



2nd World Forum on Urban Forests

Greener, healthier and happier cities for all

Book of abstracts



Washington, DC
16-20 October 2023



Welcome

"You are helping to raise the bar for urban forestry in cities around the world, and there's never been a more important time for it. We urgently need more trees in urban areas to help foster healthier and happier communities. The 2nd World Forum on Urban Forests will be an amazing platform for leaders and changemakers to come together for meaningful discussion about developing greener and more resilient cities. As a co-organizer, the Arbor Day Foundation is eager to see innovative ideas take shape over the next five days and, eventually, become the catalyst for real-world impact. We encourage you to welcome challenging questions, explore the many resources available, and establish strong connections with your peers. We're so grateful you're here!"

Dan Lambe

Arbor Day Foundation CEO

"Welcome to Washington, DC! The District of Columbia earned the moniker City of Trees in the mid 1800s, due to the sustained use of trees as critical urban infrastructure. And while the myriad benefits we now understand urban trees provide were less well known at the time, these efforts, beginning with L'Enfant's original plan up through today's Sustainable DC Urban Tree Canopy goal, reveal a sustained legacy of utilizing trees to create a healthy, inclusive and resilient city. Please enjoy your time in the District!"

Earl Eutsler

DDOT Urban Forestry Division

Associate Director/State Forester

"Welcome to the 2nd World Forum on Urban Forests!

Warm greetings to all participants, distinguished guests, experts, and enthusiasts. Over the next five days we will embark on a journey dedicated to the vital role of urban forests in shaping healthy, inclusive, and resilient cities worldwide.

The Forum will serve as a platform to explore the intricate relationship between urban environments

and the green spaces within them. Discussions will highlight innovative approaches, sustainable practices, and research that addresses both benefits and challenges of urban forests. Thank you for being a part of the Forum. Your presence and active participation are vital as we collectively envision greener, healthier, inclusive cities. Let's make these days of learning truly memorable. Welcome aboard this inspiring journey!"

Zhimin Wu

Director, Forestry Division

Food and Agriculture Organization of the United Nations (FAO)

"ISA is proud to partner in organizing the World Forum on Urban Forests. As an event that promotes the profession and professional development of arborists and urban foresters, raises public awareness of the benefits of trees, and facilitates the dissemination of knowledge on urban forestry, the forum aligns strongly with ISA's mission and guiding principles. We hope this event will facilitate new connections, foster learning, and inspire innovation in the management of urban forests and green spaces for years to come"

Caitlyn Pollihan

ISA CEO & Executive Director

"The USDA Forest Service is proud to be a co-organizer of the 2nd World Forum on Urban Forests. Please visit our exhibit and explore our resources that support healthy, inclusive, and resilient communities. For more than 40 years, we have worked to improve the forests and urban spaces where more than 84% of Americans live, work, and play. With your help – and the energy and capacity of our tribal, state, and local community partners – we will continue to lift vulnerable communities and build capacity for the future to sustain the benefits of trees and forests for generations to come"

Randy Moore

Chief, USDA Forest Service

"Welcome to our nation's capital, to our museums and gardens, and to the 2nd World Forum on Urban Forests! At Smithsonian Gardens, we connect people through plants and gardens to grow a better world. We look forward to connecting with you over the next week to grow greener, healthier, and happier cities. Join us! Your voice is important as we spend time sharing the latest science, exploring best practices, and discussing how to scale up our impacts and share that knowledge with those making a difference in our urban landscapes"

Joy Columbus

Director, Smithsonian Gardens

"Welcome to the 2nd World Forum on Urban Forests!

We are thrilled to meet all of you here in Washington DC, to share knowledge, experiences, and enthusiasm on urban forests! This forum will help us all to advance in our specific fields of expertise but more, to imagine new ways to work together, and to create even better urban forests all over the world. Happy forum to all!"

Stefano boeri, Maria Chiara Pastore

Politecnico di Milano

Stefano Boeri Architetti

"Leave no one and nothing behind - every person, city, and forest is included in our vision for the future Urbancene. This concept is rooted in the interconnected, systemic life of forests. Using the forest as an analog for cities encourages us to delve into the complex structures and functions of socio-ecological systems that are both interconnected and integrated, linking bustling urban areas with serene, remote forests and natural landscapes. In this perspective, cities are nestled within nature, not the other way around. This foundational realization calls for a reimagined approach to shaping future cities, demanding a renewed pact of collaboration between societies and the environment. The initiative supported by SISEF, 'Forest Science for Cities,' aligns with this vision, promoting harmony and

coexistence between human development and nature's splendor"

Fabio Salbitano

SISEF

Introduction

Urban forests play a vital role in sustainable and resilient urban development, contributing to socio-economic and environmental benefits. However, their full potential often remains untapped due to a lack of urban governance, planning, and knowledge. The 2nd World Forum on Urban Forests aims to address this by creating a global movement that connects practitioners, scientists, and decision-makers. Washington, DC, with its rich tradition of urban forestry and urban greening, is the ideal city to host this Forum.

The Forum provides a platform to exchange experience, best practices and lessons learned, and promote collaboration on the development of Urban and Peri-urban Forestry strategies and the identification of urban forests as means towards a greener, healthier, and happier future.

The 5-day Forum is designed to provide a comprehensive exploration of urban forests in relation to three key topics, namely health, inclusivity, and resilience. During the first 3 days, participants will have the opportunity to delve into these crucial areas through presentations, workshops, and discussions led by over 100 experts from around the world. The program is thoughtfully structured to offer a flexible format, ensuring a dynamic and engaging experience for all attendees. Each morning, high-level keynote speakers will provide valuable insights and inspiration, setting the stage for the day's discussions. In the afternoons, high-level discussion panels will foster in-depth conversations, allowing participants to delve into specific topics and exchange ideas with renowned experts in the field. Furthermore, the forum offers a rich array of side events, training sessions, and field trips. These additional activities, organized by both external and internal partners, aim to further enrich the overall experience and stimulate a flourishing environment for the exchange of ideas.

Following the successful first edition, the aim of the 2nd WFUF is to continue to highlight positive examples of planning, design and management approaches that cities with diverse cultures, forms, structure and histories have implemented to optimize the contribution that urban forests can provide in terms of economic development, environmental conservation, improved social cohesion, and public health and well-being. The forum is expected to have a significant impact on advancing sustainable and resilient urban development, optimizing the contribution of urban forests, and creating a **healthier**, more **sustainable** and more **inclusive** future for urban communities.

We extend our gratitude to the organizers who have made this Forum possible, including the Food and Agriculture Organization of the United Nations, Arbor Day Foundation, Government of the District of Columbia, Politecnico di Milano, SISEF - Società Italiana di Selvicoltura ed Ecologia Forestale, USDA Forest Service, Smithsonians Gardens and the International Society of Arboriculture.

Finally, we remind that World Forum on Urban Forests is a solid ongoing initiative that encourages knowledge exchange, partnerships, and collaboration among local and international entities, working tirelessly to improve urban forests worldwide.

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Organizing Committee

Food and Agriculture Organization of the United Nations
Arbor Day Foundation
USDA Forest Service
DDOT Urban Forestry Division
Politecnico di Milano
SISEF - Società Italiana di Selvicoltura ed Ecologia Forestale
Smithsonian Gardens
International Society of Arboriculture

Scientific Committee

Paloma Cariñanos | University of Granada, Spain
Stefano Boeri | Politecnico di Milano, Italy
Wendy Y. Chen | University of Hong Kong, China
Cynnamon Dobbs | University of Connecticut, USA
Gareth Doherty ASLA | Harvard University Graduate School of Design, United States
Francisco Escobedo | US Forest Service, United States
Cassandra Johnson Gaither | US Forest Service, United States
Johanna Gibbons | J & L Gibbons
Karin Helms | Oslo school of Architecture and Design, AHO, Norway
Cecil Konijnendijk | Nature Based Solutions Institute
Stephen Livesley | University of Melbourne, Australia
Josephine Malonza | Architect and urban designer
Robert McDonald | Nature Conservancy
Maria Chiara Pastore | Politecnico di Milano, Italy
Anand Persad | ACRT Services, United States
Tan Puay Yok | National University of Singapore, Republic of Singapore
Philip Rodbell | USDA Forest Service, United States
Fabio Salbitano | University of Sassari, Italy
Jessica Sanders | Sacramento Tree Foundation, United States
Giuseppe E. Scarascia-Mugnozza | University of Tuscia-Viterbo; BioCities and Urban Forests of the European Forest Institute, Italy
Alan Simson | Leeds Beckett University, United Kingdom
Jessica Thorn | University of St. Andrews, United Kingdom
Cheng Wang | Professor, Urban Forest Research Center of State Forestry Administration, P.R. China, China
Kathleen Wolf | University of Washington, United States
Simone Borelli | Food and Agriculture Organization of the United Nations
Michela Conigliaro | Food and Agriculture Organization of the United Nations

Oral presentations

The potential of the Handheld Mobile Laser Scanner (HMLS) tool in urban forest planning to design canopy consolidation interventions

Serena Sofia¹, Donato Salvatore La Mela Veca¹, Alessio Santosuosso², Marco Perrino², Antonio Motisi¹, Giovanna Sala¹

1. Università di Palermo, Palermo, PALERMO, Italy

2. D.R.E.Am. Italia, Pratovecchio, Italy

Recent remote sensing technologies have been a breakthrough over the past three decades in urban green natural heritage planning. In particular, LIDAR Handheld Mobile Laser Scanner systems (HMLS) have proven invaluable for measuring various parameters of individual tree structure, results of considerable utility for urban monumental trees research. The estimated morphological variables of an individual tree contribute to understanding well its resilience and role within an urban landscape. Knowing the dimensional variabilities that contribute to the structural stability of each individual tree would enable the design of more consolidations targeted to the specific needs of the examined plants. The consolidation of trees refers to all methods of connecting or supporting the branches or stems of a plant that aim to reduce the likelihood of failure and/or the damage associated with a structural failure of the plant.

In this study we focus the canopy stability of monumental trees present in two different historical gardens of Palermo (Italy) with the use of innovative technology of HMLS system. The HMLS scans were performed around two old growth trees of *Ficus macrophylla* subsp. *columaris* located respectively in the Botanical Garden and Garibaldi Garden (Palermo city, Sicily, Italy). A ZEB HORIZON handheld mobile laser scanner. was used for the survey. This species tends to drop aerial roots from its branches, which thicken into supplementary trunks upon reaching the ground, which help support the weight of its crown. Because of these characteristics, it was necessary to have full knowledge of canopy load distribution to identify the weakest points of the stems.

The use of innovative terrestrial technologies LIDAR is the objective of this study. It aims to support the collection of preliminary data necessary for the design of a consolidation of the monumental trees canopy.

The methodology used for extrapolating dimensional information and creating a digital model of the trees involves the application of specific computer algorithms. These algorithms provide valuable information on parameters such as the spatial distribution of tree stems under the canopy, the estimated total volume of the canopy, and the dimensional information of first-order branches. Accurate assessment of the condition of the vulnerable parts of the canopy is essential for planning effective future consolidation interventions. To this end, it is crucial to obtain comprehensive information about the actual state of these areas. Furthermore, the structural conformations of the trees were examined from the LIDAR scans for possible anomalies or defects, which are essential for the categorization of greenery according to failure propensity class (CPC) of the SIA (Italian Society of Arboriculture) protocol.

Terrestrial laser scanning has therefore made it possible to obtain key biometric information on the above-ground parts of trees. They are essential for preparing any management measures, because they are a useful tool for future in-depth studies and analyses on the multifunctional role of city green.