18. James R. Simpson, "Urban Forest Impacts on Regional Cooling and Heating Energy Use – Sacramento Case Study," *Journal of Arboriculture*, Vol. 24, No. 4, p. 204, July 1998.
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29. Kathleen Wong, Pixel worth 1,000 words, *US News and World Report*, p. 48, July 19, 1999.
30. Urban forest researchers evaluate the health and sustainability of an urban forest by the number of trees, their species and age diversity, suitability and general condition.
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35. *Ibid.*, p. 28-29.
36. Source: E. Gregory McPherson, correspondence with Ray Tretheway, Executive Director, Sacramento Tree Foundation, personal.
37. Source: Cyrus Abhar, Principal Civil Engineer, County of Sacramento, in conversations with Ray Tretheway, Executive Director, Sacramento Tree Foundation, August 2000.
38. Chapter 3, Section 2-C-8 of the City Zoning Ordinance requires all new parking lots to have 50% shade within 15 years. The Zoning Code of Sacramento County, Title III, Chapter 30, Article 4: 330-94(d) requires shading of from 30% to 50% depending on the number of aboveground and uncovered parking spaces provided.
39. Source: Martin Fitch, Parks Superintendent, City Tree Services and retired Sacramento County Tree Coordinator, Marty Hughes, in conversations with Ray Tretheway, Executive Director, Sacramento Tree Foundation, March 2000.
40. Wolfe Mason Associates, for the City of Sacramento, Sacramento Urban Forest Management Plan, p. 25, 1992.
41. Frances Kuo and William Sullivan, University of Illinois, College of Agricultural, Consumer, and Environmental Sciences, Human-Environment Research Laboratory.
42. Sibylle Lob, Shade Survey, Skin Cancer Prevention Project, October 1997.
43. Ray Tretheway, Executive Director, Sacramento Tree Foundation, correspondence with Gary Van Dorst, Solid Waste Planning Superintendent, City of Sacramento.
44. Paris Glendening, Governor of Maryland, Inaugural Address, January, 1999.
45. The proposed region includes the cities of Citrus Heights, Elk Grove, Folsom, Galt, Roseville, Sacramento, West Sacramento, and the counties of El Dorado, Placer, Sacramento, and Yolo.
46. Wolfe Mason Associates, for the City of Sacramento, Sacramento Urban Forest Management Plan, p. 5, 1992.

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*"The trees have taken exceptional care of Sacramento over the years. The very least we can do is return the favor."*

*—The Sacramento Bee*



210 Lathrop Way, Suite F  
Sacramento, CA 95815  
916 . 924 . TREE

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