

AREA President's Message 1

AREA Candidate Biographies..... 2

Tree Risk Assessment:
Biomechanics of Stability, Strength
and Structure 4

Urban Tree Growth and Longevity
Group..... 4

2012 AREA Session 5

2012 AREA Student Travel Grant
Recipients..... 8

TREE Fund Updates 10

Professional Opportunities 11



President's Message

Dear AREA Members:

I'm encouraging you to attend the 88th Annual ISA Conference in Portland, Oregon, August 11-15, 2012. Sustainability is the focus of the conference and the theme is "Trees: A Global Necessity." The concept of sustainability pertains to and is more directly relevant for human beings, since all of the services that humans need to survive are derived from, and are dependent upon, the long-term viability and sustainability of ecosystems.

Sustainable urban forests require healthy vegetation, community-wide support, and comprehensive management. The goal of a sustainable urban forest is to maintain a maximum level of net environmental, ecological, social, and economic benefits over time. Therefore, the Arboricultural Research and Education Academy (AREA) will be coordinating an educational program on Wednesday August 15, 2012 (8:00 a.m. to 5:00 pm) to support efforts of faculty, students, and researchers working in arboriculture and urban forestry through physical, biological, ecological and the sociological sciences. Variety of topics will be covered through oral presentations, such as tree monitoring, urban soil rehabilitation, trees and storm water mitigation, improving drought stressed trees, tree biomechanics, crown and root pruning, tree physiology, trees and wind resistance, crown safety and aerial tree inspection, elevated CO2 and urban trees, natural resource planning and management. In addition, AREA will be coordinating a poster session with many interesting and groundbreaking arboricultural and urban forestry science-based research findings.

For more information on the AREA program during the 88th Annual ISA Conference please visit:

<http://www.isa-arbor.com/events/conference/educationalSessionsWednesday.aspx>

Sincerely,
Kamran K. Abdollahi, Ph.D.
President

AREA Executive Committee

- | | |
|---------------------|------------------|
| President | Kamran Abdollahi |
| President-Elect | Angela Hewitt |
| Vice President | Gregory Dahle |
| Secretary/Treasurer | Eric Wiseman |
| Past President | Rich Hauer |
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VOTE NOW for AREA Vice President!

AREA e-Ballot: <https://secure.isa-arbor.com/Eballot/2012AREAElection.aspx>
Anyone with a valid ISA username and password can access this link; only current AREA members can vote.

The ballot is open from June 27 to July 31.
Results will be announced at the Annual AREA Business Meeting, to be held on Wednesday, August 15, 2012, during the ISA Annual Conference in Portland, Oregon.

See candidate biographies on pages 2-3.

AREA Candidate Biographies

DONITA L. CARTMILL, UNIVERSITY OF WISCONSIN-PLATTEVILLE

Dr. Donita L. Cartmill is an Assistant Professor of Ornamental Horticulture in the UW-Platteville School of Agriculture. Donita earned her B.S. degree in Agriculture with an emphasis in Horticulture from Stephen F. Austin State University in Nacogdoches, Texas, and her M.S. and Ph.D. degrees in Horticulture from Texas A&M University in College Station, Texas. Donita joined the UW-Platteville School of Agriculture in August 2009. Her teaching responsibilities include woody landscape plants, landscape management, landscape construction, landscape design, advanced landscape design, turfgrass management, fruit and vegetable production, the plant-soil environment, special topics in ornamental horticulture, and undergraduate research in ornamental horticulture. Currently, she is a co-advisor for the horticulture club and is the superintendent of the Dottie Johns Pioneer Gardens at UW-Platteville. Donita's research interests include nursery production practices, landscape establishment of woody ornamentals, and sustainable horticultural practices. She is a member of the Wisconsin Nursery Association-Wisconsin Green Industry Federation, International Society of Arboriculture, and the American Society for Horticultural Science.



For more information on Donita Cartmill, see: http://www.uwplatt.edu/soa/personnel/d_cartmill/index.html.

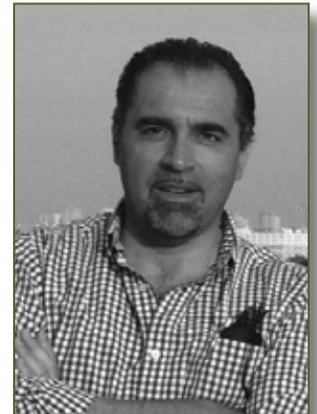
FRANCESCO FERRINI, UNIVERSITY OF FLORENCE, ITALY

Francesco Ferrini is a full professor at the Department of Crop, Soil and Environmental Science at the University of Florence in Italy. Since 2005, he has served as the president of the Italian Society of Arboriculture, the Italian Chapter of the International Society of Arboriculture. Francesco has also been a member of the ISA Board of Directors. Francesco has been involved with many ISA committees and has always believed in the work by ISA.

Francesco has spent all his professional life in the research and education sector working at different universities in Italy. He is currently conducting research on several topics, including:

- Physiological and growth aspects of different species as affected by different cultivation techniques after planting in the urban environment;
- Effect of water stress on growth performance of newly planted trees; and
- Sustainable management practices for urban tree planting and management.

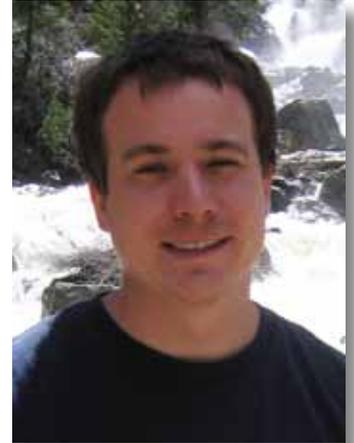
Francesco has published more than 160 scientific and technical papers—82 in Italian, 79 in English—and has given more than 90 talks in several international and national congresses. In 2009, he received the Fabio Rizzi Award for his commitment to research and extension in the fields of plant nursery science and urban arboriculture and for his continuous activity with researchers and contractors all over the world. In 2010, he was awarded the L.C. Chadwick Award for Arboricultural Research, an recognizing research that has contributed valuable information to arboriculture.



For more information on Francesco Ferrini, see: <http://www.dipsa.unifi.it/CMpro-v-p-491.html>.

ANDREW KOESER, UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Andrew Koeser is currently wrapping up his doctoral work in the Department of Crop Sciences (emphases in Horticulture and Biometry) at the University of Illinois at Urbana-Champaign (UIUC). Prior to this reentry into academia, Andrew worked for five years at the International Society of Arboriculture as an intern and as Science and Research Manager. He holds an M.S. in Natural Resources and Environmental Sciences from UIUC and a B.S. in Forestry (Urban Forestry emphasis) from the University of Wisconsin–Stevens Point. He is a Board Certified Master Arborist (BCMA), father of two wonderful daughters, and husband to an extremely supportive wife. He hopes to continue pursuing his passion for arboricultural research and education at a university, community college, arboretum, industry research facility, or government agency—essentially any place that is looking for a dedicated researcher/educator.



For more information on Andrew Koeser, see: <http://illinois.academia.edu/AndrewKoeser/About>.

CECIL KONIJNENDIJK, UNIVERSITY OF COPENHAGEN, DENMARK

Cecil Konijnendijk is Professor of Green Space Management in the Department of Parks and Urban Landscapes at the University of Copenhagen, Denmark; he also currently holds a 20% appointment at the Swedish University of Agricultural Sciences. At the University of Copenhagen, he coordinates the department's research group on Parks, People, and Policies. Cecil has an M.Sc. in forest policy from the University of Wageningen, Netherlands, and a D.Sc. in forest policy and economics from the University of Joensuu, Finland. He has worked for the Wageningen University, the European Forest Institute, and also for the Danish Centre for Forest Landscape and Planning (1999-2004), until starting his own consultancy firm in 2004. In 2009, Cecil returned to Forest & Landscape Denmark in a full-time position. During his career, Cecil has studied and promoted the role of forests, trees and other green spaces in urban societies. He has a special interest in the concepts of urban forestry and urban greening, green space strategies and policies, functions of and uses of green space, as well as communication and public involvement issues. Cecil is editor-in-chief of the scientific journal *Urban Forestry and Urban Greening*, published by Elsevier; he also has produced close to 200 publications, including edited proceedings and books, scientific and professional articles, book chapters, and conference papers. Cecil was lead editor of the book 'Urban Forests and Trees' (Springer, 2005, with Kjell Nilsson, Thomas Randrup and Jasper Schipperijn as co-editors) and sole author of the book 'The Forest and the City: The cultural landscape of urban woodland' (Springer, 2008). Cecil has been involved in a range of international networking and project activities. He coordinated the NeighbourWoods project (funded by the European Union), two environmental aid projects in St Petersburg, Russia, and a twinning cooperation for sustainable forestry between Denmark and Malaysia. Together with Thomas Randrup, Kjell Nilsson and others, he has advised the Food and Agriculture Organization of the United Nations on urban and peri-urban forestry issues. Cecil's main research interests relate to urban green space governance, the development of green space policies, green city marketing, the changing role of green space in modern society, and the assessment of green space benefits. He is also interested in the implementation of approaches such as urban forestry and urban greening.



For more information on Cecil Konijnendijk, see:

<http://www.life.ku.dk/sitecore/content/Inst/SI/English/Service/Directory/Personvisning.aspx?personid=8748>

Tree Risk Assessment: The Biomechanics of Stability, Strength, and Structure

MONDAY–TUESDAY, SEPTEMBER 24–25, 2012

A one-and-a-half-day public symposium at The Morton Arboretum in Lisle, Illinois, on the role of biomechanics research and its importance in tree risk assessment

Assessment and management of tree risk is grounded in the science of biomechanics—the ways in which trees grow to sustain both structural support and biological function. The Morton Arboretum and the International Society of Arboriculture have joined forces to present an important conference for all arborists who must make decisions on tree risk as part of their daily jobs.

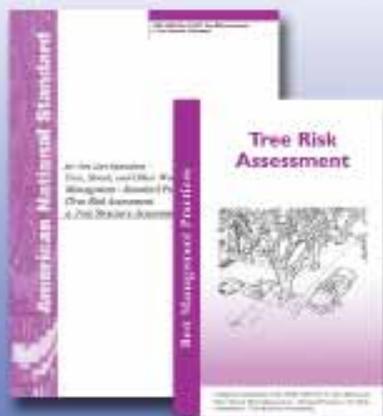
More than a decade has passed since the last conference on tree structure and mechanics in arboriculture, and in that time much progress has been made to further our understanding of tree structure and function and to develop assessment technologies. This meeting will bring together internationally renowned researchers and an audience of arborists and urban foresters to explore the current state of knowledge and promising new methodologies concerning tree biomechanics and its relevance to tree risk assessment.

For more information, see The Morton Arboretum's website at: www.mortonarb.org/tree-risk or the ISA Calendar of Events at: <http://www.isa-arbor.com/events/eventsCalendar/index.aspx>.

Urban Tree Growth and Longevity Working Group Meets in August

The annual meeting of the Urban Tree Growth and Longevity Working Group will be held at the ISA International Conference and Trade Show in Portland, Oregon, US, on Monday, August 13, from 5:00-6:00 PM in the Oregon Convention Center. For more information on the Urban Tree Growth and Longevity Working Group, see its website at <http://urbantreegrowth.org>, contact Dr. Julia Bartens at: jbartens@ucdavis.edu, or Dr. Greg McPherson at: egmcperson@ucdavis.edu.

Learn More About Tree Risk Assessment



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2012 AREA session

All presentations included in the AREA sessions will occur on Wednesday, August 15, 2012, in Room B-118/119 of the Portland Convention Center, from 8:00 AM to 5:00 PM.

AREA STUDENT PRESENTATIONS (see pages 8-10)

David Callow

Yujuan Chen

Thomas Martin

Alison Stoven O'Connor

Lara Roman

A BRIEF OVERVIEW OF URBAN TREE BIOMECHANICS RESEARCH

Gregory Dahle, Ph.D.

Ken James, Ph.D.

This presentation will deliver an overview of the important literature on urban tree biomechanics. The discussion will address biomechanical principles, tree failure and defects, modeling, effects of arboricultural practices, and measurement techniques. The effort will concentrate on the difference between static and dynamics approaches to biomechanics that together help arborist understand how trees withstand environmental loads. While some of the tree biomechanics research has dealt directly with urban trees, a number of research avenues have dealt with trees in the forested setting. We will discuss how research from forested trees may or may not be directly applicable with urban trees.

EFFECTS OF CROWN ARCHITECTURE ON DYNAMIC BEHAVIOR OF TREES: UNDERSTANDING THE RELATIONSHIP BETWEEN BRANCHES AND STEM

Cihan Çiftci

To investigate the dynamic behavior of a large *Acer saccharum*, a finite element model (FEM) was developed using ADINA-8.5. After validating the FEM by comparing the calculated and empirical values of the tree's natural frequency, attributes that affected the tree's dynamic response to harmonic wind excitations were identified. Each of the following parameters was varied while holding the others constant: stem diameter; branch slenderness; number of branches; damping ratio; and the height, attachment angle, and azimuth of branches. The first four affected the dynamic motion of the tree, while the latter three did not. Refining the FEM will help investigate the effect of arboricultural practices on dynamic motion.

EFFECT OF CROWN REDUCTION ON *KHAYA SENEGALENSIS*

Yok King Fong, Ph.D.

By pulling various sizes of water sprouts away from their attachments, the attachment strength of the sprouts—when compared to similar size branches that derived from axillary buds from natural growth and development—were 25% weaker. In this study it was also observed that (a) the depth of discoloration and decay within a pruned branch below the pruning cut was significantly correlated with the diameter of the branch during pruning, and branch diameter 4.5cm appeared to be the threshold value for pruning; (b) topping wounds on branches had 279% more discoloration and decay than branch collar wounds; and (c) the percentage of pruning wound closure was found to be directly related to the depth of discoloration and decay below the pruning cuts. Old pruning cuts with < 25% closure is a good indicator for severe discoloration and decay within branches.

STABILITY OF TREES: EFFECTS OF CROWN AND ROOT PRUNING

Steve Mitchell, Ph.D.

Wind acting on a tree crown creates a drag force, which multiplied by the distance from the crown centre to the base of the stem produces a turning moment. This applied moment is resisted by the strength of the stem, and root anchorage. Our wind tunnel studies indicate that tree branches act as individual drag elements. Spiral pruning reduces drag in direct proportion to the branch mass removed. We have also investigated the effects of trenching in wind tunnel and field studies. Trenching closer than 5 stem diameters to the base of tree stems reduces root anchorage.

EFFECTS OF ROOT SEVERANCE BY EXCAVATION ON GROWTH, PHYSIOLOGY, AND UPROOTING RESISTANCE OF TWO URBAN TREE SPECIES

Alessio Fini, Ph.D.

The purpose of this study was to evaluate the effect of two different levels of root severing on tree growth and physiology. In 2004, 48 horsechestnuts (*Aesculus hippocastanum*) and 48 European limes (*Tilia x europaea*) were planted in a sandy-loam soil. In June 2009, the following treatments were imposed: 1) roots were severed only on one side of the tree; 2) roots were severed at two opposed sides of the tree; 3) roots were not damaged (control). Stem diameter, shoot growth, leaf gas exchange, chlorophyll fluorescence, and pre-dawn water potential were measured during the following two growing seasons. Results will be discussed in the presentation.

HOW MUCH WIND RESISTANCE CAN A DAMAGED *PINUS PINEA* BRANCH HAVE?

Alessandro Pestalozza, Ph.D.

Some months ago, a man was killed along a road by a falling branch of a *Pinus pinea* tree. The local court decided it was necessary to study the behavior of pine branches during storms. After a preliminary investigation, it was evident that the branch was previously heavily injured. Dynamic simulation tests on branches of 15 trees were performed with Dynatim equipment in order to determine the breaking point of a branch with or without an artificially reproduced injury. Evaluation of wind loads and determination of the breaking point were performed using specific software (TSE). Tests indicated that wounds decreased branch wind resistance about 35%.

TESTING TREE STABILITY USING ENGINEERING-BASED TREE PULLING TESTS: RESEARCH MEETS PRACTICE

Philip van Wassenæer

Failure of trees with compromised root systems can create dangers to significant targets and to arborists climbing or dismantling trees. However, assessing the uprooting stability of a tree using visual assessments is very difficult. In 2010, at the ISA Tree Biomechanics Symposium, research was conducted to analyze the uprooting of 11 Sycamore trees (*Platanus occidentalis*). Measurements were taken at non-destructive loads and as the trees were pulled to complete root failure. The results of this research project will be presented as well as examples where tree pull testing has been used to assess trees with compromised root systems.

DIFFERENCES IN SOIL MICROBIAL COMMUNITY STRUCTURE IN VARIOUS URBAN LAND-USES

Keith Turnquist

The process of urbanization and associated landscape maintenance practices can adversely affect the physical and chemical properties of soil. Unfortunately, the impact of urbanization on the soil microbial communities is not well studied. This study examined soil microbial communities from five land-uses in Milwaukee, Wisconsin. Despite significant differences in chemical and physical properties, data from this experiment suggest soil microbial biomass and compositions of the bacterial and fungal communities were largely similar across land-uses. As a result, the overall impact of urbanization on soil biology is limited. Therefore the value of generically recommended biological amendments must be questioned.

ACLA (ANALYSIS OF CHROMATISM AND LEAF ABSCISSION): THE ANALYSIS OF AUTUMNAL COLOR, AN EASY PATH TO THE PHYSIOLOGY OF THE TREE

Gerard Passola

Much arboricultural work—pruning, physiological and structural analysis—often uses a certain type of analysis. The ACLA method allows a fast, fine, and objective determination of the physiology of a tree or its parts, making it possible to understand the processes of rebalancing and self-empowerment that the tree develops internally. The chromaticity depends upon the concentrations of hormones that influence the abscission, generating a different variation of leaves' colors. The analysis allows us to understand and give a biological explanation for each of the colors that appear when a tree goes into "nature's fireworks."

ASSESS THE IMPACTS OF ELEVATED CO2 ON PHYSIOLOGICAL PROCESSES OF SELECTED URBAN TREES

Zhu Ning, Ph.D.

CO₂ plays an extremely important role in tree physiological processes. Urban tree response to elevated CO₂ is relatively unknown. This study assessed the impacts of elevated CO₂ on physiological processes of Southern red oak (*Quercus falcata*) and red maple (*Acer rubrum*) by examining their photosynthesis, transpiration, and stomatal conductance.

A SCIENCE PROGRAM FOR URBAN NATURAL RESOURCE PLANNING AND MANAGEMENT

Weston Brinkley

Green cities are more livable cities, and yet the urban natural resources we have are diminishing. Scientists are working with agencies, non-profit organizations, and universities to assess forest conditions, prioritize forest management programs, and better understand ecological stewardship activity. A set of Integrated Urban Forest Assessments are taking place as leading projects in this research. These projects represent scientific explorations directly supporting land management and stewardship organizations' goals and operations. These efforts together represent not only a major concerted program for urban forest research in the Pacific Northwest, but also an important source of urban ecosystem management resources.

2012 AREA Student Travel Grant Recipients

Congratulations to the following five students, who have been awarded 2012 AREA Student Travel Grants to attend the ISA International Conference and Trade Show in Portland, Oregon, US. Please be sure to attend the AREA session on Wednesday, August 15, to hear their research presentations. If you see them in the halls of the Portland Convention Center, please be sure to say hello!

AN ASSESSMENT OF TECHNIQUES TO IMPROVE THE VITALITY OF DROUGHT STRESSED MATURE URBAN TREES

David Callow

University of Melbourne (Australia)
Melbourne School of Land and Environment

This study evaluates several techniques to improve the vitality of drought stressed urban trees across four sites within the City of Melbourne, Australia. Five treatments were trialed on mature elms (*Ulmus* spp.) or London Planes (*Platanus x acerifolia*). A combination of a soil amelioration treatment and Paclobutrazol treatment resulted in statistically significant reductions in drought stress when measured as pre-dawn leaf water potential. A relationship was identified between leaf water potential and a visual vitality index and between leaf water potential and elm bark chlorophyll fluorescence. Three of the treatments also resulted in significant changes to leaf chlorophyll F_o values.

David Callow is an arboricultural consultant at Callow Landscape Horticulture in Melbourne, Australia. David has worked as an arboricultural consultant for 11 years and has worked in various areas of arboriculture including: utility vegetation management, education, risk management, planning and development and large scale tree survey. David is completing a Bachelor of Horticulture and has also previously completed a Diploma in Natural Resource Management and a Diploma in Horticulture (Arboriculture). David is an ISA Certified Arborist.



THE EFFECTS OF URBAN SOIL REHABILITATION ON URBAN TREE GROWTH

Yujuan Chen

Virginia Tech
Department of Forest Resources and Environmental Conservation

Urbanization has resulted in unfavorable soil conditions for trees growing in urban areas. Land development and building construction typically include clearing and grading that result in compacted urban soils that make it difficult to establish trees and achieve expected canopy cover. Trees are desirable in urbanized areas for their role in mitigating stormwater runoff, cooling buildings, improving air quality, and improving human well-being. For these reasons, plans to attain a minimum tree canopy cover are required in many jurisdictions. However, policy typically does not address soil conditions. This study aims to determine if urban soils can be rehabilitated to improve tree growth and restore healthy soil functions, and if these effects be quantified to help inform policy. Tree growth response, including height, DBH, and canopy, were measured over four years. Minirhizotron images were used to evaluate vertical root distribution. In addition, soil carbon fractionation and microbial biomass carbon data will be presented to explain the relationship between tree growth and soil carbon dynamics.



Yujuan Chen, a Ph.D. candidate in urban forestry at Virginia Tech, is studying the influence of urban soil rehabilitation on soil carbon dynamics and tree growth. She received her B.S in Horticulture from Beijing Forestry University and M.S in Ecology from the Chinese Academy of Forestry in Beijing, China. Yujuan's research examines how current urban land development practices—including clearing, grading, compacting, and building—have resulted in degraded urban soil. She seeks to rehabilitate degraded urban soils to improve tree growth, and to understand how this rehabilitation practice may influence the potential of urban soils to sequester carbon and provide other ecosystem services.

DEVELOPING STRATEGIES TO PROTECT AND UTILIZE EXISTING TREES IN NEW LOW IMPACT DEVELOPMENT STORMWATER MITIGATION SITES

Thomas Martin

Virginia Tech

Department of Forest Resources and Environmental Conservation

Trees are theoretically an important component of low impact development (LID) and stormwater mitigation practices. However, urban foresters and arborists are reporting that large valuable trees are often removed to make way for bio-engineered stormwater management structures. Low Impact Development sites often focus on herbaceous swales to mediate stormwater issues, rather than utilize the benefits that trees could provide in these systems. We will present a targeted literature review, a case-study, and a stakeholder survey with the goal of helping to resolve conflicts between existing trees and LID sites.

While working in the landscaping industry for over ten years, Tom Martin developed a fascination for trees and their care that led him to complete a Master's degree in Horticulture in 2002 while researching tree production methods. Tom is currently a doctoral candidate in the Horticulture Department of Virginia Tech, and is particularly interested in helping to resolve conflicts between trees and urbanized sites. He has also served as the Horticulturalist and Landscaping Instructor for the Agricultural Technology Program at Virginia Tech since 2004, where he teaches a wide range of landscaping and horticulture classes to Associates Degree seeking students.



NURSERY TREE PRODUCTION AND TRANSPLANT SUCCESS OF PYRUS CALLERYANA 'GLEN'S FORM' (CHANTICLEER®) INFLUENCED BY CONTAINER TYPES AND OVERWINTERING TREATMENTS

Alison Stoven O'Connor

Colorado State University

Department of Horticulture and Landscape Architecture

Roots in black plastic containers, commonly used in the industry, can be injured by wide diurnal temperature fluctuations that occur during the growing season. Root injury sustained during production may negatively affect tree health when planted in landscapes. Research at Colorado State University is using *Pyrus calleryana* 'Glen's Form' (Chanticleer®) to compare nursery production and landscape tree establishment using two fabric containers (Root Pouch®, Avena & Associates and Smart Pot®, High Caliper Growing-Root Control, Inc.) with plastic. Overwintering treatments are also being examined—consolidated pot-to-pot in blocks or "lined out" in rows. Ultimately the goal is to promote transplant success.



Alison Stoven O'Connor is a Ph.D. candidate in the Department of Horticulture and Landscape Architecture at Colorado State University, studying nursery tree production and landscape establishment. Alison received her B.S. in horticulture from Iowa State University and her M.S. in horticulture from The Ohio State University. She is also the horticulture agent for CSU Extension in Larimer County (Fort Collins), coordinating 120 active Master Gardener volunteers. Alison has been with CSU Extension for six years and hopes to obtain her Ph.D. in 2014.

MONITORING MORTALITY IN THE SACRAMENTO SHADE TREE PROGRAM

Lara Roman

University of California, Berkeley

College of Natural Resources, Department of Environmental Science, Policy, and Management

Realizing the benefits of urban tree planting programs depends on tree survival. We assessed tree mortality, growth and residential maintenance practices during the 5-year establishment period in the Sacramento Shade Tree Program. We annually monitored a cohort of trees that were distributed in 2007. In 2008, 77% of trees were planted and alive, 10% died after planting, and 13% were never planted. Annual survival rates were higher in subsequent years. The economic recession impacted our study, as Sacramento had high rates of home foreclosures. This study demonstrates the need for tree monitoring to support the assumptions used in cost-benefit models.

Lara Roman is a Ph.D. candidate in urban forest ecology at UC Berkeley. Her dissertation research focuses on urban tree mortality, with field sites in northern California: Sacramento County, West Oakland, and East Palo Alto. These projects represent collaborative partnerships with local urban forestry non-profit organizations to monitor urban trees for mortality and growth. These tree mortality studies apply concepts and methods from demography and epidemiology. Lara completed a Master of Environmental Studies from the University of Pennsylvania, where she also received a bachelor's degree in Biology, with a concentration in ecology and evolution. At both universities, Lara has been involved with community-based participatory research and service learning courses, including service courses in urban forestry and urban environmental health. Her research has been funded by the Garden Club of America Urban Forestry Fellowship.



TREE Fund Research and Education Grants

The Tree Research and Education Endowment Fund (TREE Fund) promotes research-based tree care for current and future generations. Applications for the following two grants will be available on the TREE Fund's website beginning on Monday, July 2, 2012:

John Z. Duling Grants (up to \$10,000; October 1st annual deadline): provides "seed" funding for new, innovative research projects. Apply online at www.treefund.org

Jack Kimmel International Grants (up to \$10,000; October 1st annual deadline): provides funding for arboriculture research projects all over the world. Apply online at www.treefund.org





Research Arborist

The Morton Arboretum invites nominations and applications for a full-time Arboriculture Researcher, to conduct applied research and green industry outreach focused on the care and management of urban trees.

The Arboriculture Scientist will establish an internationally recognized arboriculture research program. Research topics may include tree risk assessment, biomechanics, plant health care, stress management, pruning responses, wound reaction, nutrition, and/or related subjects. Expectations include publishing in scientific, professional, and popular journals; obtaining extramural funding sufficient to support a high level of productivity; interacting with green industry professionals; supervising the Plant Health Care program; contributing toward management of Arboretum landscape trees; and collaborating with other scientists within and outside of the Arboretum. The Arboriculture Scientist will work especially closely with Arboretum researchers in plant pathology, entomology, root system biology, soil science, plant improvement and urban forestry. Academic teaching, advising, and adjunct faculty status opportunities are available at area universities.

Qualifications: Ph.D. in arboriculture, urban forestry, or related area; familiarity with regional challenges to urban trees and their management, and a demonstrated ability to communicate with industry professionals and other scientists; strong background in experimental design and statistical analytical methods and software; International Society of Arboriculture certification and experience in the tree care industry are highly desired.

Review of applications will begin December 15, 2011, and will continue until the position is filled. Applicants should send a letter of application, curriculum vitae, statements of research and related interests and experience, and contact information for three references to: The Morton Arboretum, Human Resources, 4100 Illinois Route 53, Lisle, IL 60532 or jobs@mortonarb.org. For further information or to nominate candidates, please contact Dr. Gary Watson, Head of Research, at 630-719-2415 or gwatson@mortonarb.org.

The Morton Arboretum is a 1,700-acre public botanical garden, featuring one of the world's most diverse collections of woody plants, over 900 acres of natural areas, a comprehensive research library, modern laboratories and herbarium, and outreach education for professional and public audiences. Research at the Arboretum has focused throughout its 85-year history on finding practical solutions to the challenges of maintaining healthy natural areas and developed landscapes, and on communicating results to the research community, practicing professionals and the general public. See www.mortonarb.org. Equal Opportunity Employer.