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Erratum 559

Ana Maria Benavides and Ronald C. Bunnell
Environmental and Management Drivers of *Magnolia silvioi* Mortality in a Tropical Andean City 560

Abstract. Background: Evidence of urban tree mortality is mostly limited to temperate regions; little is known about mortality in tropical cities or threatened native trees used in greening programs. *Magnolia silvioi* (IUCN Endangered) has been widely planted in Medellín since 2009, outside its natural range. Methods: We combined Medellín's Urban Tree System (SAU) records with field assessments of 178 individuals to score survival, phytosanitary condition, site context, and management history. Random Forest classification models (500 trees) were trained using tree, site, spatial, and maintenance-related predictors. Model performance was evaluated with out-of-bag (OOB) error and class errors. Results: Overall mortality was high (119/178; 66.8%). Of the 59 survivors, 54% showed decline symptoms. Mortality remained similarly high across natural, infrastructure, and built settings (approximately 65% to 71%). A reduced model with 6 predictors (latitude, longitude, pollution index, pruning, interventions, and planting date) improved performance (OOB = 20.8%), with latitude, pruning, longitude, and interventions as top predictors. Trees receiving more interventions and pruning exhibited lower predicted mortality. Conclusions: *Magnolia silvioi* shows high mortality and widespread decline symptoms across urban areas of Medellín. Spatial variables were the strongest predictors of mortality, likely reflecting differences in geomorphology and jurisdictional management while consistent maintenance mitigates risk more than microsite variables. Management intensity, particularly pruning and repeated interventions, was consistently associated with reduced mortality risk. Findings support adaptive monitoring, risk-based maintenance, and cross-municipal coordination to sustain conservation-priority trees in tropical cities.

Keywords. Pruning; Random Forest Test; Spatial Gradients; Tropical Cities.

Keidai Kishimoto
A Multi-Level Evaluation of the 3-30-300 Rule Using Individual- and Building-Level Analyses in the Japanese Urban Context: A Case Study of Himeji City 575

Abstract. Background: The 3-30-300 rule—ensuring 3 trees visible, 30% green cover, and access within 300 m to green spaces—has been proposed as a target to enhance the availability of ecosystem services from urban green spaces and trees. Although existing studies have examined how Western cities do not achieve this rule using aggregate data, which residential building and individuals in high-density East Asian cities benefit from the rule remains unclear. Methods: This study aims to develop a method for evaluating the 3-30-300 rule at the individual level using synthetic population data and to clarify its impact on population groups across different residential building types and urban densities, as well as on groups with different attributes in Himeji City, Japan. Results: The results show that, similar to other cities worldwide, only 5.1% of the population of Himeji City fully meets the 3-30-300 rule, with particular challenges in achieving 30% green cover. Apartments find it harder to meet the overall 3-30-300 rule, while residents in detached houses tend to have 30% green cover. Elderly groups tend to achieve 3 trees visible as well as 30% green cover. Conclusions: The underlying mechanisms differ from those in Western cities and are likely influenced by the decline in privately owned trees, the role of street trees, and urban planning systems in park provision. The results enable a microscale visualization of environmental injustice, facilitating policy prioritization to allocate limited resources aligned with the 3-30-300 rule.

Keywords. Environmental Justice; Residential Building Type; Synthetic Population Data; Urban Density; Urban Green Space.

Alyssa A. Vinson
Bridging Perceptions and Practices: Insights from Post-Hurricane Tree and Landscape Damage 592

Abstract. Background: The 2024 hurricane season devastated the Southeastern United States, with Florida's Southwestern Gulf Coast counties uniquely impacted. While debris clogged roadways and communities struggled to recover, the full extent of tree and landscape damage was only beginning to emerge. In the wake of disasters, Land Grant University Extension services provide education and technical expertise to residents and policymakers, serving as vital hubs of connection. Extension programs are effective when they address specific community challenges. Methods: To guide program development and outreach, a needs assessment survey was conducted to determine tree and landscape damage, management costs, and whether hurricane impacts altered perceptions of trees. Results: Respondents reported a significant increase in

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fear of trees following the hurricane, and this increase was not correlated with landscape and property damage. Of the major roof damage cases (8 total), all were associated with large tree failure, while the remaining moderate or minor cases (76 total) occurred without whole tree failure. Although major roof impacts were uncommon, their association with whole tree failure underscores the severity of such events. Fear or perception of trees as dangerous did not show a clear relationship with observed damage or replanting intentions, indicating a perceptual gap. Conclusions: Despite elevated fear of trees, approximately one-third of respondents were still willing to replant. This contrast between concern and behavior reflects the broader perceptual gap identified. Addressing this gap requires community education that emphasizes evidence-based tree planting and management practices. These implications are directly actionable for Extension programming.

Keywords. Extension Education; Hurricane Resilience; Risk Perception; Urban Forestry.

Yaw Agyeman Boafo, Godslove Elikplim Kwadzo Ahortor, Victor Owusu, and Stephen Twumasi Annan
Urban Residents' Perceptions of Urban Trees and Participation in Tree Planting Activities in a Rapidly Urbanising Neighbourhood of Accra, Ghana 603

Abstract. Background: Urban trees provide multiple ecological, social, and climatic benefits, yet their long-term sustainability in rapidly urbanising cities depends on how residents perceive and engage with urban tree planting programmes and the governance systems that support them. However, limited research has examined how governance-related factors influence participation in urban tree planting activities in rapidly urbanising African cities. Methods: This study examined urban tree perceptions, participation in tree planting activities, and governance-related factors shaping engagement in Madina, a high-density neighbourhood in Accra, Ghana. A household survey of 395 respondents across 5 sub-areas was conducted. Descriptive statistics and logistic regression were used to assess perceived benefits of urban trees, participation patterns, programme awareness, institutional trust, and barriers to engagement. Results: Urban trees were widely valued, particularly for aesthetic enhancement, habitat provision, temperature regulation, and air purification. However, participation was uneven and awareness of formal urban tree programmes remained low despite strong interest in future involvement, revealing a pronounced participation-awareness gap. Logistic regression results showed that participation was more strongly associated with programme awareness, perceived effectiveness of local authorities, and trust in information sources than with sociodemographic characteristics. Reported barriers to participation were dominated by information gaps, lack of organised opportunities, time constraints, and limited planting space. Awareness of urban tree planting programmes emerged as the strongest predictor of participation. Conclusion: The findings highlight the importance of governance visibility, communication, and institutional credibility in translating positive perceptions of urban trees into sustained community participation. Strengthening neighbourhood-level coordination and continuous public engagement may therefore be critical for supporting long-term urban tree stewardship.

Keywords. Community Engagement; Tree Planting Participation; Urban Forestry; Urban Governance; Urban Tree Stewardship.

Rainer Doecke and Stefan K. Arndt
Biodiversity and Climate Vulnerability of Street Tree Species Composition in Old and New Suburbs Along a Climate Gradient 621

Abstract. Background: Urban forests may be vulnerable in a changing climate, and a perceived or real lack of biodiversity may exacerbate this vulnerability. Methods: We assessed the biodiversity and climate vulnerability of street trees in 5 local government areas in Greater Melbourne, Australia, along a climate gradient in old (pre-2005) and new suburbs. Results: Despite significant variations in mean annual rainfall and aridity index across the study area, all locations maintained moderate to high biodiversity scores according to both Shannon and Simpson indices. Areas of higher rainfall showed strong genera dominance and a lower taxonomic richness than drier areas, yet they achieved high Simpson diversity scores, suggesting an even distribution among species within dominant genera. Newer suburbs had a lower taxonomic richness of species, genera, and families compared to older suburbs and lower Shannon and Simpson indices; no area complied with the Santamour 10/20/30 rule. Climate vulnerability assessment using climate envelope models indicated that species vulnerability did not differ along the climate gradient and that species in most locations were not very vulnerable under most scenarios. However, trees in new suburbs were less climate vulnerable compared to trees in old suburbs under the 2090 climate scenario. This difference between old and new suburbs indicates that species selection practices may have increased climate resilience, though this comes at the cost of lower overall species diversity. Conclusion: While climate change poses significant challenges, our research demonstrates that considered species selection and management strategies can help create urban forests better adapted to future conditions.

Keywords. Biodiversity; Climate Gradient; Tree Vulnerability; Urban Forest.

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Benjamin W. Held, Ryan L. Murphy, Chad P. Giblin, and Robert A. Blanchette
Dutch Elm Disease Resistance in American Elm: A Conceptual Framework and Case Study from Minnesota 637

Abstract. Background: Dutch elm disease (DED) has reshaped the American elm (*Ulmus americana*) component in North American landscapes for nearly a century. Although breeding and selection programs have produced a small number of commercially available DED-resistant cultivars, uncertainty remains regarding the durability of their resistance under current pathogen virulence. Methods: This study presents a conceptual framework for screening and interpreting DED resistance based on historical breeding programs and long-term field studies. The framework was applied in a case study evaluating 3 commercially available American elm cultivars ('Valley Forge', 'Jefferson', and 'Lewis & Clark' [Prairie Expedition®]) inoculated with a locally derived isolate of *Ophiostoma novo-ulmi* ssp. *americana* in Minnesota. Trees were challenged with 3 inoculum concentrations, and resistance was assessed with 2 tree ages. Results: All cultivars exhibited low wilt severity one year after inoculation across all inoculum concentrations. No significant effects of cultivar, inoculum concentration, tree age, or their interactions were detected, indicating stable resistance across the tested doses and age range. Conclusions: These results are consistent with long-term North American and European studies showing that DED resistance in elm is quantitative and best expressed as functional survival or having the ability to limit pathogen spread, recover from localized wilt, and maintain canopy vigor over time. The conceptual framework and experimental results presented support the continued deployment and evaluation of DED-resistant American elm cultivars for urban and landscape restoration.

Keywords. Disease Resistance; *Ulmus*; Vascular Wilt.

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