LIGHTHOUSE PARK preservation society

LIGHTHOUSE PARK PRESERVATION SOCIETY

Fall, 2025

Issue #44
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WHY DO WE HAVE MOUNTAINS?

By Bob Turner

Mountains are the iconic geography of the Vancouver region. They are so elemental to life here that we might never ask the question "Why do we have mountains?" It's a question worth answering as it reveals important truths about this place we call home.

Any answer to this question should account for at least two observations. The first is that survey measurements indicate that our mountains are rising. For example, the Coast Mountains between Vancouver to Whistler are thrusting upwards between 1-2 millimetres per year. That may not sound like much, but at that rate, a million years will raise a mountain a kilometre or two, about the height of many of our North Shore mountains. This tells us something important; our mountains aren't a relic of some ancient uplift that is now deceased; there is Earth energy lifting them today.

The second observation is that our regional mountains don't occur just anywhere; rather they form two distinct belts. One belt runs along the outer Pacific shore to form the Vancouver Island Ranges and the Olympic Mountains of Washington State. The second belt includes the Coast Mountains and, to the south, the Cascade Mountains. Between the two belts lies a long lowland, partly filled by the Strait of Georgia and Puget Sound. An explanation for both rising mountains and two mountain belts lies deep below our feet. This illustration (image 1) is an artistic rendering of the subduction zone below the Pacific Northwest region. The continental tectonic plate, on which we live, is driving westwards, riding over the oceanic plate below the nearby Pacific Ocean. Sedimentary and volcanic rock is scraped off the top of the down-going oceanic plate and stuffed under the edge of the continental plate, jacking it up to create coastal mountains. The mountains that rise above Tofino are an example.

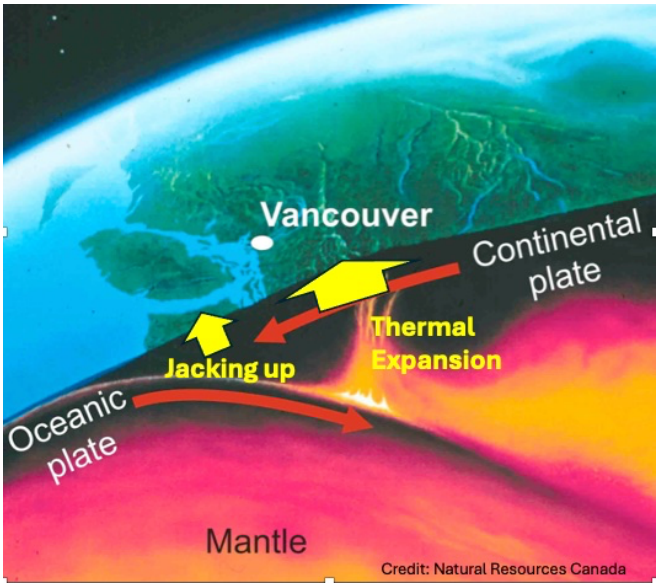


Image 1, Jacking up creates one belt while the second belt is formed by thermal expansion, Images Credit: Natural Resources Canada courtesy of Bob Turner

Further east, a different mountain-building process is underway. As the oceanic plate slides down below the continent, mineral transformations release water, triggering the melting of rock to magma. Because the magma is lighter than the solid rock around it, it rises, carrying with it heat that warms the continental plate above, causing expansion. *Continued on p.6*

Inside this issue:

About us:

Lighthouse Park Preservation Society is a membership based non-profit organization formed in 1998 to:

Protect the natural integrity of Lighthouse Park;

Promote public awareness of its natural features;

And support the development of biological zones near the park boundaries

THE LEARNING CURVE - MAPPING THE TREES IN LIGHTHOUSE PARK

By Mike Castle

How it got started. My involvement in this project began at the 2024 AGM when Alexandra Mancini asked if anyone was interested in mapping special features in the park, such as noteworthy trees, other plants and geological features. Sounded like fun, so my hand went up! Sally McDermott and Alexandra Mancini also volunteered.

I had previously been involved with Cypress Provincial Park developing their Hiking Map, which involved mapping trails, and this seemed to be somewhat similar.
In the long term we hope to produce a new visitor map and brochures, to promote public awareness and education, but those details are for the future. We decided to start with a focus on trees. How wide or tall are they? Where are the largest examples? How do they compare with those in the 1999 Entech Report, an ecological study of the park that covered not only trees but all the natural features including rocks and plants. It is in two large volumes. We scanned many pages and 6 large drawings.

Plan A. Amongst other things, we wanted to record changes to the trees identified by Entech. Diameter, Height and whether they are still there. In July 2024 we started with a Trial Run, measuring location and DBH (Diameter at Breast Height) for 20 trees on the Valley Trail.

We used the UBC Big Tree registry method for DBH, which defines breast height as 4'- 6" (1.37m) above ground averaged on the high and low sides of the tree. Then later I managed to contact Norm Hansen (now aged 92 and sharp as a tack) who was the forester for the Entech report. I discovered that they used the BC Forestry method - which measures DBH at 1.3m (4'-3") on the high side of the tree. This method is easier to do, particularly when the tree is on the edge of a precipice. Also Sally's shoulder is conveniently 1.3m above ground! But that meant that 20 trees had to be re-measured. The learning had only just started!

Sally and Claire measuring a Douglas fir on Beacon Lane Trail while Mike takes notes, Image Credit: Marshall Bauman

Discovery no. 2 was that my Garmin GPS is not accurate enough. In the park, the error on this type of GPS is +/- 20m. In an open area we would expect +/- 7m. Satellite signals get bounced around, particularly in valley terrain and heavy tree cover. Taking the average of multiple GPS points was not enough to say which side of the trail a tree was on, never mind trying to compare with Entech trees. So, on to Plan B!

Plan B. We are now using the BC Forestry method for DBH. To solve the location problem, we need to use the trails as reference lines – like a sort of grid. Trees are then located by distance along the mapped trail, plus bearing and offset (distance) to each tree. Available trail data was not sufficiently accurate, so then mapping trails became a priority. This meant measuring distance and bearings at jogs in the trails. That's Jography!

All of this gets recorded, then entered into GIS software. I am using QGIS, which is free (Open Source) cartographic software.

We have so far measured location and DBH for 67 trees: 21 Cedar (Cw), 41 Douglas-fir (Fd) and 5 others. The largest DBH found so far is a cedar on the Juniper Loop with DBH of 2.70 m (a 12% increase from 1998). For firs, the largest is between Seven Sisters and Shore Pine trails with a DBH of 2.48m (a 7% increase).

Continued on p. 5.

PRESIDENT'S MESSAGE

by Alexandra Mancini

So many people deserve thanks for the achievements of our Society every year. This year we received generous grants from the West Vancouver Foundation ($5600) and other donors ($1714). These monies will enable improvements to the trail entrance at Birdsong Path, a bench in Salmonberry Meadows, our speakers' program honoraria, and this newsletter.

At our AGM in June, we announced a few changes in leadership. Many thanks to three Directors who retired from our Board. Hilary Clay was our Treasurer for the past 3 years, James Mitchell was a Director for 2 years, and David Cook retired after a second term of 7 years (he was a Director from 2004 to 2009 as well). We are very grateful for the support that these Directors have given our Society. David will continue to host guided walks (page 4). I am pleased to welcome Jane Srivastava as our new Treasurer; thank you for stepping into this important role!

Lynn Nordman deserves a special mention and thank-you for her 11 years as Membership Secretary and her agreement to carry on in this role. Our 5 returning Directors (Dave Broughton, Daphne Hales, Sally McDermott, Areta Sanders, and me) will be kept very busy again this year. We have 7 work parties planned so far this fall (to be led by Dave, Sally, and me) and perhaps a few more events with school groups (TBD, to be led by Daphne and Areta). Our monthly bird counts, an educational talk, a guided walk, new signage for Birdsong Path, and our new tree mapping project will round out the next few months.

And of course, our sincerest thank-you to our many volunteers who pitch in to do the hands-on work! We are making a difference!

TRIBUTE FOR RAY BRADBURY

We are sad to announce that in January 2025, our dear friend Ray Bradbury passed away. Ray was many things in his life, a beloved husband, father, and grandfather, a professional architect, an accomplished artist, and a committed environmentalist. He cared deeply for our natural environment and gave much time and effort over two decades to support the work of our Society.

Caulfeild Park and Lighthouse Park commanded most of his volunteer time and he diligently pursued removal of invasive plants and restoration planting where needed. When we undertook the restoration planting at the anchor site in Caulfeild Park in 2010, Ray took on the heavy work of watering that site thoroughly and frequently, through two very hot and dry summers. Without his reliable help, most of the native plants that we planted would have withered under the hot sun. Those plantings are mature now and it is truly a beautiful natural space.

Ray loved gardening and he painstakingly grew native trees from seed. He generously donated many of those young trees to our restoration projects in Lighthouse Park and the Dale Park. Two of his Grand firs were planted in The Dale Park about 10 years ago and they are growing steadily today. They are a fitting legacy for this kind gentleman. He will be sorely missed.

Ray and Elspeth Bradbury enjoying a day of restoration planting at the Caulfeild Park anchor site in 2017, Image Credit: Alexandra Mancini

VOLUNTEER OPPORTUNITIES

For all volunteer events please wear old clothes, sturdy shoes and work gloves. Volunteers who are 12 years and under must be accompanied by an adult.

SATURDAY, SEPTEMBER 6, 9.00 a.m. – noon
WEED PULL, CAULFEILD PARK, LABURNUM, BLACKBERRY, AND SCOTCH BROOM
Meet at the Anchor on Pilot House Road.

SATURDAY, SEPTEMBER 13, 9.00 a.m. – noon
WEED PULL, LIGHTHOUSE PARK
Meet at the Juniper Trail entrance in Lighthouse Park.

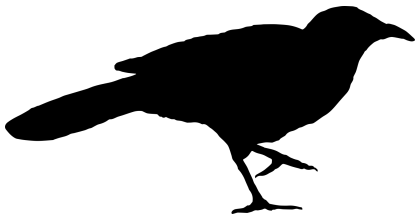
SATURDAY, SEPTEMBER 27, 9.00 a.m. – noon
WEED PULL, CAULFEILD PARK
Meet at the Anchor on Pilot House Road. This event will be led by West Vancouver Parks.

SATURDAY, OCTOER 18, 9.00 a.m. – noon
WEED PULL, KLOOTCHMAN PARK
Meet at Klootchman Park at trail head on Howe Sound Lane. Park on Howe Sound Lane or Crossway.

SATURDAY, OCTOER 25, 9.00 a.m. – noon
WEED PULL, LIGHTHOUSE PARK
Meet at the Juniper Trail entrance in Lighthouse Park.

SATURDAY, NOVEMBER 1, 9.00 a.m. – noon
WEED PULL, THE DALE PARK
Meet at the corner of Water Lane and the Dale.

SATURDAY, NOVEMBER 8, 9.00 a.m. – noon
WEED PULL, THE DALE PARK
Meet at the corner of Water Lane and the Dale.



MONTHLY BIRD COUNT
All are welcome to join us when we meet at the entrance to Birdsong Path in the parking lot of Lighthouse Park on the first Sunday of the month. For more information call or text Suann 604-240-2452.

September 7	8.30 a.m.
October 5	8.30 a.m.
November 2	8.30 a.m.
December 7	8:30 a.m.

EDUCATIONAL TALK

Promoting Peaceful Coexistence Between Bears and Other Wildlife on the North Shore
By Holly Reisner
Saturday, Nov 15, 2:00 pm – 3:30 pm

Come and learn about the work the North Shore Black Bear Society has been doing in North and West Vancouver for over 25 years. Our small team of staff and directors, along with our amazing volunteers are working hard to ensure North Shore residents will be able to enjoy our wildlife for years to come. Learn about a black bear's life cycle, our responsibilities towards our wildlife and what we can all do to keep them safe. Enjoy slides and videos of the North Shore Bears of 2025.

Holly Reisner is the Executive Director of the North Shore Black Bear Society. Born and raised in North Vancouver, she has had the privilege of seeing bears in and around her neighbourhoods for 60 years! A passion for conservation and education about these beautiful animals lead her to an opportunity to help steward this important organization.

Register for this event at:
https://westvanlibrary.ca/event/promoting-peaceful-coexistence-between-bears-and-other-wildlife-on-the-north-shore-with-holly-reisner/

EDUCATIONAL WALK

Lighthouse Park old-growth forest ecology and mushroom tour.

- Monday, October 20, Meet at 11.00 a.m. and tour lasts for 3-4 hours.
- Trip leader: David Cook (Biologist)
- Register with David at cookeco2@yahoo.com
- Harvesting: Note that mushroom harvesting is not allowed in District or Provincial parks.

THE LEARNING CURVE, CONT'D

Is there a Plan C? Maybe. Without GPS there is a lot more data collection. So I bought a GNSS Receiver (SparkFun Facet). I was able to give it a quick test on my deck before the "On/Off" button failed!! SparkFun could not respond in time, so it had to be returned.

But, the "quick test" output was promising. I got +/- 0.4m accuracy (open sky), which is about 20 times better than my Garmin. Accuracy under the trees will be less, but I am hoping for +/-1m, or close to it.

In August I received a different GNSS Receiver, with similar accuracy, from a Canadian supplier (Columbus EX-1. Look it up if you are interested!). Initial testing looks promising. The Learning Curve continues . . .

Resources. The DWV open data portal has all kinds of GIS data - Orthophotos, contours, park boundaries, roads, and buildings. But most interesting of all is . . . LiDAR (Light Detection And Ranging data). The LiDAR data is useful in two ways:

LiDAR is helpful in mapping trails, when combined with other clues, as it can give an indication of bare earth - where the trails might be.

Also, I was able to calculate tree canopy heights to locate the high points. This gives us somewhere to look for tallest trees. According to the LiDAR modelling, the tallest trees are 67m, with at least 40 locations where the trees are over 56m tall. 12 of these are along Valley of the Giants. But there can be height errors (such as where a tree overhangs a steep cliff), so everything has to be checked on the ground. We will leave height measurements until we have located the most significant trees. In the fall it will be easier, with fewer leaves to block the view, and I have my clinometer ready.

Out of interest, BC is investing in a six year program (started in 2023) to collect LIDAR elevation data for all of B.C. and make it available to everyone.

The Crew. Our crew consists of Sally McDermott, Claire Whitehead, Kitty and Mike Castle, with Alexandra Mancini and Marshall Bauman providing additional support as needed, and sometimes other long suffering friends.

Sally and Claire are the expert tree-measurers, with Kitty doing her best as a trusty scribe. I am running around with compass, tapes, measuring wheel, trying to record where we are. Sally and I are also trying to match what we are seeing with trees in the Entech report.

We have had some good conversations with other park users, of all ages, who are interested in the project. I am learning a lot, getting some exercise, and a chance to know more about this special place.

BALD EAGLE 2025 UPDATE FOR LIGHTHOUSE PARK

By Sally McDermott

The Valley Trail eagle pair fledged the lone eaglet in Lighthouse Park this year.

The other eagle pair in the park, the Shore Pine Point pair lost their nest after it blew out of the tree in the November 4th wind storm. Luckily their nest tree remained standing, not so with many other trees in the park. However, they did not rebuild the nest as expected despite spending every day in their territory hunting, fishing, stealing fish from the river otters and protecting their territory from other eagles trying to encroach on it. Without a nest they could not lay eggs therefore they did not produce any offspring. The good news is, in early July they started rebuilding the nest in the same tree. This means they are planning to come back to this territory and breed here next season after their northern migration.

Across the North Shore only 50% of the eagle pairs fledged young so Lighthouse Park with the two eagle pairs fell under the same 50% success rate.

WHY DO WE HAVE MOUNTAINS? CONT'D

This thermal expansion forces the land surface upwards and creates the rising mountains that surround you as you drive the Sea to Sky Highway.

However, uplift by itself doesn't create mountains. Erosion is also needed. And uplift unleashes erosion. It can be easy to miss how this happens. When we walk in the mountains, our eyes are drawn to the towering peaks. However, it's the lowly valleys where all the mountain-making action is happening. There is no mountain without a valley. It is the down-cutting of valleys, by river or glacier, that creates the dramatic relief between mountain top and valley bottom.

The second cartoon (image 2) illustrates how uplift and erosion team up to create mountains. Uplift forms a rising plateau. Uplift also energizes streams that cut into the edges of the plateau. With time, river valleys dissect the plateau into mountains. In the Vancouver region where erosion by Ice Age glaciers was intense, there is little left of the original plateau.

But a sense for the ancient plateau persists when viewed from a mountain top such as Whistler Mountain (image 3). The tops of the highest peaks scribe out a surprisingly flat skyline that is close to the old plateau surface from which the peaks were carved.

There you have it - a quick telling of why we have mountains. Subducting tectonic plates create uplift. Rivers and glaciers cut the rising plateau into a sea of peaks.

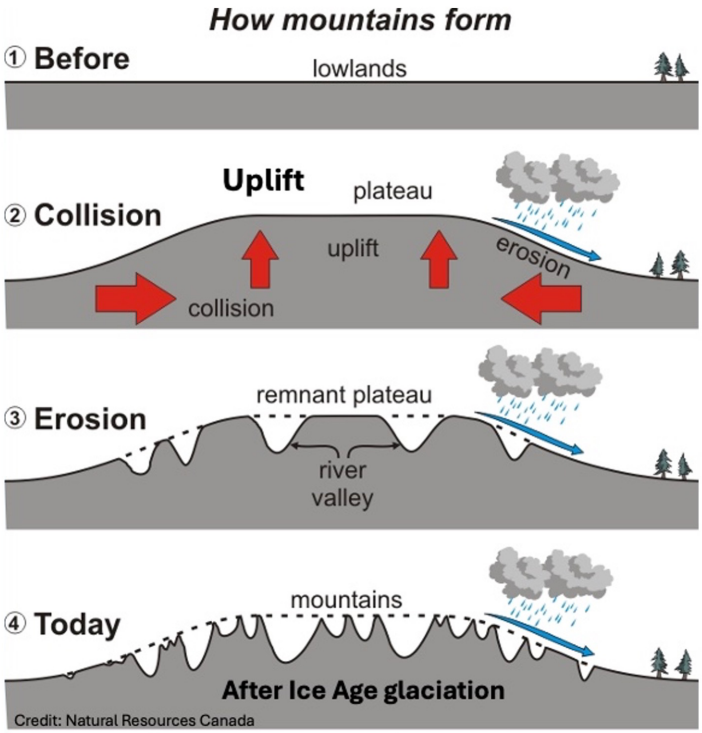


Image 2, The process of mountain forming through uplift and erosion. Image Credit: Natural Resources Canada, courtesy of Bob Turner

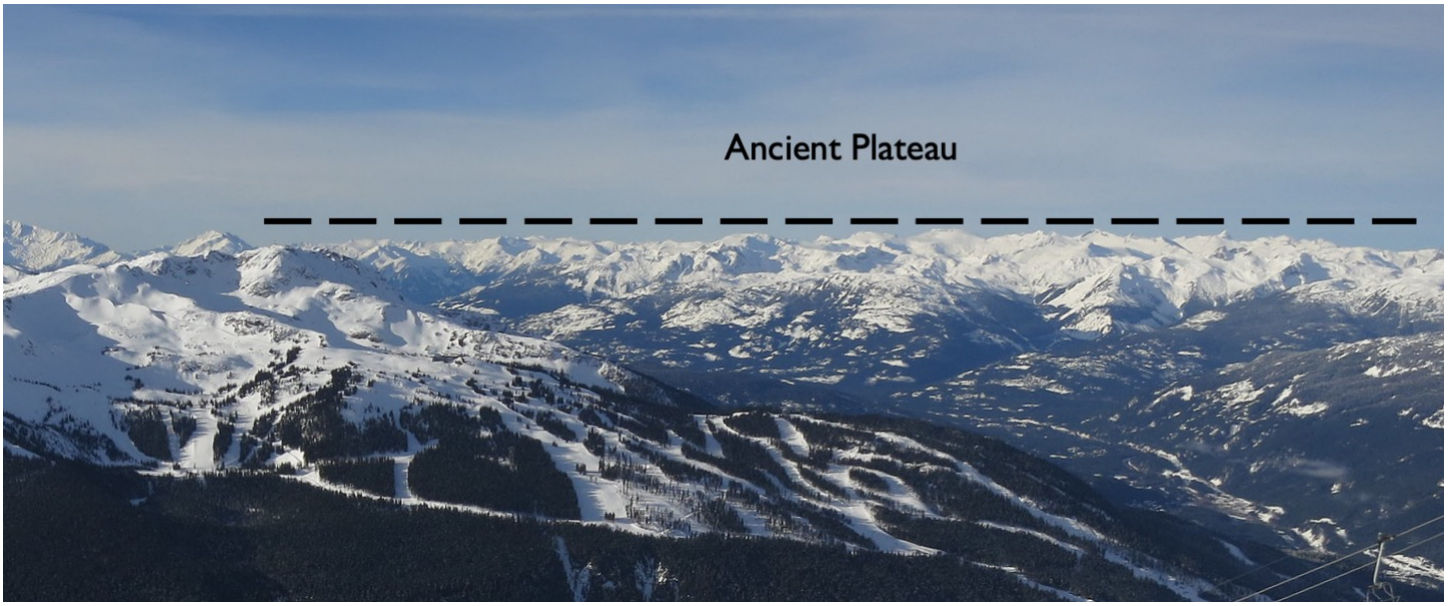


Image 3, View from Whistler Mountain, Image Credit: Ruth Hartnup CC-BY-2.0 with modifications