Trees Are Good... Especially in Kelowna, British Columbia

A Municipal Arborist Exchange

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Left to right: Kelowna City Forester Ian Wilson, Landscape & Design Technician Lorna Rowland, Urban Forestry Supervisor John Penrice, and Arborist Exchange participant Delia Juncal from Oceanside, California.

Kasugai Gardens in Kelowna symbolize the friendship between Kelowna and Kasugai, Japan, sister cities since 1981.

As my plane departed from Southern California, known for palms, pools, and tropical plants, I looked forward to experiencing the green forests of Kelowna, British Columbia. My thought was to gather as much information as I could about the management of trees there and compare it to the management of trees in California. Little did I realize what my experience would entail.

My host, Manager of Park Services Mr. Ian Wilson, is a respected administrator, leader, and Registered Professional Forester. This respect was evident when I observed Ian speaking with his colleagues. He and his talented and knowledgeable staff were always available to accommodate and include me in their daily activities as well as answer the multitude of questions I posed. Ian is also recognized in the industry as an innovator, having partnered with Silva Cells on their first commercial installation in North America (see *www.deeproot.com* for more information about this and other projects).

The Park Services Branch Ian oversees is responsible for the maintenance of 200 parks, street trees, recreational trails, riparian wetlands, sport centers, water gymnasium, historic sites, and waterfront parks/beaches. At present, the City employs 5 gardeners and 25 grounds personnel.

Kelowna prides itself on being a "Community in Bloom" (CIB) city. According to the CIB Web site, "Communities in Bloom is a national [Canadian] organization dedicated to the promotion of green spaces in urban settings." This pride is exemplified by the dedicated hard-working gardeners, grounds personnel, certified arborists, and urban foresters that play such an amazing role in the success in the beautification of their city.

In terms of the urban forest, I was extremely envious of the many tree varieties that we in Southern California are not able to grow with much success due to our warmer arid-type climate and adverse soils. I appreciated Kelowna's red maple (*Acer rubrum* 'Red Sunset'), ruby horsechestnut (*Aesculus* x *carnea briotii*), thornless honeylocust (*Gleditsia triacanthos*), black gum (*Nyssa sylvatica*), European beech (*Fagus sylvatica*), black locust (*Robinia pseudoacacia*), dogwood (*Cornus* sp.), hawthorn (*Crataegus* x *mordenensis* 'Toba' and 'Snowbird'), saucer magnolia (*Magnolia soulangiana*), and Japanese tree lilac (*Syringa reticulata*).

I had such fun with Landscape & Design Technician Ms. Lorna Rowland. In her Smart Car, she took me on a non-stop botanical adventure. The City arboretum educates citizens to the importance of proper arboricultural practices and awareness of trees. The "right tree, right place" theme is alive and working there.

With Urban Forest Health Technician Mr. Blair Stewart, I witnessed the mass destruction caused by the mountain pine beetle (*Dendroctonus ponderosae*) and the western pine beetle (*Dendroctonus brevicomis*). The predominant

Kelowna is an official Community in Bloom.

Kelowna's Okanagan Lake

conifers in Kelowna are the native ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii*), and the lodgepole pine (*Pinus contorta*). Both the mountain pine beetle and the western pine beetle will infest and kill Ponderosa pines. The mountain pine beetle will also infest lodgepole, white, Scotch and other native and exotic pines. More than 1500 infested trees were removed from Kelowna parks last winter.

The bark beetles attack the pine species from the base up to a trunk diameter of about 3 inches (8 cm). When examining the trunks, pitch tubes are present (tubes of pitch extrude from the bark after beetles bore in) if mountain pine beetles have attacked, but this is not generally true of western pine beetles. Instead, to identify western pine beetle damage, one looks for sawdust and frass around the base of the tree. Mountain pine beetles attack from about a meter above the ground to just above the main branches in the tree crown. Western pine beetle initiates attack at mid-bole and then extends both up and down the trunk from this point.

Pitch tubes are made when the female beetles bore into the bark of trees and construct galleries where they lay their eggs; boring dust may also be present. When beetles are not present in sufficient numbers, trees can produce enough resin to "pitch out" beetles as they try to bore into the inner bark. The beetles carry blue-staining fungi into the tree which aids the beetle in overcoming the trees defenses; afterwards the sapwood begins to discolor.

The first sign of beetle-caused mortality is generally discoloration of the foliage. Needles begin fading and change from green to yellowish green, then sorrel, red, and finally rusty brown. According to projections by the Canadian Ministry of Forests and Range in "The Urban Forest Effects (UFORE) Analysis Report" (October 2007), the infestation will likely continue until 2018 and will kill approximately 80% of provincial pine volume in the central and southern interior. Fortunately, funding was received through the federal and provincial government to assist Kelowna with these and other forest fuel management efforts this year.

Mr. Bruce B. Hostetler, Entomologist/Service Center Manager for Forest Health Protection, Westside Forest Insect & Disease Service Center, Oregon, indicated that efforts to control the mountain pine beetle in ponderosa pine in a forest situation include thinning to reduce stocking levels or thinning around large old pines to reduce competition. In an urban situation, keeping the trees in a vigorous condition without too much competition from other vegetation is critical. In a drought condition, making sure that the trees are properly watered will reduce the susceptibility of trees to attack. Even though pine beetles have a number of native predators and parasites, there has been little success in controlling outbreaks by artificial augmentation of the predator and parasite populations. Unseasonably low temperatures may retard outbreaks.

Due to the City of Kelowna's commitment to environmental sustainability, including IPM, the city has chosen not to broadcast spray insecticides. Residents place a high priority on protecting the natural open space and the water quality in the Okanagan Lake. Normally, if beetle outbreaks are large, direct chemical control may not be cost-effective. Experimental efforts include wrapping the base of the trees with a fiberglass cloth or a mesh screen to help prevent the beetles from boring into the trunk, and incorporating pheromones to deter attacking beetles. This naturally produced semiochemical, verbenone, is now available commercially for protecting trees from attack by mountain pine beetle. Finally, new pine tree varieties are being tested for planting as a solution to provide diversity and prevent future outbreaks.

A large part of my time was spent with Urban Forestry Supervisor Mr. John Penrice. John's many years of expe-

Trees planted in Silva Cells

Beetle cavities

Kelowna, British Columbia

Kelowna is known as the "Palm Springs of Canada" largely due to its arid climate and milder temperatures in both summer and winter (average July high: 82˚F/28˚C; average January temperature: 23˚F/-5˚C) than the rest of the country. The city lies north of the State of Washington, in a rain shadow between the Rocky Mountains and Pacific Coast Mountains. Kelowna receives 167 days of sunshine annually and only 11 inches (27.9 cm) of rain.

Kelowna is one of the largest cities in the Central Okanagan Valley, encompassing 100 square miles (259 square km), and has a human population of approximately 115,000. There are over 3 million trees in Kelowna, including street, mountain, and private trees.

rience in park management, construction, occupational safety and health services, and supervision makes John one of the most valuable city employees. As we drove together, he expressed his concerns over how trees will have to compete with other utilities and infrastructures. I certainly shared this concern, as in many California cities, new highway projects are cutting and ripping existing tree roots. John's thought is ideally to have a utility-line-free corridor within the public parkways, relegating utility lines to streets adjacent to curb and gutters, thus giving street trees a wider and unobstructed growing area. I am grateful to have met John; every city could use a John Penrice in their management.

Towards the end of my journey I met with Mr. Harry Burggraaf, City of Kelowna's Lead Arborist. Harry deals with all tree-related issues including requests from citizens, developers, and other departments. It was comforting to commiserate with Harry on the same issues that we deal with in California. Many of Harry's daily activities involve the enforcement of the City of Kelowna's Municipal Properties Tree Bylaw. Existing trees, especially heritage trees, are weighed equally or slightly higher in respect to other infrastructures. Harry was surprised and excited to hear about the City of Oceanside's approach to new developments, including the landscape bonding requirements, the review process for proposed street trees, and the actual inspection of the installation of trees prior to the release for certificate of occupancy.

Lastly, I had the opportunity to interview the park planner and other planners. It was refreshing to hear that many of the developers in Kelowna are committed to providing greenscapes. The planners explained that the City of Kelowna encourages mixed-use developments that are compact (higher density) and sustainable.

Kelowna's "Sustainable Checklist" assists council, staff, and the development community to work in partnership to achieve long-term goals and objectives. This may be accomplished by efficient use of public funds, protecting open space and natural areas, place-making (live/work/play), accessibility, housing choices, shorter commutes, and more transportation choices. When surveyed, most residents feel that protecting the environment is a priority. It was good to know that the different entities could work together to better protect, improve, and enhance Kelowna's environmentally sensitive ecosystems. I could detect a sense of pride and a sense of community throughout the city.

The time I spent in Kelowna was a valuable experience both professionally and personally. I am convinced that all those who manage trees deal with the same basic issues. As I reflect back on my 30 years of experience in the management of trees, there have been so many great advances. With all the new technology and specialized education, we can only go forward in producing a better environment in which to live.

I am forever thankful to my host Ian Wilson and co-host John Penrice and their families for showing me Canadian hospitality and making my visit so memorable. I say a final thank you to SMA and the sponsors of the Municipal Arborist Exchange Program for this unforgettable experience.

Key Words:

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