ISA International Society of Arboriculture

ARBORICULTURE & URBAN FORESTRY
Scientific Journal of the International Society of Arboriculture

INDEX
Arboriculture & Urban Forestry
Volume 48, 2022

Abram, Lauren Z. (and J.P. Keller, E.A. Tulanowski, and M.R. McHale), From West to East: Tree Placement Differentially Affects Summertime Household Energy Consumption in a Semi-Arid City, 261
accounting costs
of purchasing new chains and professional sharpening, 223
accuracy
of photo-based plant identification applications, 27
of urban forestry tools for estimating tree height, 319
adaptation
of SSPM framework, 60
aerial-based remote-sensing tools
challenges and opportunities in digital age, 45
aerial laser scanning (ALS)
shading effect of urban canopy, 95
Agrimi, Mariagrazia. *See* Pace, Rocco
air pollutant removal
potential for highway trees to provide, 293
Almas, Andrew D. *See* Conway, Tenley M.
analysis of variance (ANOVA)
of effect of climbing line, ascent technique, and their interaction, 309
Andersson, Erik. *See* Plitt, Sophie
arboricultural tree climbing
magnitude and frequency of loading associated with, 309
arborists and wildlife advocates
development of grassroots coalition of, 1
artificial intelligence
usage to assist tree risk assessment, 138
Arwade, Sanjay R. *See* Kane, Brian
ascent techniques
effect on magnitude and frequency of arboricultural climbing loads, 309
Barron, Sara. *See* Lu, Yuhao
Bassett, Corinne G. (and R. Gilpin, and K. Donohue), Lessons Learned from Developing Best Management Practices for Urban Tree Care and Wildlife, 1
best management practices (BMPs)
for urban tree care and wildlife, 1
Biagiola, Luca. *See* Pace, Rocco
biochar, fertilization, and tillage (BFT)
arboriculture treatment improving soil quality and tree growth, 203
biochar soil amendment
influence on tree growth and soil quality, 176
Bolingbrook, Illinois, USA
soil organic matter and tree growth in suburban street tree landscape in, 203
botanists
and photo-based plant identification apps, identification ability of, 27
botany
professional women in, 333
Buntrock, Laura. *See* Hoy, Morgan
CACI model
in urban forest RS data, 147
Calfapietra, Carlo. *See* Pace, Rocco
California
best management practices for, 1
campus landscaping
oscillating patterns of, 74
women's role in, 333
carbon sequestration
potential for highway trees to provide, 293
carbon storage
potential for highway trees to provide, 293
Casario, Brianna M. *See* Schmidt, Ryan J.
Catania, Michelle. *See* Scharenbroch, Bryant C.
chain saw chains
sharpening options and practices for operational efficiency of, 233
Chen, Jan-Chang (and C. Wei, Y. Hsieh, S. Huang, and P. Peng), Intelligent Survey Technologies and Applications for Urban Forests in Taiwan, 49
Cheng, Zhaohua. *See* Lu, Yuhao
Chicago metropolitan region
long-term growth of highway ROW trees in, 293
Chizmar, Stephanie. *See* Hoy, Morgan
civic beautification
Harrison's interests in, 333
climate change
and urban tree species distribution, 147
climbing lines
effect on magnitude and frequency of arboricultural climbing loads, 309
clinometer
accuracy and precision in tree height estimation, 319
Colorado, USA
tree placement effect on summertime household energy consumption in, 261
compliance rates
associated with tree replacement requirement of residential tree removal permits, 9
connectivity
of SSPM framework, 60
contaminated soils
use of biochar in, 176
Conway, Tenley M. (and J.K. Khatib, J. Tetreult, and A.D. Almas), A Private Tree By-Law's Contribution to Maintaining a Diverse Urban Forest: Exploring Homeowners' Replanting Compliance and the Role of Construction Activities in Toronto, Canada, 9
COVID-19 pandemic
impact on economic growth, 278
crown dimensions
influence on likelihood of tree failure, 242
measurement with electronic ipsometer/clinometer, 113
Dahle, Gregory A. *See* Walker, Mathew
database retrieval system
using GIS, 49
data collection
for identification of tree species using software, 27
urban forests, 147
Deak Sjöman, Johanna (and A. Kristoffersson, G. Mercado, and T.B. Randrup), Sustainable Smart Park Management—A Smarter Approach

©2022 International Society of Arboriculture

to Urban Green Space Management?, 60
De Angelis, Paolo. *See* Pace, Rocco
decision-making system software
for tree risk assessment, testing of, 138
diameter at breast height (DBH)
influence on growth of highway ROW trees, 293
measurement with diameter tape and tree calipers, 113
and trunk flare diameter (TFD), allometric relationships between, 217
digital field instruments
comparison with traditional tools in urban forestry, 113
digital innovation
Gothenburg smart city approach through, 60
digital surface models (DSMs)
for urban forest data collection, 147
digital tools
potential for knowledge sharing, 124
diversity
of SSPM framework, 60
Donohue, Kara. *See* Bassett, Corinne G.
driverless vehicles
roadside infrastructure design for, 147
drone-mounted measurement tape
for true height estimation, 319
economic costs
of purchasing new chains and professional sharpening, 223
electrical utility rights-of-way
likelihood of failure of trees along, 242
emamectin benzoate
to manage emerald ash borer, trunk-injected, 165
emerald ash borer (EAB)
trunk-injected emamectin benzoate to manage, 165
e-tools
potential for knowledge sharing, 124
explanatory approaches
to assess likelihood of tree failure, 242
Field-Map
for tree measurements, 113
Fischer, Burnell C. *See* Freeman-Day, Stephanie
Fite, Kelby. *See* Scharenbroch, Bryant C.
footlocking induced loads
frequencies of, 309
forestry
professional women in, 333
Freeman-Day, Stephanie (and B.C. Fischer), Indiana University's Woodland Campus: A Case Study of Urban Forest Patch Sustainability, 74
GALES-based model
to assess likelihood of tree failure, 242
general dynamic logic (GDL)
tree assessment modelling in, 138
geographic information system (GIS)
Indiana University's Bloomington (IUB) campus, 74
shading effect of urban canopy, 95
for urban forests, 49
Gilpin, Ryan. *See* Bassett, Corinne G.
Ginzel, Matthew. *See* Sadof, Clifford
Girling, Cynthia. *See* Lu, Yuhao
Giuliarelli, Diego. *See* Pace, Rocco
Gordon, Jason. *See* Hoy, Morgan
Gothenburg
smart city approach through digital innovation, 60
Grabosky, Jason C. *See* Schmidt, Ryan J.
green patches
on Indiana University Bloomington campus, historical analysis of, 74
ground-based remote-sensing tools
challenges and opportunities in digital age, 45
Guidolotti, Gabriele. *See* Pace, Rocco
Gula, Scott. *See* Sadof, Clifford
Harrison, Ellen Waln
role in urban greening, 333
Henderson, James E. *See* Hoy, Morgan
highway rights-of-way (ROW) trees
factors influencing long-term growth of, 293
homeowner characteristics
related to likelihood of replacement tree plantation, 9
horticulture
professional women in, 333
Hoy, Morgan (and R. Parajuli, S. Chizmar, O. Joshi, J. Gordon, J.E. Henderson, S. Mehmood, P. Khanal, O. Witthun, and L. Buntrock), Business Outlook of Private Urban Forestry in the Northeast-Midwest Region of the United States, 278
Hsieh, Yi-Ta. *See* Chen, Jan-Chang
Huang, Shang-Chuan. *See* Chen, Jan-Chang
hybrid approaches
potential for knowledge sharing, 124
image recognition
for identification of tree species using software, 27
impervious surfaces in landscapes
and urban tree canopy, 261
inclusion
of SSPM framework, 60
Indiana University's Bloomington (IUB) campus
forested and natural patches on, 74
in-field identification
of urban forests, 27
injection systems
to deliver emamectin benzoate to emerald ash borer leaf canopy, 165
insecticide
delivery to emerald ash borer leaf canopy, efficacy of, 165
institutional planning
urban and university forests, 74
intelligent survey technologies and applications
for urban forests in Taiwan, 49
iPhone 12 Pro
for tree measurements, 113
Johnson, Michelle. *See* Plitt, Sophie
Joshi, Omkar. *See* Hoy, Morgan
Kane, Brian (and S.R. Arwade), The Effect of Climbing Line and Ascent Technique on the Magnitude and Frequency of Arboricultural Climbing Loads, 309
Keller, Joshua P. *See* Abram, Lauren Z.
Khanal, Puskar. *See* Hoy, Morgan
Khatib, Jihan K. *See* Conway, Tenley M.
knowledge sharing
e-tools potential for, 124
knowledge systems
for system transformation, conceptual model of, 124
Koeser, Andrew K. *See* Salisbury, Allyson B.
Konijnendijk, Cecil C. *See* Nitoslawski, Sophie
Konijnendijk, Cecil C., Editor's Note: AUF Goes Full Open Access, 259
Kristoffersson, Anders. *See* Deak Sjöman, Johanna
laser rangefinder
accuracy and precision in tree height estimation, 319
Lee, Louis S.H., Quantitative Tools for the Prediction of Pavement Damages Associated with Urban Trees, 217
LiDAR
for urban forests, 49, 147
likelihood of failure
of trees along electrical utility rights-of-way, 242
linear regression models
impact of UTC on cooling electricity use, 261
Lu, Yuhao (and J. McCarty, J. Sezto, Z. Cheng, N. Martino, C. Girling, A. Rysanek, S. Barron, and G. Matasci), Modeling the Shading Effect of Vancouver's Urban Tree Canopy in Relation to Neighborhood Variations, 95

©2022 International Society of Arboriculture

Lukac, Martin. *See* Schaffert, Emma
Martin, Alexander, Chain Saw Chains: Analyzing Sharpening Options and Practices for Operational Efficiency, 233
Martin, Alexander J.F., Accuracy and Precision in Urban Forestry Tools for Estimating Total Tree Height, 319
Martino, Nicholas. *See* Lu, Yuhao
Masini, Emanuela. *See* Pace, Rocco
Matasci, Giona. *See* Lu, Yuhao
McCarty, Justin. *See* Lu, Yuhao
McHale, Melissa R. *See* Abram, Lauren Z.
McNulty, Maggie L. (and L.A. Roman), Forgotten Contributions: The Overlooked Impact of Ellen Harrison and Early 20th Century Women in Urban Greening, 333
mechanistic approaches
to assess likelihood of tree failure, 242
Mehmood, Sayeed. *See* Hoy, Morgan
Mercado, Geovana. *See* Deak Sjöman, Johanna
micro-expense analyses
of operating decisions, 223
Miesbauer, Jason W. *See* Salisbury, Allyson B.
Monte Carlo–based methodology
to assess likelihood of tree failure, 242
multiple regression
pavement damages associated with urban trees, 217
nature-based thinking
Sustainable Smart Parks framework based on, 60
New Jersey forests
photo-based plant identification applications for tree identification in, 27
New York City
UGI management by stewards using e-tools in, 124
Nitoslawski, Sophie (and C.C. Konijnendijk), The Emergence of Smart Urban Forestry: Challenges and Opportunities in the Digital Age, 45
non-destructive detection instruments
for urban forest health survey, 49
Northeast-Midwest region of United States
business outlook of private urban forestry in, 278
northern Illinois
long-term growth of highway ROW trees in, 293
operational efficiency
of chain saw chains, 233
ordered logistic regression model
business outlook of private urban forestry, 278
Pace, Rocco (and E. Masini, D. Giuliarelli, L. Biagiola, A. Tomao, G. Guidolotti, M. Agrimi, L. Portoghesi, P. De Angelis, and C. Calfapietra), Tree Measurements in the Urban Environment: Insights from Traditional and Digital Field Instruments to Smartphone Applications, 113
panoramic streetscape systems
for urban forests, 49
Parajuli, Rajan. *See* Hoy, Morgan
parameter estimation
in tree risk assessment, 138
patch sustainability
patterns in, 74
pavement damages
associated with urban trees, quantitative tools for prediction of, 217
Pearson's correlation coefficients
impact of UTC on cooling electricity use, 261
Peng, Ping-Hsun. *See* Chen, Jan-Chang
percent error
of urban forestry tools for estimating total tree height, 319
perception
of SSPM framework, 60
Percival, Glynn. *See* Schaffert, Emma
Philadelphia
female advocates for urban greening in, 333
photo-based plant identification applications (apps)
accuracy of, 27
Plitt, Sophie (and E. Andersson, and M. Johnson), Assessing the Potential of E-Tools for Knowledge Sharing and Stewardship of Urban Green Infrastructure, 124
Portoghesi, Luigi. *See* Pace, Rocco
precipitation
influence on likelihood of tree failure, 242
private green industry businesses
business outlook of, 278
private tree removal regulation
tree replacement requirement associated with, 9
property-level construction
related to likelihood of replacement tree plantation, 9
protruding flares and roots
factors affecting presence and magnitude of, 217
Purcell, Lindsey. *See* Sadof, Clifford
quantitative tools
for prediction of pavement damages associated with urban trees, 217
radiance daylight simulation engine data
shading effect of urban canopy, 95
radio frequency identification (RFID)
for urban forest management, 49
Rainbow Ecoscience Q-Connect™
efficacy to deliver emamectin benzoate, 165
Randrup, Thomas B. *See* Deak Sjöman, Johanna
real-time kinematic (RTK) detection instruments
for urban forest management, 49
remote sensing
of urban forests, technology challenges and opportunities for, 147
replacement trees
health and species of, 9
residential buildings
cooling electricity use, UTC impact on, 261
resilience
urban and university forests, 74
Roman, Lara A. *See* McNulty, Maggie L.
root-mean-square error (RMSE)
of urban forestry tools for estimating total tree height, 319
ropewalking
kernel density plots for, 309
Rose, Gillian. *See* Schaffert, Emma
Rust, Steffen (and B. Stoinski), Using Artificial Intelligence to Assist Tree Risk Assessment, 138
Rysanek, Adam. *See* Lu, Yuhao
Sadof, Clifford (and S. Gula, L. Purcell, and M. Ginzel), Factors Affecting Efficacy of Trunk-Injected Emamectin Benzoate to Manage Emerald Ash Borer, 165
saline soils
use of biochar in, 176
Salisbury, Allyson B. (and J.W. Miesbauer, and A.K. Koeser), Long-Term Growth of Highway Rights-of-Way Trees, 293
Schaffert, Emma (and M. Lukac, G. Percival, and G. Rose), The Influence of Biochar Soil Amendment on Tree Growth and Soil Quality: A Review for the Arboricultural Industry, 176
Scharenbroch, Bryant C. (and K. Fite, and M. Catania), An Arboriculture Treatment of Biochar, Fertilization, and Tillage Improves Soil Organic Matter and Tree Growth in a

©2022 International Society of Arboriculture

Suburban Street Tree Landscape in Bolingbrook, Illinois, USA, 203
Schmidt, Ryan J. (and B.M. Casario, P.C. Zipse, and J.C. Grabosky), An Analysis of the Accuracy of Photo-Based Plant Identification Applications on Fifty-Five Tree Species, 27
semi-arid city
tree placement effect on summertime household energy consumption, 261
Sezto, Jeri. *See* Lu, Yuhao
sharpening options and practices
for operational efficiency of chain saw chains, 233
single-family residences
cooling electricity use, UTC impact on, 261
smart cities
modern urban forestry for, 147
planning challenges and opportunities in digital age, 45
soil amendment
biochar, 176
soil organic matter (SOM)
in suburban street tree landscape in Bolingbrook, Illinois, USA, 203
soil quality
arboricultural treatment of biochar, fertilization, and tillage (BFT) improving, 203
biochar soil amendment influence on, 176
soil type and soil conditions
influence on likelihood of tree failure, 242
solar irradiance reduction
for neighborhoods in Vancouver, 95
species-specific regression
pavement damages associated with urban trees, 217
Staley, Daniel C., Modern Urban Forestry for Modern Cities: Technology Challenges and Opportunities for the Remote Sensing of Urban Forests, 147
statistical approaches
to assess likelihood of tree failure, 242
stewardship
of urban green infrastructure (UGI), 124
stick method
accuracy and precision in tree height estimation, 319
Stoinski, Bernhard. *See* Rust, Steffen
stormwater reduction
potential for highway trees to provide, 293
street trees
arboricultural treatment of biochar, fertilization, and tillage (BFT), 203
shading effect of, 95
structural soils
potential use of biochar for soil stability in, 176
summertime household energy consumption
effect of tree placement on, 261
sustainability
urban and university forests, 74
Sustainable Smart Parks framework
based on urban ecology and nature-based thinking, 60
system knowledge
sharing and complexity of, 124
Taiwan
intelligent survey technologies and applications for urban forests in, 49
target knowledge
through visioning activities and exchanging, 124
Tetreult, Janele. *See* Conway, Tenley M.
thermal dynamics modeling
of built environment and urban canopy, 95
tie-in point (TIP)
load-bearing capacity and possibility of failure of, 309
tillage treatment
influence on soil organic matter and tree growth, 203
Tomao, Antonio. *See* Pace, Rocco
Toronto, Canada
homeowners' replanting compliance and role of construction activities in, 9
transformative knowledge
impact of e-tool on, 124
tree care
best management practices for, 1
tree failure
likelihood of failure along electrical utility rights-of-way, 242
tree growth
arboricultural treatment of biochar, fertilization, and tillage (BFT) improving, 203
biochar soil amendment influence on, 176
highway ROW trees, factors influencing, 293
tree height
accuracy and precision of urban forestry tools for estimating, 319
measurement with electronic ipsometer/clinometer, 113
tree identification
framework to detect tree decay, 49
photo-based plant identification applications for, 27
tree load
simplified and limited model, assessment of, 138
tree measurements
in urban environment, 113
tree placement
effect on summertime household energy consumption, 261
tree risk assessment
artificial intelligence assisting, 138
likelihood of failure along electrical utility rights-of-way, 242
tree size
impact of species and cultivar choices and highway ROW location on, 293
tree survival
biochar soil amendment influence on, 176
trunk flare diameter (TFD)
and diameter at breast height (DBH), allometric relationships between, 217
trunk-injected emamectin benzoate
factors affecting efficacy of, 165
Tulanowski, Elizabeth A. *See* Abram, Lauren Z.
urban data sampling
using integrated in-vehicle LiDAR and panoramic streetscape system, 49
urban ecology
Sustainable Smart Parks framework based on, 60
urban environments
degraded soils and nutrient availability in, 176
tree measurements in, 113
urban forestry
best management practices for, 1
business, issues affecting, 278
business outlook in Northeast-Midwest region, 278
challenges and opportunities in digital age, 45
for modern cities, 147
urban forests
historical analysis at patch level, 74
intelligent survey technologies and applications for, 49
photo-based plant identification applications for identifying, 27
private tree removal regulation for, 9
technology challenges and opportunities for remote sensing of, 147
tree measurements in, 113

©2022 International Society of Arboriculture

urban green infrastructure (UGI)
stewardship of, 124
urban greening
gendered history of women in, 333
urban heat island (UHI)
urbanization and climate change impact on, 147
urban tree canopy (UTC)
impact on cooling electricity use, evaluation of, 261
shading effect modeling in Vancouver, 95
urban trees
biochar soil amendment influence on, 176
diameter at breast height (DBH) and trunk flare diameter (TFD), allometric relationships between, 217
quantitative tools for prediction of pavement damages associated with, 217
urban wildlife
best management practices (BMPs), 1
Vancouver
urban tree canopy shading effect modeling in, 95
vegetation-related outages
relationships governing tree failure and, 242
visible and spectral imagery
for urban forest data collection, 147
Walker, Mathew (and G.A. Dahle), Likelihood of Failure of Trees Along Electrical Utility Rights-of-Way: A Literature Review, 242
Wei, Chun-Hung. *See* Chen, Jan-Chang
wildlife
best management practices for, 1
Witthun, Olivia. *See* Hoy, Morgan
Zipse, Pamela C. *See* Schmidt, Ryan J.

©2022 International Society of Arboriculture