

## Arbor Vitae

### A Personal, Teacher's View of Tree-Life on the University of British Columbia Campus

#### Introduction

While strolling through the campus of the University of British Columbia, you can't help but notice trees. Whether it is to rush past them while going to class or on your way to grab a bite at the Student Union Building, it is difficult not to have a favourite tree (or two). There are an enormous number: old and young, native and exotic. They stand as witnesses to an ever-changing campus as well as to the effort of those who, in the past, had planted them to beautify the landscape.

Early pictures of campus show how barren the first landscape was. The land was cleared to make way for the construction of the university: not a tree was left standing. The plans for the campus (1914) were grandiose. Simple Gothic-style architecture of BC granite with large tree-lined avenues was the vision of the day. This was never to be realized. Construction ceased when the First World War broke out, and a temporary campus (Fairview) was erected on the site now occupied by the Vancouver General Hospital. The Fairview campus remained as the university site until 1925. In 1922, an aggressive campaign began to eliminate problems of inadequate facilities and overcrowding. It was driven by student initiatives and supported by 56,000 citizens who signed a petition urging the government to restart construction of the university. The Great Trek, a symbolic and historic march, started from the Fairview campus ended at the exposed girders of the Science building (now Chemistry). The government relented; funds were released and construction resumed. Budgetary constraints determined that a number of buildings were built as temporary structures. Many are still in use today. The Point Grey campus opened for business in 1925 and has been growing ever since, with two major disruptions: another world war and the Depression.

Shona Ellis, Instructor.

Department of Botany, Faculty of Science, University of British Columbia  
Vancouver, BC, Canada, V6T 1Z4.  
shona@interchange.ubc.ca

Budgetary problems would always restrict the realization of the vision of the university.

My recollections of campus, as a young child in the 60s, are of vast pasture, farms, and barns – not many trees. A main focus of the university at that time was agriculture and forestry. In the 40s my grandfather became the technician in charge of the poultry facility and he and his family lived in one of a group of small houses called the Farm Cottages (Naramata Court), built in 1919, where the Winter Sports Centre now sits (southwest corner of Agronomy Road and Wesbrook Mall). My grandparents left in 1967. The farm cottages were relocated soon after, and then demolished in the early 90s. A *Sorbus aucuparia* (rowan tree) marked the location of my grandparents' house until its removal less than five years ago. It had rotted in the centre and although still alive, one of the landscape crew was able to push it over manually – so much for the family tree.

I returned as an undergraduate in 1980, and lived in Place Vanier Residence. My interest at the time was not really in trees, but I did admire and found comfort from the large native conifers and rhododendrons surrounding the residence. I have been at UBC ever since; after a rather circuitous route I am now an Instructor in the Department of Botany. My interest in trees and plants on campus has grown dramatically. The wild and tended areas on campus have been important sources of plant material for classes, places to take students and members of the community, and of course to enjoy. The many fieldtrips that I conduct include a look at the very trees I took for granted in my youth.

The story of the trees on campus cannot be told without mentioning John Davidson. He was the first UBC botanist and Director of the UBC Botanical Garden. His first charge was to set up the gardens. Although very exciting for him, he must have felt utter dismay at the landscape that was his starting point. Being an avid outdoorsman and lover of nature, the devastation must have been disheartening, but he rose to the challenge and developed the University botanical garden, now the oldest continuously operating botanical garden in Canada. Some 25,000 plants were transported to the university from the Essondale Colony Farm in New Westminster (now Coquitlam), where Davidson had established what he hoped would become the provincial botanical garden. John Davidson was also a great teacher who believed in the outdoor classroom as a vital part of the university's mandate. He

contributed not only to the education of the student body, but to the community as a whole, giving numerous lectures and fieldtrips. His publications and public lectures reveal a man passionate about many subjects. The Botanical Gardens were initially set up for teaching and research. They were to reflect the plant diversity of British Columbia and to be used to solve some of the nomenclature issues of the day. Since BC was a relatively new frontier, surveys of plants were not only incomplete, but many plants had ended up with a diversity of names. The garden included a native plant arboretum of trees and shrubs as well an aquatic garden, a rock garden (simulating the habitat of a rock-slide), a medicinal plant garden, and exotic plants from various countries. Trees from Eastern North America (Canada and the United States) were also featured. All that remains of the original UBC Botanical Garden is a collection of trees, now called the Old UBC Arboretum and original surviving specimens scattered over the campus north of University Blvd. People like John Davidson, Frank Buck (first landscape architect) and later Nick Weesjes (Head Gardener in the 1960s and 1970s) had a passion for trees and a vision for the campus that created the landscape that characterizes the University of British Columbia.

The Old UBC Arboretum is bound by University Boulevard, West Mall, Lower Mall and the Fraser River Parkade. One of my favourites walking tours begins at the large *Pinus ponderosa* (ponderosa pine) in front of the Ponderosa building at the corner of University Boulevard and West Mall. The trees in the arboretum are labeled with their common and scientific names as well as their plant family and the country to which they are native. Such labeling would be welcome on the rest of the trees on campus.

The trees in the following discussion of the UBC Arboretum are a selection of the 120 or so different species that remain today. To the north of the Ponderosa Building, a stairway takes you to a row of native BC conifers, starting with a *Chamaecyparis nootkatensis* (yellow cedar). Recent DNA research indicates that it is more closely related to a newly discovered tree of Vietnam (*Xanthocyparis vietnamensis*) than to other members of the genus *Chamaecyparis*. Beside the yellow cedar is a *Thuja plicata* (western red cedar). The *Abies grandis* (grand fir), which used to be next in the row, fell victim to a wood-boring beetle and was “put down” in December 2003. Adjacent building construction and the roadway from years past seems to have compromised the health of a number of these trees, possibly making them more susceptible

to pests. The *Tsuga heterophylla* (western hemlock) has a woolly adelgid (type of aphid) infestation and the *Picea sitchensis* (Sitka spruce) has Cooley spruce gall adelgid, which causes cone-like galls to form that are often mistaken for malformed cones. Despite these afflictions, the trees continue to survive. The deciduous trees around the corner from the row of conifers have not fared as well. The *Betula papyrifera* (paper birch), *Alnus rubra* (red alder), a beautiful lichen-laden *Alnus sinuata* (Sitka alder), and *Rhamnus purshiana* (cascara) have recently been cut down due to disease (and acts of vandalism). This, however, is not a message of doom and gloom. These trees, for the most part, lived their expected natural lifespans. Plans are already underway to replace them with similar species.

Heading east in the arboretum you will encounter trees native to the United States including *Celtis occidentalis* (hackberry), *Diospyros virginiana* (common persimmon), *Halesia tetraptera* (silver-bell tree), and *Fraxinus pennsylvanica* var. *lanceolata* (red or green ash). A number of trees are native to Asia, such as the *Pterocarya stenoptera* (China wingnut), a member of the walnut family. It has fruits that hang down in long clusters. Each nut has two narrow wings, which make it look like a wingnut. Between the small buildings (Ponderosa Annexes) you can meander around and find trees both native and exotic.

As you emerge from between the small buildings you come to a grassy area in front of the First Nations' House of Learning. Before its construction this was a parking lot, not a very dignified place for such a precious collection of trees. When the parking lot and Ponderosa Annexes were first planned (early 1970s) the trees and vegetation that were the remains of Davidson's garden were slated for destruction. Opposition to removal of this unique teaching resource was strong; some even spoke of chaining themselves to trees in protest, but the construction proceeded around the beloved trees of the arboretum. In 1987 the First Nations' House of Learning was established and construction began in 1991. There was controversy about the site selection because of its potential impact on the trees. An *Araucaria araucana* (monkey puzzle) was moved and the building was constructed with some effort to have as little impact on the trees as possible. Approximately six trees, including a lovely *Cedrus brevifolia* (Cyperian cedar), were lost during construction, but a number of noteworthy specimens remain. The *Acer saccharum* (sugar maple), of eastern North America, has leaves that we all

recognize on our national flag, although the emblem is in fact stylized. *Ailanthus altissima* (tree of heaven), a native of China, has pinnately compound leaves that can be as long as 60cm (24 inches). Abutting the First Nations' House of Learning is one of my favourites, a *Metasequoia ghyptostroboides* (dawn redwood). This conifer was known only from fossil material until the 1940s when a small grove of living trees was discovered in China. It is a hardy tree and, since its discovery, has become widely planted. A number of large oaks form a row in front of the First Nations' House of Learning (one recently fell over). A stately *Castanea dentata* (American chestnut) produces spiny fruit in the fall. Although once a prominent tree in Eastern North America, this species is now rare due to chestnut blight. A very bizarre looking paper birch, ravaged by pruning, is worth a look (it is lovingly known on campus as the elephant tree). Around the end of the building toward the parkade you will find a *Cunninghamia lanceolata* (Chinese fir) with its long flat leaves and rose-like seed cones. It can be a rather untidy plant, as it sheds branches instead of individual leaves. A *Sciadopitys verticillata* (Japanese umbrella pine) has long, whorled leaves. The label indicating that this tree is in the Pinaceae is incorrect; it is actually a member of the Sciadopityaceae. A majestic *Sequoiadendron giganteum* (giant sequoia) is an obligatory destination for many fieldtrips. The area beyond the giant sequoia is used for ceremonies of the First Nations' students and visitors are asked to keep a respectful distance. On the top of the little hill toward West Mall sits the relocated male monkey-puzzle, a native to Chile. The variety of trees makes the arboretum a great place to take classes where interesting features can range from conifer diversity, hardwoods, bark, to economically important trees. This important collection of trees has survived the changes to campus since 1925, when the Point Grey campus first opened its doors to 1400 students (today there are more than 30,000 students attending).

Trees not only reflect the growth of the campus, but they also symbolize academic accomplishments and hopes for the future. Each graduating class, since 1919, has planted a "class tree" and marked it with a plaque. More than twenty of these trees have been lost for various reasons and a similar number of plaques are in need of replacement or repair. One of the class trees, a globose selection of *Ulmus americana* (American elm) in front of the Hennings building on Agricultural Road was planted by the class of 1940. It is probably the favourite tree on campus because of its lovely pendulous

habit that arches over the pedestrian walkway. The class tree of 1938, also an American elm, met its end during a windstorm in 1999. The wood was milled and a beautiful harvest table was constructed. The tabletop is a single piece of wood, the edges curving with the contours of the tree. Although not initially intended for campus, it has been obtained by the President's Office. It is a fitting renewal from such a tragic end. In the Biological Sciences inner courtyard stand two *Davidia involucrata* (dove tree). The tree donated by the class of 1965 stands about 35 ft tall. It is beautiful in the spring when the white bracts hang like handkerchiefs from its branches. A second in the centre of the courtyard was a gift from the class of 1966. Although a fine little tree, it is stunted by the confinement of its planter, reaching a height of only about thirteen feet. In front of the Wesbrook Building you will find another favourite, the *Betula jacquemontii* (Himalayan silver birch), with its stunning white bark (class of 1988).

Trees have also been planted commemoratively. A *Quercus robur* (European oak) was planted in 1957 on the west side of the Wesbrook Building to commemorate the university's "adoption" of the 14 faculty and 200 students from the Sopron (Hungary) School of Forestry who escaped after the 1956 revolution. They became the Sopron Division of the Faculty of Forestry. The plaque beneath the tree reads "Lonely Oak, I am battered by lightning and mighty storms, but at least I can breathe the fresh air of my freedom". The province and forest industry have benefited greatly from the contributions of the Soproners.

Other trees were planted in memorial, a celebration of a life, and others to celebrate an event. For UBC's 75<sup>th</sup> anniversary, UBC held an Open House (1990). As part of the celebration, trees were planted at Fairview Grove (Main Mall next to the Fisheries Centre). This was the site where Leonard Klinck (UBC's first Dean of Agriculture and its second president) made an office in a converted dynamite shack; a cairn marks its place. Klinck oversaw the move from the Fairview campus to Point Grey and then the construction of the university. During the Open House, seventy-five seedlings of native tree species were planted (grand fir, western hemlock, Douglas fir, and red alder). In addition, seven trees were planted by dignitaries including Gordon Campbell (then Mayor of Vancouver), David Strangway (UBC President) and David Lam (Lieutenant Governor of B.C.). This wooded area contains mostly native trees of different ages, including a number of western red

cedars planted as class trees in the mid-seventies.

Dr. John Worrall, a professor of Forestry, probably knows the trees of campus more intimately than anyone else. Since his arrival at UBC in 1960, he has taken special interest in the trees around the university and outdoor spaces have always been an important component of his teaching. Recently, I had the opportunity to go for a brief tree walk with him. His seemingly gruff and crusty exterior crumbled away as he pointed out what made a particular tree special. It was easy to see why he is so popular with students. He pointed out a planting where a number of *Arbutus* had volunteered. This small space is getting a little crowded; perhaps the removal of the red maple (intended occupant) would provide a small native garden. Native plantings should be encouraged, and John does not attempt to hide his dismay at the state of the campus and its trees.

Caring for trees is an important job. You can't just plant a tree and expect it to thrive with little attention. Who is responsible for the care of UBC's living treasures? As it turns out many people are responsible for their planting, maintenance, and demise: landscape architect, landscape supervisor, university arborist, and landscape technologists. Collin Varner (university arborist) is responsible for the assessment of trees and recommendations for their care, a very difficult job that includes not only the assessment of tree health, but also for safety. Safety issues include not only the prevention of injury from a falling branch, but sadly the identification of sites for potential hooligan activity and opportunity for crime. It is these problems that require what some perceive as excessive pruning.

Another difficult part of the arborist's job is making decisions to remove a tree. Each decision is on a case-by-case basis and often incurs the wrath of a concerned citizen. The decision to remove a tree is not taken lightly, but Collin always seeks a second opinion from an independent arborist. For example, the recent decision to remove what was the second largest American elm on campus, beside the Chemistry Building on University Boulevard, was made only after it was established that the upper trunk was rotting. Efforts to preserve the tree were made several years ago, when the larger branches were supported with cables, but eventually the hazard became too great and it was cut down in October 2003. Leaving the shattered remains on site for a week to show everyone its rotted state provided some reassurance that the right decision had been made. It is a very sad thing to lose an old tree

because it has become a long-standing part of the landscape, and these elms along University Blvd indeed are precious. Most were planted in the 1930s. In 1962, Hurricane Frieda uprooted twelve of them along University Boulevard. Today there are 12 survivors between West Mall and Westbrook Mall. These trees are not only precious because of their beautiful form, but they are also endangered. Dutch Elm disease has wiped out many elms east of the Rocky Mountains and it may only be a matter of time before we lose them here. At the edge of the South Library Garden there is an *Ulmus glabra* 'Camperdownii' (Camperdown elm, also known as weeping elm) that is also susceptible to Dutch elm disease. This is the older of the two specimens on campus. Camperdown elm is a graft between two forms of the same tree. A seedling, which exhibited a creeping habit, was discovered in Dundee Scotland, in 1640. This one plant is the progenitor of all of the Camperdown elms we have today. Branches are grafted to stocks of the common upright form to produce trees with a dome of twisted branches; a gorgeous tree with or without leaves.

There are nearly 400 different species of trees on campus. Most are deciduous, mainly *Acer* (maples), oaks, and *Prunus* (cherries). In 1998 the trees on campus were catalogued. Of the 7078 trees, 15% were native (12% conifers and 3% deciduous). Patrick McIsaac, who was appointed the university's Landscape Architect in 2003, brings fresh vision as well as a keen interest in the past. Revitalizing various places on campus is a big part of his job. An area that is currently being re-landscaped is Agronomy Road and West Mall. The remnants of an old orchard occupy a small parking lot behind the MacMillan Building. This area along Agronomy Road with its yellow-flowering *Laburnum* trees is having a facelift. The trees have been assessed. Some remain, while others have been removed and will be replaced. *Laburnums* will once again line the street as well as a row of *Liriodendron tulipifera* (tulip trees). Trembling aspen will be intermixed with the remaining heritage apple trees in the parking lot. At the bottom of the Agronomy Road three *Sequoia sempervirens* (coastal redwoods) have been planted. Another idea, that interests those of us who would like to see more native plantings on campus, is the development of a Garry oak woodland near Marine Drive.

The area around Main Library is also going through major changes. In 1985 a beautiful giant sequoia in front of the Main Library declined rapidly when its base was encased with a concrete planter and caused damage to its

root system that eventually killed it. This was one of the oldest trees on campus, planted shortly after the completion of the library (1925), which was the second building constructed on campus. A splendid row of *Catalpa bignonioides* (southern catalpa) stands between the south side of the Buchanan building and the Library. A number of healthy trees have been cut down during the development of the Ike Barber Centre for Learning (new wing of the Main Library), including the oldest *Fagus sylvatica* (American beech) on campus and a row of *Picea abies* (Norway spruce). These trees were not in the line of construction and indeed the university arborist recommended their protection. At a time when dollar value is given high priority, it is worth noting that the beech alone was assessed at \$27,000 replacement value. Future plans to the Main Library include the renovation of the building's south end. One can only hope that a number of the large trees on this original landscape site, including a catalpa, and *Ulmus americana* (American elm), and a western red cedar, will escape the fate of the big beech. The American elm has been recommended to highlight the entrance to the new wing. Trees of this age and size cannot be moved or replaced.

In 2004, there is much new construction and development taking place on campus. New buildings are being built to replace old. The construction of residences and the development of University Town (a highly controversial decision) will increase the number of people living on campus to 24,000 by 2005 (there are currently around 10,000). The face of the campus is changing dramatically. It can't be denied that changes are needed; parts of the campus do look care-worn. But as building proceeds, what is being done to protect the trees? Currently, a tree protection policy is being developed to provide guidelines for the preservation and replacement of campus trees affected by development. Presently, the developers, architects and contractors consult with the landscape architect and arborist, but it appears that their recommendations are set aside for lack of strong advocacy on behalf of the landscape. The whole community needs guidelines to protect the green spaces of our campus. They provide resources for the university to meet its obligation to teach as well as enhancing the aesthetic of the campus. The Landscape Plan (2001), not yet approved by the Board of Governors, is a document designed to direct the management of the landscapes on campus. Goals include building on the strengths of the current landscapes, enhancing social space, and revitalization in the face of development on campus. Unless

there are regulations in place to protect the landscapes, particularly the trees, these goals will not be accomplished.

UBC Farm (South Campus) is a little-known gem. It is used jointly by Agricultural Sciences, Forestry, and Botany for research, providing teaching materials, and education for both UBC students and the Vancouver community. It is a bustling place in the summer with its community gardens and Marketplace on the weekends. John Worrall has a small arboretum of about 40 trees at the west end of UBC Farm. His collection includes an impressive 20 year old coastal redwood (*Sequoia sempervirens*) grown from seed as well as *Nothofagus nervosa* (rauli), *Abies bracteata* (bristlecone fir), *Quercus macrocarpa* (burr oak), *Fraxinus latifolia* (Oregon ash), *Cupressus macrocarpa* (Monterey cypress), *Quercus velutina* (black oak), monkey puzzle, *Larix occidentalis* (western larch), and a number of *Quercus garryana* (Garry oaks). John also tends two small stands of trees (one of yellow cedar, the other Douglas fir) which were used about 15 years ago for research in the Botany Department. The *Chamaecyparis nootkatensis* (yellow cedars) were grown from seed collected from Walker Mountain on Vancouver Island and used to investigate morphological variation. The *Pseudotsuga menziesii* (Douglas firs) were planted at the same time and used to explore the variation of seedling growth rates. The Douglas fir stand was surrounded by a ring of *Abies procera* (noble fir) to eliminate ecological edge effects that could confuse the growth measurements. There is a small, forested area next to the Worrall arboretum. A trail, prepared by student and faculty volunteers, is used by a number of courses (Agriculture, Forest Science, and Botany) as well as by fieldtrips for the public. Student activities on this site for my own courses include fieldtrips, surveys of invasive species, bryophyte ecological study, and moss inventories. UBC Farm, however, is slated for “development” within the next 8 years as part of the “South Campus Community Plan”. This site provides the university the unparalleled opportunity to develop an agroforestry-centred community where education can be integrated with a residential setting. It is a great idea, but the fear is that the development decisions will be based on the greater financial gain after the site has been completely cleared.

The Pacific Spirit Park is another treasure. Most of this regional park is second growth forest dominated by Douglas fir, with western hemlock the main understory tree. The forest next to the Old Marine Drive (ocean-side of the UBC Botanical Garden) holds special value because it is one of the

last low elevation old growth Douglas fir forests in the Great Vancouver area. Four hundred year old Douglas firs cling to steep cliff banks and often provide perches for the resident population of eagles. The site offers a striking vista: the ocean with the log booms that contain logs, which have been towed from up-coast and stored in the brackish waters of the Fraser River, destined for a nearby mill.

The UBC campus is expanding beyond its original boundaries. This isn't a great shock because Vancouver is growing. However, public expectation and confidence of leadership from the campus is being undermined when changes that impact the neighbouring community occur with little or no advanced notice. Public response to clear-cut logging of six acres at South Campus to make space for the new NRC (National Research Council) building exposed uncertainty about the impact of professional arborist recommendations. Even though tags were placed on numerous trees to indicate their preservation, not one was left standing. A growing campus means a growing community, including students, staff, faculty, and residents (on and off campus). Decisions should be made with the consultation of all interested parties. One positive consequence of the fallen elm is the formation of a campus tree committee to advise and monitor planting and removal of campus trees.

As the development on campus continues, we rely more and more on trees for breaks from the monotony of concrete. We are fortunate to live in a climate conducive to the growth of a diversity of trees from all over the world. We should take advantage of our unique geography and continue to build a world-class arboretum reflecting the biodiversity of our planet. Trees can connect us to other parts of our world, and they are also links to our past and future.

### **Acknowledgements**

I am very grateful to John Worrall, Gordon Weetman, and Collin Varner for their generosity of time and information.