



ARBORICULTURAL ABSTRACTS

PREDICTING OPPORTUNITIES FOR GREENING AND PATTERNS OF VEGETATION ON PRIVATE URBAN LANDS Austin Troy, J. Grove, J. O'Neil-Dunne, S. Pickett, and M. Cadenasso

This paper examines predictors of vegetative cover on private lands in Baltimore, Maryland. Using high-resolution spatial data, we generated two measures: "possible stewardship," which is the proportion of private land that does not have built structures on it and hence has the possibility of supporting vegetation, and "realized stewardship," which is the proportion of possible stewardship land upon which vegetation is growing. These measures were calculated at the parcel level and averaged by US Census block group. Realized stewardship was further defined by proportion of tree canopy and grass. Expenditures on yard supplies and services, available by block group, were used to help understand where vegetation condition appears to be the result of current activity, past legacies, or abandonment. PRIZM™ market segmentation data were tested as categorical predictors of possible and realized stewardship and yard expenditures. PRIZM™ segmentations are hierarchically clustered into 5, 15, and 62 categories, which correspond to population density, social stratification (income and education), and lifestyle clusters, respectively. We found that PRIZM 15 best predicted variation in possible stewardship and PRIZM 62 best predicted variation in realized stewardship. These results were further analyzed by regressing each dependent variable against a set of continuous variables reflective of each of the three PRIZM groupings. Housing age, vacancy, and population density were found to be critical determinants of both stewardship metrics. A number of lifestyle factors, such as average family size, marriage rates, and percentage of single-family detached homes, were strongly related to realized stewardship. The percentage of African Americans by block group was positively related to realized stewardship but negatively related to yard expenditures. (*Environmental Management* 2007. 40(3):394–412)

CONTRASTING BELOW- AND ABOVEGROUND RESPONSES OF TWO DECIDUOUS TREES TO PATCHY NITRATE AVAILABILITY

Vit Gloser, Katherine Libera, and Colin M. Orians

We investigated how patchy nitrate availability influences growth and functioning of plant roots and generates, through vascular constraints on long-distance transport, aboveground heterogeneity in plant growth and chemistry. We examined two broadleaf tree species, *Acer rubrum* L. and *Betula papyrifera* Marsh. Plants were grown either in a split-root setup where a single root received full nutrient supply and the rest of the root system received all nutrients except nitrogen (patchy treatment), or in a single pot with full nutrient supply (homogeneous treatment). In both species, fine roots proliferated in the nitrogen patch, but *B. papyrifera* produced twice as much fine root biomass in response to patchy nitrate availability as did *A. rubrum*.

There was no difference between treatments in nitrogen uptake rate in either species. In general, specific water uptake was higher in *A. rubrum* than in *B. papyrifera*, especially in the nitrogen-rich side pot. When nitrate availability was patchy, nitrate reductase activity in roots and leaves was unaffected in either species. In *A. rubrum*, but not in *B. papyrifera*, patchy nitrate supply resulted in aboveground heterogeneity, with leaves above the N-fertilized roots being larger and having a higher relative chlorophyll concentration than those inserted in the opposite quarter of the stem. (*Tree Physiology* 2008. 28:37–44)

ACCUMULATION OF DEICING SALTS IN SOILS IN AN URBAN ENVIRONMENT

Mary Ann Cunningham, Eric Snyder, Daniel Yonkin, Morgan Ross, and Toren Elsen

Examining rates of deicing salt accumulation and leaching in urban soils is important for understanding the distribution and movement of salt in the environment. We examined autumn concentrations of deicing salts in soils in a moderately dense urban landscape in eastern New York State. The study area contrasted to the isolated, rural highways examined in previous studies. While NaCl was the most abundantly applied salt, Mg²⁺ (apparently from MgCl₂, a secondary deicing salt) was the most abundant salt cation in soils. Moderate Na⁺ levels, and equivalent concentrations at depth and in surface samples, indicate that leaching of Na⁺ is rapid in this system. Leaching may ameliorate toxicity for land plants but accelerate inputs to aquatic systems. In contrast to rural highway studies, where salt levels declined rapidly with distance to pavement, Na⁺ remained elevated at the maximum distance measured. Airborne salt dispersal and dense networks of pavement likely contribute to widespread elevated salt levels. This semi-urban setting had salt levels high enough to be toxic to terrestrial plants and soil protozoa. Even moderate levels of development can have dramatic effects on salt inputs into soils and aquatic systems. (*Urban Ecosystems* 2008. 11(1): 17–31)

WHAT DO FORESTERS THINK ABOUT URBAN FORESTRY, URBAN PEOPLE, AND CITIES?

Robert M. Ricard and Maureen H. McDonough

Urban residents affect forest policy and hence forest management decisions and outcomes. In addition, urban forestry has become more visible, integrated, and influential in the Society of American Foresters (SAF). However, little is known about what foresters think urban people know about forestry, what emphasis foresters believe should be placed on urban forestry compared with traditional forestry, and what foresters think about the purposes of urban forestry. Results of a nationwide mail survey of SAF members suggest that urban forestry is well accepted as a community of interest by respondents, that respondents lean more toward loving cities than hating them, and that respondents

believe urban people understand some specific forestry objectives, such as the link between forests and wood products, but not many others. (*Journal of Forestry* 2007. 105(6):285–292)

ASSESSMENT OF URBAN FORESTRY RESEARCH AND RESEARCH NEEDS IN NORDIC AND BALTIC COUNTRIES

C. Konijnendijk, A. Nielsen, J. Schipperijn, Y. Rosenblad, H. Sander, M. Sarv, K. Mäkinen, L. Tyrväinen, J. Donis, V. Gundersen, U. Åkerlund, and R. Gustavsson

A review of research and research needs in urban forestry was carried out in Denmark, Estonia, Finland, Latvia, Norway, and Sweden during 2005. A questionnaire addressing post-2000 and ongoing research was sent to 146 researchers and generated 76 completed questionnaires. Universities were found to lead urban forestry research, while municipalities headed funding organisations in terms of number of projects funded. Planning, ecological and management aspects were the most common research themes, but socially oriented research also played an important role. The research needs questionnaire was sent to 192 key research actors (assignors, users and researchers), resulting in 63 completed needs assessments. The research themes of 'urban forest management', 'social and cultural values' and 'urban forest and green planning' were prioritised for future research. Comparison of ongoing research and research needs showed discrepancies, as ongoing research does not always cover the same themes identified as primary research needs. Priorities for future research as identified by the research community respective those assigning and using research also differed. Economic assessment of benefits, for example, scored much higher as a need among researchers than other respondents. In terms of present weaknesses in the research 'infrastructure', research actors emphasised lack of funding, fragmentation of research and insufficient critical mass. The region's urban forestry research can be enhanced and made more meaningful by strengthening national and international networking within the research community, across disciplines, as well as between researchers and those commissioning and using research. (*Urban Forestry and Urban Greening* 2007. 6(4):297–305)

URBAN FORESTS AS COMPENSATION MEASURES FOR INFRASTRUCTURE DEVELOPMENT

Erik Skärbäck

Sustainable development requires, among other things, that development projects not result in the degradation of natural resources for outdoor recreation. There has been a rapid increase in knowledge regarding the importance of the external environment to our health and well-being. Stress is reduced significantly when people are exposed to health-promoting nature and landscape values. Many people are actively choosing to reduce their stress. Doctors today prescribe outdoor walks in peaceful environments for the same purpose. A high level of traffic noise increases stress. This paper discusses the application of silent values in an infrastructure development project, the extension of Sturup Airport, east of Malmö, Sweden and Copenhagen, Denmark. Through estimating the change in noise resulting from the development, it is possible to integrate mitigating and compensating measures in the planning process discussions. Such measures can be negotiated as conditions for authorization of the project. The airport is situated in an area rich in nature values for recreation. The airport expansion will mean both new noise impacting "silent" areas and increasing noise levels in already noise-affected areas. In this study, we have taken a positive stand on the silent areas, mostly agriculture land, where compensation measures could be taken, thus balancing the loss of silent nature values for recreation. Silent areas that will not be affected are suitable and feasible for compensation measures thus can be called compensation areas. In this way the development of new recreational areas, preferably designed as urban forests, are critical preconditions for the negotiations for the airport extension. The conclusion is that urban forest investments for health and well-being can be an important part of strategic decisions in spatial planning. As preconditions for a permit, the development and financing of new urban forests and green areas can be part of the total development plan. This is an issue of global interest, as many countries are in a process of rapid urbanization, and urban greening and urban forestry have an important role to play in the process of promoting quality of life and improving environmental quality. (*Urban Forestry and Urban Greening* 2007. 6(4):279–285)

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