A brief history of valuable & ever changing trees

GREEN SCENE
ELAINE GOLDS

Ancient species at R'view valuable

Every time I participate in a guided tour of the trees on the Riverview Hospital grounds, I always learn a little more and come home with more questions to investigate.

(Tree tours are offered monthly throughout the good weather months by volunteers from the Riverview Horticultural Centre Society. The next tree tour takes place on Mother's Day, this Sunday, at 1 p.m. Details are available at www.rhcs.org.)

In our part of Canada, where we are blessed with an abundance of trees, it is easy to take them for granted and forget what important roles they play in our lives. The so-called ecosystem services they provide are immense.

First, trees remove pollutants such as carbon dioxide from the air and produce the oxygen upon which all animals, including humans, depend.

They provide shade that cools us in the summer and a canopy that can shelter us from heavy downpours.

Trees also enhance our lives with their colour, form and beauty.

They provide vital habitat for countless species, including the many delightful birds that nest in them, and, sometimes, feed upon their berries and seeds.

Trees provide us with valuable food products such as nuts and fruits.

When we cut trees down, we can convert them into useful wood products such as furniture and shelter. We can also burn trees to create energy for heat and electricity.

Finally, trees remain the best way we have of creating a carbon storage bank right in our backyards. Even though industry is attempting to develop complicated technologies to sequester carbon, there is still no better way to store carbon than the simple act of planting a tree.

Billions of years ago, in ancient geological times, Earth was initially bereft of trees. It was only about 450 million years ago when more primitive plants such as algae, microbes, mosses and liverworts emerged on the planet's rocky terrain and slowly created the soil that could support more advanced plants.

The earliest forms of trees evolved 420 million years ago, complete with a vascular system to pump water and lignin to provide support. These ancient trees were giant species of club mosses, horsetails and ferns. While geologic events have led to their extinction (except for a few tree ferns, which persist in the tropics), they left us a rich legacy of fuel in the form of coal.

ANDREW P. PHOTO

From the Riverview tree tour on April 27. The spectacular late-blooming purple magnolia in the background is thought to be a hybrid.

Around 360 million years ago, a breakthrough in the evolution of plants occurred with the development of seeds, which is an extremely reliable way to ensure the survival of the next generation. Some of the earliest seed-bearing plants include the palm-like cycads, of which, about 130 species still grow in the tropics.

Other pioneer seed-producing trees were members of the ginkgo family, which were once abundant across the planet. They became a dominant species about 260 million years ago. Today, only a sole surviving member of this family persists, the ginkgo biloba, which can be found at Riverview.

Over time, geologic events such as massive volcanism, meteor impacts and periodic ice ages have eliminated many forms of life; these processes also created opportunities for new species to evolve. In fact, it is estimated 98% of all the species that once existed have become extinct.

During the age of the dinosaurs, conifers were the predominant tree form. They appear first in the geologic record about 300 million years ago; their heyday lasted until 50 million years ago. Today, we have only about 630 extant (i.e., still living) species of conifers, compared to well over 350,000 species of the true flowering plants, which now appear to be in their zenith.

The trees of Riverview include some interesting sole surviving members of several coniferous families, or genera. These include the only surviving species from the ancient Sciadopityaceae family, which dates from 220 million years ago, as well as single surviving species of several genera including Sequoia, Metasequoia, Sequoiadendron and Cryptomeria.

During their prime time on the planet, conifers of various families were abundant throughout the world. The so-called monkey puzzle tree, also found at Riverview, is a member of the Araucariaceae family, species of which were (and still are) widespread throughout the southern hemisphere. These spiky trees seem to be especially well-designed to deter the grazing of dinosaurs; certainly, a few species have persisted ever since dinosaurs roamed the Earth.

All conifers are pollinated by the wind. The emergence of the flowering plants — i.e., angiosperms, many of which depend on various insects for pollination — could only happen once insects appeared. While you might consider the beautiful magnolias, with their huge and showy flowers, to be the most highly evolved of flowering plants, they are actually the most primitive of our flowering trees. In fact, members of the magnolia family appeared on Earth before the bees and butterflies did, and, thus, they had to rely on more primitive beetles for pollination. Their flowers have thick fleshy petals to provide a few enticing nibbles for these beetles.

There are two major centres of evolution for magnolias; one is in Asia and the other is in southeastern North America. Riverview has several magnificent specimens of magnolias from both continents as well as a few hybrids produced by horticulturalists.

A closely related genus, the Liriodendron (i.e., tulip tree), is also a member of the Magnolia family. Although once far more abundant, the Liriodendron now consists of only two species: one from China and the other from eastern North America. A tour through Riverview will offer you an opportunity to view both of these species. Like the magnolias, they have large (but greenish) flowers that are often not readily visible at the top of the tree.

The more I become enthralled with the beauty and fascinating botany of the trees of Riverview, the more I am convinced this fantastic collection of trees must not be threatened by inappropriate development on the Riverview grounds. Upcoming Open Houses on May 24 and 28 (see www.bmn.bc.ca for details) will provide everyone with an opportunity to speak up for the preservation and enhancement of this unique tree collection.

Elaine Golds is a Port Moody environmentalist who is conservation/education chair of the Burke Mountain Naturalists, chair of the Colony Farm Park Association and a founding director of the board of the Port Moody Ecological Society.

BMN members night

Burke Mountain Naturalists members usually listen to guest speakers at their monthly meetings. This month, however, they'll do the talking.

Next Tuesday, the BMN meeting will feature a series of short presentations by members and others. Topics will include one member's photographic impressions of Antarctica and another's favourite cycling trails in the Tri-Cities.

The meeting starts at 7:30 p.m. in the hall of Como Lake United Church, located on the corner of Marmont Street and King Albert Avenue in Coquitlam. For more information, call 604-936-4108 or 604-461-3864, or visit www.bmn.bc.ca.

A chinstrap penguin photographed during a cruise around the Orne Islands by Burke Mountain Naturalists member Paul Steeves.