LIGHTHOUSE PARK preservation society

LIGHTHOUSE PARK PRESERVATION SOCIETY

January, 2008

Vol. 1, Issue 9

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President's Message

by Marja de Jong Westman, M.Sc

Mention Lighthouse Park to someone and they'll likely think of towering Douglas-fir trees, "meadows" of sword ferns and a few swampy bits of wetland with an early spring showing of skunk cabbage. Few realize that some of the most biologically important areas of Lighthouse Park have nothing to do with its age-old forests, but are found instead on its rocky perimeter. Indeed, rocky coastal bluffs, like those seen in Lighthouse Park, are classified as sensitive and biologically specialized ecosystems. A Sensitive Ecosystems Inventory conducted in the 1990's also identified the rarity of this ecosystem type, with only 0.3% remaining in east Vancouver Island and the Gulf Islands. The bluffs of Lighthouse Park, neighbouring Caulfeild and Kloochman Parks, and Whytecliff Park are the only key representative areas of this ecosystem type in the Lower Mainland. The cliffs of Eagleridge Bluffs would also have been included.

To the uneducated eye, these bluffs may seem like desolate grounds rather than areas of conservation value. After all, what are swaths of bedrock, a few patches of thin soil, and scattered tufts of vegetation worth? It is precisely because of the rather harsh windswept, salt-sprayed environment that unique plant and animal communities arise in this habitat. Here, pockets of soil take many years to form. Taking root in these pockets are plants like sea blush *Plectritis congesta,* tiger lily *Lilium columbianum,* nodding onion *Alium cernuum,* blue-eyed Mary *Collinsia parviflora,* common camas *Camassia quamash,* and harvest lily *Brodiaea coronaria,* as well as various mosses and lichens, the most easily identifiable being the coastal reindeer lichen, *Cladina portentosa*. A shared feature of all these species is their tolerance for hostile conditions. Many grow quickly from seed, survive via underground bulbs and are undeterred by summer drought, winter winds, and salty soils. Despite this, their root systems are

Harvest Lily, *Brodiaea coronaria,* E. Graham

easily destroyed by any kind of human use. The thin layer of soil offers little protection from foot traffic. These same sites house the insect life that feeds a once-common inhabitant of the park's bluffs, the northern alligator lizard, *Elgaria coerulea.*

Lighthouse Park has only a few remaining "healthy" bluff sites. Over the years visitors seeking the open beauty of the park's edges have contributed to the removal of much of the natural vegetation. The park is also advertised as a good spot for rock climbing and is in an area know to climbers as "Arbutus Alley".

The Lighthouse Park Preservation Society decided last year to study and develop a conservation plan for these important bluff communities, both those in Caulfeild Park and Lighthouse Park. In this regard, a UBC graduate student, Alexandra de Jong Westman, one of my two biology-pursuing daughters, assisted with a GPS inventory

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President's report, cont'd….

Northern alligator lizard, *Elgaria coerulea,*. This live bearing reptile can thrive in sunny spots on the edges of damp coniferous forests. Photo: M. de Jong Westman

of the rare and significant plants of Caulfeild Park, and recently David Cook and I met with a West Vancouver Parks' representative to evaluate an area of Juniper Point as an environmental monitoring and exclusion site.

The Society's concern for coastal bluff ecosystems has been longstanding, but recent removal, by climbers, of a large area of natural vegetation from an originally undisturbed bluff site at Juniper Point, has solidified our focus. We realize that many bluff sites in the park should be left free for visitors to enjoy, but we now see an urgent need to protect and conserve remaining untouched sites. We also hope to develop some restoration strategies. The work will be demanding.

It is always important to view local environmental stewardship projects with a national or global perspective. By doing so one can truly appreciate the value of local energy. Recent data indicates that less than 10% of Canada is protected despite promises to meet the international minimum threshold of 12%. Governments continue to tamper with park land, to alter its boundaries, and to promote mining, logging and development. In addition invasive/exotic species are displacing native species at great speed. The United Nations has stated that several of Canada's World Heritage sites may have their status revoked if conditions leading to severe ecological stress are not removed. (Statistics taken from *Unnatural Law* by David Boyd.)

Many of these environmental concerns are out of our direct grasp but local ones are not…pull up the ivy, plant native species for the birds and butterflies, and join our efforts as your time allows.

The Society now has an e mail address. For more information on joining the Society, volunteering, events, or contributing to the newsletter, you can e mail us at:

lighthouseparkps@gmail.com.

THE LIVING STUMP

by Terry Taylor

Beside the Juniper Loop trail is a strange looking stump, reminiscent of an object from Lord of the Rings. At just under two meters tall it is a structure noticed by most people when they encounter it. This is a feature that is fairly common in Douglas-fir forests. It is a tree whose roots are grafted to another tree. This root grafting took place when the stump was still a young, actively-growing Douglas-fir. The tree to which it is attached is very likely the big Douglas-fir right beside it. Something happened which removed the top of the young tree, but nutrients continued to flow from the large tree into the roots of the small one. No buds or needles remain on the little tree, but the wood and bark on its top has continued to live, and knobby outgrowths have grown over the broken top of its remaining stump. As no buds remain, no needles or branches can be produced, just this disorganized mass of woody tissue.

None of the coniferous trees in British Columbia are able to produce buds from the surface of their bark, but damaged Douglas-firs are able to grow living wood if they are root-grafted. If you visit a Douglas-fir plantation you will often see a few stumps which are grafted. The grafted ones are those with a rim of growing wood around their edges. The Juniper Loop stump is a very good example of this process, one in which the new wood has completely overgrown the stump top. Such a graft, however, is not favourable to the larger tree, for the top of the stump did not get overgrown for quite a few years, and the exposed surface probably became infected with woody decay fungi. These fungi can often grow from the stump into the wood of the living tree to which it is attached.

Unlike conifers, deciduous trees often have clusters of cells on their trunks which can develop into new buds if the tree is cut down. This is especially noticeable with big-leaf maples. A big-leaf maple stump puts out many new branches, and many of the maples with multiple trunks have developed in this way. This characteristic is utilized in the ancient art of willow coppicing.

Lighthouse Park Rocks

Part 1

by David Cook

Hidden beneath the soil and organic litter of a forest floor is the substrate of rock that both supports and nurtures the life that populates its surface. Even seemingly exposed rock surfaces are covered in a film of lichens, bacteria and algae, so that we seldom see the rock itself. Only when broken by man or subjected to one of nature's more violent moments do we see a fresh rock surface.

If you look at a freshly broken surface of a rock in Lighthouse Park you will notice it is made up of light and dark mineral crystals packed tightly together; referred to as salt and pepper texture. These minerals are quartz, two types of feldspar, black mica and dark coloured iron/magnesium-rich minerals called hornblende and pyroxene. This combination of minerals is characteristic of a suite of rocks called granitic rocks. Depending on the percentage of quartz and the two feldspars in a granitic rock they are given different names. In the case of Lighthouse Park, the principal granitic rock is called quartz diorite.

The formation of granitic rocks is one of the most discussed and controversial subjects amongst geologists today and is not fully understood. The most significant gains in understanding how granitic rocks are formed arose as a result of the development of the theory of plate tectonics, beginning in 1956.

About 100 million years ago a piece of the Earth's crust beneath the Pacific Ocean was subducted or pushed beneath the crust of North America. At many kilometers depth within the crust and at hundreds of degrees temperature, superheated fluids and gases were generated at the base of the North American plate. As these fluids and gases moved upwards, they caused melting of the overlying rocks. Accompanied by faulting and plucking of wall rock, this process worked its way upwards. If the molten rock or magma eventually reached the surface, it might have expressed itself in a variety of ways; from gently extruded lava flows to explosive volcanoes. As the heat engine of this process wound down, the molten rock at great depth cooled slowly forming the coarse-grained granitic rocks that we see today. Closer to the surface where the temperatures were lower, the same molten rock cooled quickly, forming fine-grained volcanic rocks. The hypothetical lava flows and volcanoes have long since been removed by erosion, so that what we see today in Lighthouse Park are the exposed deep roots of these volcanoes.

Profile of Lighthouse Park looking west from Marine Drive, James Hollko

More recently in geological time, the Earth went into a deep freeze and ice covered vast areas in both the northern and southern hemispheres. For 2.6 million years the ice ground back and forth over the land. On the North Shore, the ice reached a maximum thickness of about 1800 meters about 16000 years ago, with dome-like mountain peaks such as The Lions submerged beneath the ice, while other peaks like the snaggle-toothed Tantalus Range, were emergent above the ice. Rounded, smoothed and striated rock surfaces that we can see today in the park are clues to the passing of the ice. About 13000 years ago, the ice finally retreated from the park area, followed by an approximately 130 meter rise in sea level.

The profile of the park (see photo) slopes gently upward to the north, a feature which is repeated in many places across the North Shore where the mountains slope down to the waters of Burrard Inlet. This slope reflects a 65 million year old flat surface called a peneplain, the final erosional stage of a previously existing mountain range. Because of a renewal of mountain building in recent times this originally flat surface has been tilted upwards to the north.

Also present in the park are numerous narrow, dark coloured volcanic dykes that can be seen cutting or intruding the granitic rocks. Because they cut the granitic rocks, they are younger. It is thought that they were not related to volcanoes, but were feeder dykes for volcanic flows or sills such as can be seen on Sentinel Hill in Ambleside and at Prospect Point in Stanley Park.

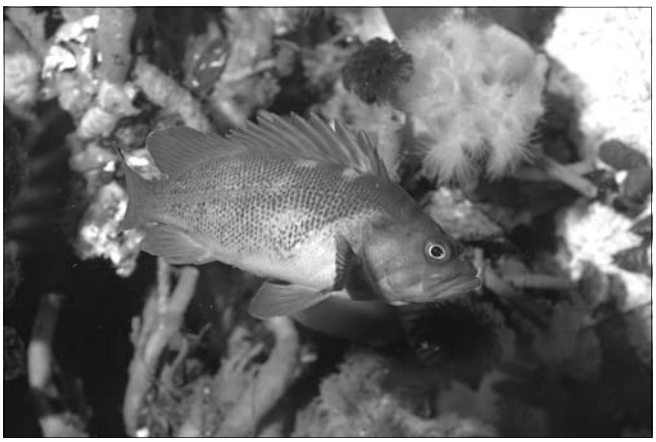
The geological history of the park area extends much further back in time to at least 200 million years. This older story can only be seen in nearby Caulfeild Park, and will be the focus of a future newsletter article.

Further Reading:

Clague, J. & R. Turner (2003): Vancouver, City on the Edge, Tricouni Press, Vancouver.

Underwater on the Shoreline of Lighthouse Park

by Jeff Marliave, Ph.D.

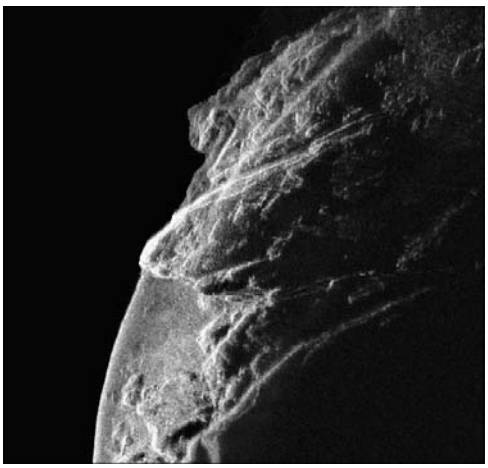


Copper rockfish, *Sebastes caurinus,* are the most abundant rockfish species along the shoreline of Lighthouse Park. Some rockfish species live for over 100 years, but the Coppers live under 50 years.

Think about a mountain scree slope where you would anticipate seeing marmots and pikas. Now imagine that same boulder slope under the sea. This is typical rockfish habitat. Piled rocks are often home to the highest densities of inshore rockfish. Individual rockfish establish small territorial areas and show the greatest home-site fidelity in these rock piles. One rockfish may spend its entire and relatively long life in just one area. This behaviour makes a localized rockfish population vulnerable to being "fished out".

In order to be able to determine where important rockfish habitats exist and without the aid of scuba diving for visual confirmation, the Vancouver Aquarium research team has acquired a side-scan sonar package that will help pinpoint the best prospects for diving exploration. The images will also help the Aquarium to interpret underwater images to the visiting public.

Lighthouse Park actually does not have many undersea boulder piles. Most of its shoreline, in fact everything on the west side, is sandy, mud bottom. But the neighbouring areas in and around Starboat Cove possess rocky reefs (witness the history of sport fishing there, today a problem of poaching since fishing has been banned from the shoreline). Side scan sonar of the cove reveals extremely rugged underwater rock outcroppings, similar to those on the adjoining land.



This side scan image is taken from a boat and shows the underwater features of a reef off East Beach. The image shows about 200' of reef extending from a 100' depth on the left to 30'. Its surface shows large chasms filled with boulders which provide hiding places for rockfish.

Muddy sea bottoms often host sea pens, whereas the few rocky reefs have attached organisms like bull kelp, giant barnacles, plumose anemones and feather-duster worms. It is at the margins of the rock reefs or in a few large chasms in the rock that one sees rockfish hovering over rock piles. When a diver approaches, the rockfish usually dart under the rocks. Other common fish on the reefs at Lighthouse Park are lingcod and kelp greenlings. Rockfish species at Lighthouse Park include coppers, quillbacks, blacks and Puget Sounds.

Sea pens, *Ptilosarcus gurneyi,* are related to corals, and filter organisms from passing seawater. They can withdraw their body into the mud when disturbed. Photos: Jan Halvarson

MEMBERS' ACTIVITIES

GUEST SPEAKER SERIES

West Vancouver Memorial Library, Peter J. Peters Room

There will be a members' update before each talk

SATURDAY, JANUARY 26th

2:00-4:00 p.m.

JARED HOBBS, M.Sc.

"Spotted Owls - Shadows in an Old-Growth Forest"

SATURDAY, FEBRUARY 9th

2:00-4:00 p.m.

LANCE BARRETT-LENNARD, Ph.D.

"Five Years with the Killer Whales of False Pass"

SATURDAY, APRIL 5th

2:30-4:00 p.m.

SHEILA ROSS, M.Sc.

"Global Warming: the Science and the Complexity"

Annual General Meeting

Saturday, June 21st, 2008

2:00 p.m.

Sk'iwitsut Hut, Lighthouse Park

Followed by guest speaker

MALCOLM FITZ-EARLE, Ph.D.

North Shore Bear Network

VOLUNTEER OPPORTUNITIES

SATURDAYS in the Park, 9-12 a.m.

FEBRUARY 16th - Ivy Pull

MARCH 8th- Ivy Pull

APRIL 19th - Restoration Planting, Beacon Trail

APRIL 19th - 10:00 a.m. guided walk with David Cook

MAY 10th - Broom Pull

MAY 31st - Broom Pull

Wear old clothes and work gloves. Meet at the upper kiosk in the parking lot .

Sunday, APRIL 20th, EARTH DAY CELEBRATIONS at Gleneagles Community Centre

Saturday, JUNE 7th, COMMUNITY DAY, Ambleside Park

Help man the Lighthouse Park Preservation Society Display for an hour or two at these events. Contact Elaine at 604-925-1071

EVERY SUNDAY 2-4 p.m. PHYL MUNDAY NATURE HUT

Spend two hours meeting visitors from across Canada and abroad and learn more about the park's natural and human history. *Contact May at 604-926-3174*

MONTHLY BIRD COUNTS

Meet at the upper kiosk in the parking lot on the first Sunday of every month, at

8:00 a.m. Feb. 3, Mar. 2,

7:30 a.m. Apr. 6,

May 4, June 1, July 6th.

David Foreman, Michael Cupit and Marja de Jong Westman on the November monthly bird count . Along with a good number of seabirds and nuthatches, they saw a Steller's sea lion swimming off Shore Pine point.

Photo, Ed Donaldson

PARKS' DAY SATURDAY, JULY 19th

11:00 a.m. - 4:00 p.m.

Family fun events in the park

Join biologist, David Cook, for a one hour walk along the trails to learn how to identify the dominant plants, and the ways in which they all work together.

Stop along Beacon Trail to gather clues for a Nature Password. Collect a prize at the Phyl Munday Hut.

Visit the Phyl Munday Nature Hut for hands-on activities and live exhibits.