ARBORICULTURAL ABSTRACTS

URBAN FORESTRY: THE FINAL FRONTIER?
E.G. McPherson

Forestry and urban forestry have more in common than practitioners in either field may think. The two disciplines could each take better advantage of the other's expertise, such as foresters' impressive range of scientific theory and technological sophistication, and urban foresters' experience in working with diverse stakeholders in the public arena. The wildland–urban interface is a geographic center of convergence, and the nexus of forest ecology and human ecology will become forestry's next frontier where forestry and urban forestry join together to construct healthier habitats for humans. (J. For. 2003. 101(3):20–25)

COMPARISON OF THE COLD HARDINESS OF LANDSCAPE TREE AND SHRUB CULTIVARS GROWING AT TWO DISPARATE GEOGRAPHIC LOCATIONS
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The stem cold hardiness of five tree and five shrub cultivars was evaluated monthly from September 1998 through April 1999 on plants growing both at Griffin, Georgia (330° 15' N), and Chanhassen, Minnesota (440° 50' N), U.S., to determine whether cultivar hardiness varied with latitudinal differences in photoperiod and temperature conditions. On September 22, hardiness levels of five of the ten cultivars growing in Georgia were greater than or equal to those of their counterparts growing in Minnesota. After this date, however, all cultivars acclimated much more slowly in Georgia than in Minnesota, with the site-related hardiness differential on November 11 ranging from 13°C for 'Cully' river birch to 25°C for 'Sunrise' forsythia. The forsythia cultivars 'Lynwood Gold' and 'Spring Glory' were seriously injured in the Minnesota planting in early January when outdoor minimum temperatures were between –28°C and –31°C for several days. All other taxa attained their maximum detected cold hardiness levels by January 13 in Minnesota, while some in Georgia continued to harden through February 10. With the exception of 'Tristis' weeping willow, all of the cultivars attained greater midwinter hardiness levels in Minnesota than in Georgia. All cultivars deacclimated much more rapidly in Georgia than in Minnesota. These results indicate that rates of cold acclimation and deacclimation and maximum midwinter hardiness levels of temperate zone woody plant taxa are strongly influenced by local photoperiod and temperature conditions. To accurately evaluate the geographic range of adaptability of woody plant taxa, cold hardiness evaluations need to be conducted regionally on locally grown plants. (J. Environ. Hortic. 2002. 20(2):77–81)

THE RE-EMERGENCE OF INDIGENOUS FOREST IN AN URBAN ENVIRONMENT, CHRISTCHURCH, NEW ZEALAND
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Christchurch, the second largest city in New Zealand, is a planned city on a coastal plain on the east coast of the South Island. The birth of the city and the subsequent century of development was characterized by colonial values and tree and garden planting with familiar European species along with those from Australia, North America, and eventually all other continents. The image of an "English garden city" with classical parks of oaks and willow-lined rivers became the accepted norm and the way in which the city has been promoted to potential tourists. Gardening is one of the top two recreational activities, and exotic species greatly outnumber native species in the flora and in gardens. This has had serious consequences for the highly fragmented and degraded indigenous vegetation and its co-adapted wildlife. A few hardy indigenous species continued to regenerate through this period, but since the 1970s, there has been a progressive change of attitude and interest in reclaiming the natural heritage of the city, manifest in widespread private and public planting of indigenous species and active habitat restoration. In this article, we examine the indigenous and exotic shrub and tree components of the Christchurch flora as planted street trees, in domestic gardens, and in parks. We also present data on shrub and tree regeneration in parks and domestic gardens in the city. Indications are that the more sensitive, less intrusive management of urban environments, combined with the greater density of indigenous seed sources, has allowed regeneration of a wide range of indigenous species across a broad spectrum of habitats—from neglected gardens to pavement cracks to exotic plantations. This is despite the competition from the prodigious seed banks and density of exotic trees, shrubs, and ground covers and albeit minimal impacts of introduced browsing and seed-eating mammals. If the present trends continue through appropriate management and facilitation, these tentative signs of native forest regeneration should eventually proliferate into a sustainable mixed-origin urban forest that resurrects and preserves the natural character of the region. (Urban For. Urban Green. 2004. 2:149–158)

POST-TRANSPLANT GROWTH OF FIVE DECIDUOUS NORDIC TREE SPECIES AS AFFECTED BY TRANPLANTING DATE AND ROOT PRUNING

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Shoot growth and leaf surface area were recorded during three seasons subsequent to transplanting five deciduous street tree species in Norway: *Acer platanoides* L., *Aesculus hippocastanum* L., *Prunus avium* L., *Sorbus aucuparia* L., and *Tilia* × *europaea* L. 'Pallida'. Trees were transplanted at four dates, early and late fall (August 25 and October 23), and early and late spring (April 23 and May 5–19, depending on species), with two root ball diameters (three and five times the stem circumference). Control trees were not transplanted. Shoot growth in all species, except *Sorbus aucuparia,* was reduced by 38% to 86% of control trees and leaf surface area by 13% to 61% in the first season after transplanting. In *Acer platanoides* and *Aesculus hippocastanum,* shoot growth was also reduced in the second season (71% and 81%, respectively). All species except *Aesculus hippocastanum* resumed pre-transplant growth in the third season. Early fall transplanting was least favorable in all the species, resulting in delayed establishment as well as reduced shoot growth and leaf surface area. Early spring transplanting was found favorable for *Acer platanoides* and *Prunus avium,* but unfavorable for *Sorbus aucuparia.* The experiment confirmed that the larger root balls are preferred over smaller root balls. (Urban For. Urban Green. 2004. 2:129–137)

PHYTOPHTHORA RAMORUM AS THE CAUSE OF EXTENSIVE MORTALITY OF *QUERCUS* SPP. AND *LITHOCARPUS DENSIFLORUS* IN CALIFORIA

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A new canker disease, commonly known as sudden oak death, of *Lithocarpus densiflorus, Quercus agrifolia, Q. kelloggii,* and *Q. parvula* var. *shrevei* in California, U.S., is shown to be caused by *Phytophthora ramorum.* The pathogen is a recently described species that previously was known only from Germany and the Netherlands on *Rhododendron* spp. and a *Viburnum* sp. This disease has reached epidemic proportions in forests along approximately 300 km of the central coast of California. The most consistent and diagnostic symptoms on trees are cankers that develop before foliage symptoms become evident. Cankers have brown or black discolored outer bark and seep dark red sap. Cankers occur on the trunk at the root crown up to 20 m above the ground, but do not enlarge below the soil line into the roots. Individual cankers are delimited by thin black lines in the inner bark and can be over 2 m in length. In *L. densiflorus* saplings, *P. ramorum* was isolated from branches as small as 5 mm in diameter. *Lithocarpus densiflorus* and *Q. agrifolia* were inoculated with *P. ramorum* in the field and greenhouse, and symptoms similar to those of naturally infected trees developed. The pathogen was re-isolated from the inoculated plants, which confirmed pathogenicity. (Plant Dis. 2002. 86:205–214)