



Climate Change and Ecological Reserves

By Mike Fenger, President

At this year's FER AGM, we are very pleased to have Dr. Werner Kurz as our guest speaker. He will give the annual FER-sponsored public lecture titled: "Climate Change and Forests: Impacts and Interactions." Werner was a member of the Intergovernmental Panel on Climate Change that was recently awarded the Noble Peace Prize.

Climate change has been dubbed global warming and is getting wide-spread coverage in the media as well as in academic circles. One can only surmise that this is the result of such high profile publicity as: Al Gore's lecture series turned mainstream movie "An Inconvenient Truth"; Tim Flannery's "The Weather Makers"; George Monbiot's "Heat"; Grasslands Council 2007 spring issue "Changing Climate Changing Grasslands?"; Sara Wilson and Richard Hebda's just released report "Mitigating and Adapting to Climate Change through the Conservation of Nature" on the Land Trust

Alliance of British Columbia (LTABC) website (www.landtrustalliance.bc.ca) to name just a few.

There are also reports on climate change on the Biodiversity BC web page Major Impacts: Climate Change (<http://www.biodiversitybc.org/EN/main/26.html>) which are separate from the reports on Impacts to Biodiversity (excluding climate change).

Government staff and those in the Ministry of Environment with whom Friends of Ecological Reserves work are being guided by the provincial government's "Climate Change Action Plan" and there are concerted ongoing efforts towards understanding and adapting to climate change.

Friends of Ecological Reserves will need to understand what this means for maintaining the Ecological Reserves system which was established to protect elements of biodiversity. How well ERs will perform this function in light of climate change is unclear. Ecological

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Visit our website at: www.ecoreserves.bc.ca

The Log

Winter 2007

The LOG is published 3 times a year by the Friends of Ecological Reserves to promote the establishment, management and maintenance of Ecological Reserves in British Columbia. *The LOG* is distributed to members, volunteer wardens, affiliates, supporters, government, friends and the enquiring public.

The views expressed in this newsletter are not necessarily those of the Friends.

Articles for publication are invited. The deadline for submissions for the Spring issue of *The LOG* is March 14, 2008.

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Climate Change (Continued)

Reserves are fairly small segments of the Parks and Protected Areas system and have been designated reserves for a variety of reasons; from protection of rare plants, to areas where biological values are concentrated, such as marine islands with seabirds nesting colonies. Ecological Reserves were less frequently established to represent widespread common ecosystems. The current ER system has significant gaps and under represent the current diversity of the province.

We are now at the stage of understanding the magnitude of the problem and our role in it. It is unclear whether the biological resources within protected areas and specifically the species/ecosystems for which many of the ERs were set up, can adapt to the forecast change in climate. Which plants/wildlife/ecosystems currently in the ER systems will not persist and will be either overwhelmed by newcomers who find their ecological niches expanding, or fail to re-establish due to unfavourable climatic conditions? What ability do some species have to disperse to suitable similar sites across the landscape? We have more questions than answers.

To more fully appreciate what is expected, here is an excerpt on climate change implications from a paper prepared by Bob Peart, Sarah Patton and Eva Riccius entitled: "Climate Change, Biodiversity: And the Benefit of Healthy Ecosystems" prepared on behalf of the Canadian Parks and Wilderness Society, BC Chapter. Thank you to CPAWS for permission to share this in our Winter Log.

"Some specific terrestrially-related climate change predictions are:

- An increase of 1 C will 'force' a shift of ecological zones (or rather, the climate envelope for such zones) a predicted 300 m up in elevation and 150 km north. The prediction is a minimum increase of 2-5 C in 70-100 years, translating to 600-1500 m in elevation and 300-750 km in distance.
- This projected 'ecological zone shift' is estimated to be at a rate of 40 km per decade the 'average' plant/animal/insect can shift habitats at a maximum of 6 km per decade. Larger mammals may be able to shift habitats at a faster rate. The rate that appropriate conditions shift will therefore be so fast that many species will be unable to compensate through dispersal.
- Alpine tundra ecosystems will shrink and alpine "islands" could disappear as woody ecosystems (subalpine forests and buckbrush) shift up in elevation. Forest composition (tree and understory species) will change significantly in Kaska Territory. Expect an expansion of moister warmer forests. Pl will probably get hammered by MPB, spruce by a combination of spruce beetle and root rot. Bl will increase in abundance. Deciduous trees aspen, birch, cottonwood could also expand, perhaps at the expense of the evergreens after insect epidemics. But they too have their own problems with insects and disease. The climate could be suitable for Douglas-fir and western red

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Friends of Ecological Reserves Attend Elders Council Workshop

By Mike Fenger

Friends of Ecological Reserves attended the Elders Council for Parks (EC) Workshop at UBC on November 29th and 30th. Eva Durance (ER warden/naturalist), myself (President) and Bristol Foster (FER emeritus) were present.

On their web site <http://www.elderscouncilforparks.org/> the EC defines itself as “an independent society with members who are retired parks system employees and conservation advocates who have dedicated a significant portion of their lives to parks and protected areas in BC.”

It was good to be with a group of like-minded individuals and very timely for me as a FER representative to find a viable, established, knowledgeable group that understands and supports natural area conservation. It was also good to see that a large proportion of the Ministry’s Parks executive were present for the first day and evening.

The workshop’s desired outcomes were:

1. Agreement on the vision/principles/characteristics of a viable/sustainable BC Parks system.
2. An action plan for how conference participants and others will work together to advance that vision, particularly drawing on the themes of climate change,



Cliffs near north end of Cougar Canyon ER

youth and nature, community involvement and leveraging the 2011 Park Centenary.

3. Agreement on how we support the provincial government in valuing the role of parks in the critical areas of climate change and children’s health.

We began with stories of personal experiences that we have with Parks. This was an excellent non-flip chart approach that enabled insights and personal touches to come from participants. We shared stories of sea otter recovery, and bottles of wine over picnic tables with life-long friends. The outdoor and natural environment is a precious place and the Protected Areas system has a special place in so many lives.

The structured part of the workshop focused on two

themes and an opportunity to revitalize the Parks System on the 100th anniversary of Strathcona Park (2011).

Climate Change

Climate change is arguably the greatest long-term threat to global biodiversity as we know it and to the well being of human civilization, yet the implications of climate change and the need for new conservation strategies have only just begun to be considered.

The benefit of healthy marine and terrestrial ecosystems to protecting biodiversity, in light of climate change, must receive more attention. Retaining a variety of life permits adaptability in changing environments and a diversity of organisms maintains future ecological stability and supports human health. To maintain biological diversity and help as many species as possible adapt to climate change, a management regime that secures large landscapes with appropriate connecting ecological corridors is essential, thus the crucial need for a viable provincial park system.

Provincial parks cannot halt climate change but they can provide the healthy landscapes required to afford the natural world the opportunity to adapt. The ecosystems that parks protect within their boundaries support all forms

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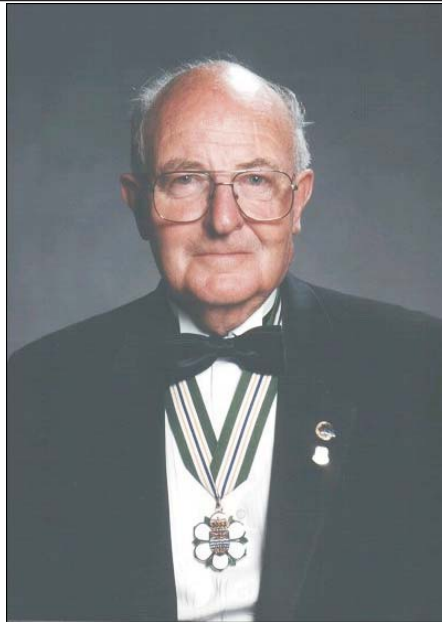
A Tribute to Bert (VC) Brink

By Mike Fenger

The flags at UBC campus were half mast on Friday November 30th in honour of Bert (VC) Brink as Bristol Foster and I exited the Elders Council strategy session on Parks and Protected Areas. There were a number of personal tributes to Bert during the Elders Council meeting and we were informed of his deteriorating condition on Thursday morning by Ed Mankelow who visited him the previous day.

Bert Brink was one of BC's leading conservationists. Bert was admired by many for his quiet persistent curiosity and pursuit of knowledge about the natural environment – something that strikes a chord with members of Friends of Ecological Reserves. Below is the text of a hand written note Bert sent FER August 2, 2006. At age 93, the ER conservation agenda is quite clearly unfinished in his mind and he has passed that on to us.

Just a note by chance – 1) Do you believe that the “Friends” would “sponsor” eco-reserves in the Shulaps/south Chilcotin Mountains area? There seems to be a number of serpentine-specific plants there and more may be added with study (e.g. *Luina serpentina* - Bev and Bill Ramey recently collected). Infirmities of age preclude my ever going there again. I am trying to persuade Dick Stace Smith to do a short article on the area. I do have



some soils/plant data from a decade back.

2) When Eco-reserve 64 was set up in the Itcha-Ilgacha Mountains in the Chilcotin Region there was no doubt accompanying text. Do you happen to know if the text is available in print or in a file in the Ministry? I would especially like to know if the lichens are listed, especially the Cladonias.

3) Disjunct species of Douglas fir occur in several places in the central British Columbia Stuie, Fraser Lake, Pinchi Lake, Prince George, (Jasper Park, Alberta). Are any of these stands in an ecoreserve? Interestingly in the undercover of the Fraser Lake stand there is (was?) Fendler's bluegrass (*Poa fendleriana*) normally associated with ponderosa pine to the south. Maybe the BC Forest Service has a reserve with disjunct Douglas fir.

Arthritic hands make typing-computers difficult – please

pardon the hand writing. I doubt my ability to attend the Kamloops meeting. unless one of children drives me there.

Best Regards Bert Brink

Rather than begin a correspondence, I phoned Bert and we discussed ERs and his questions. It was good to get his insights – something we will have to go without from now on.

Question 1. Would we sponsor ERs? Yes, FER is in the business of sponsoring ERs, we don't believe the ER system is complete. We were in agreement that an ER to accommodate plants with a close ecological niche to serpentine soils was in keeping with the ER legislation. We talked about the benefits of a field expedition for botanical sampling of the serpentine band that runs on the leaside of the coast mountains to the Yukon. Bert also stated that some of the higher elevation areas may have remained ice free and have plants that form part of an ice-free legacy going back 100,000 years – now won't that be an interesting place to sample? FER continues to advocate for a higher profile for ERs with the Ministry of Environment. FER recommended dedicated ER staff following our State of Ecological Reserves review. This has not yet been agreed to by government but the need appears greater than ever.

Given climate change and if we are to life-boat many of the rare and representative elements of BC biodiversity, a more complete ER system with sufficient monitoring and baseline information would provide for more informed and effective decision making.

Question 2. Could we supply lichen names for ER 64?

I did not have a good answer – still don't and because there is no central filing system for ecological reserves this information, if available would be in the Williams Lake office. Very little ecological data is on the web in an accessible form with the notable exception of Race Rocks.

The FER vision is to make all ER-related ecological information web-available. FER was not able to pursue the lichen question for Bert.

Question 3. Are there Douglas-fir ERs for disjunct populations?

I was not aware of any for Douglas-fir but no ERs have been established for disjunct populations or for some tree species at the edge of their range. Disjunct major tree species populations are obvious ER candidates especially in light of climate change. FER would need to research the disjunct question and what is captured in existing ERs.

Bert pondered that perhaps the Forest Service would have Douglas-fir reserves on disjunct populations. I was not aware of any Forest Service reserve system but they do make sense from a strategic and long term

forest management sense. I also did not know whether there were any permanent growth and yield sample plots placed in any disjunct Douglas-fir stands. Permanent growth and yield sample plots are protected from logging and form a very small reserve.

I was not able to adequately pursue Bert's questions and time slipped away as did Bert.

It would be good for FER to pick-up the questions again as they continue to be relevant and show how Bert was thinking ecologically and strategically. It would be extremely fitting to be able in the future to establish a Bert Brink ER – that would be a well-deserved tribute to one of BC's pioneer conservationist. Thank you Bert for all that you did and your inspiration to so many of us. We will carry on.

Bert has been listed as one of our FER honorary directors for many issues. His listing appears in the 2007 Winter *Log* as a final tribute to him.

For more on Bert Brink visit.
http://www.landfood.ubc.ca/alumni_history/biography/vernon_brink.htm
http://www.protocol.gov.bc.ca/protocol/prgs/obc/1990/1990_VCBrink.htm



Visit our website at: www.ecoreserves.bc.ca

CALENDAR

Friends of Ecological Reserves 2008 Annual General Meeting

March 7, 2008 at 7:00 pm
(Lecture begins at 8:00 pm)

Location:

David F. Strong Building Room C118 (University of Victoria)

Speaker:

Dr. Werner Kurz, member of the Intergovernmental Panel on Climate Change, co-winners of the 2007 Nobel Peace Prize.

All members as well as those interested in becoming members are welcome.

For more info, call Tom Gillespie at (250) 361-1694 or check the website at:

<http://www.ecoreserves.bc.ca/>.

Field Trip to Trial Island Ecological Reserve

Saturday, April 26, 2008

Fee: FER members \$10.00,
Non-members \$30.00,
Seniors/students \$25.00 (Fee includes a one-year membership to FER.)

To register or for more information, call Marilyn at (250) 477-5922

Botany BC 2008 May 15 - 18

Based out of Powell River, field trips will visit sites on the Sunshine Coast including Texada Island. Botany BC is an annual meeting of botanists and plant enthusiasts but is open to anyone interested in plants.

For information call: Elizabeth Easton (250) 953-3488 or email: elizabeth.easton@gov.bc.ca

of life, moderate climate, filter water and air, conserve soil nutrients and control pests.

Through appropriate public programming, parks have an essential role in educating society at large about the causes and consequences of climate change and the human-nature crisis we face. Children in particular must know that their future rests in a natural world, not a virtual world. Parks are where citizens can have these first hand experiences. (Rick Careless made the climate presentation and led the group that addressed this in more detail.)

Children, Families and Nature

In his book *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*, Richard Louv writes that we are misdirecting the activities of our young. He links the lack of nature in the lives of today's wired generation – nature-deficit – to some of the most disturbing childhood trends such as obesity, depression, attention deficit and the high prescription rate of drugs, especially anti-depressants. The solution is just outside – in your neighbourhood and in urban and provincial parks. The evidence is clear that exposure to unstructured outside experiences will:

- Improve the level of knowledge of basic facts of nature by today's younger generation.
- Improve problem solving, critical thinking and

decision-making.

- Reduce the criminalization of nature and media exploitation that keeps children indoors and leads to parents being over-protective (stranger danger).
- Reverse the decline in support for environment-related education by schools and government, which will lead to an increased amount of time that students spend in natural areas.

Our provincial park system needs to facilitate the opportunity for children and families to enjoy nature, particularly through unstructured play and nature interpretation. Parks play a critical role in reducing the alienation from nature at the child, family and community level and encourage wonder and joy in nature itself. Children need safe and fun places to go outside and play with the overall aim of inspiring children and their families to:

- Develop a life-long participation in healthy outdoor activities.
- Visit parks and natural areas.
- Support the importance of parks and natural areas.

In addition, parks need to be more inclusive. Historically BC parks were about families and we need to be very attentive to new family structure as well as an aging and changing population. Immigration has brought many changes in how our population sees protected areas and how they may use them. We can no longer

depend on the majority of our society being exposed to nature's values. We must strengthen our support base by reaching out to minority groups – by inviting them to enjoy our provincial parks. (Bob Peart presented a brief overview on this theme and lead the group discussion.)

Rick Serale provided an overview of elements of History of Parks and thoughts on 2011. Parks staff provided an excellent PowerPoint on the Parks system.

Elements Of A Viable Provincial Parks System

Let us envisage a parks system:

1. With a bold revitalized management model that engages all British Columbians in supporting their parks system.
2. That is enjoyed by all British Columbians because there are newly invigorated recreation and nature education programs.
3. Where government provides the legal and policy framework for parks as a priority, and resources the system accordingly.
4. That contains lands that protect nature and biodiversity within a well-planned system, which recognizes the valuable contribution of adjacent gateway communities.
5. That establishes new strong relationships with First Nations.
6. That builds on the "natural" in supernatural BC to showcase BC's "green"



Families enjoying Montague Harbour Provincial Park, Galiano Island

entrepreneurial expertise and environmental best practices through investments in park infrastructure replacements and improvements.

7. That is publicly accountable and performance/achievement focused through the development of a citizen's based monitoring regime, and a triennial public review of the state of our parks.
8. That provides proper enforcement, planning and inventory thus ensuring the long-term viability of the system.
9. That truly engages local communities and youth in park management support roles through the involvement of schools, local politicians, seniors outreach etc. in an effort to attract new park visitors.
10. That is ready to welcome visitors to the 2010 Olympics and to attract

visitors in 2011 to celebrate the hundredth anniversary of our provincial parks system.

To realize this potential, the provincial government needs to provide significant new funds and multi-year investments, then challenge all parts of society to collaborate and become fully engaged to achieve a collective "made in BC world class vision" for British Columbia's provincial park system.

Colin Campbell made a well-received presentation on behalf of Elder Council to the Government finance committee this fall. Here is an excerpt of this presentation.

"Our expanded provincial parks system of 893 parks and protected areas needs an immediate infusion of funds in the amount of \$30 million annually. This will provide the immediate care and attention necessary to restore ecological systems that function within

parks and begin to create a management regime to manage our parks and protected areas, scientifically, to world class standards. This will ensure their long term health for the economic, environmental, and social benefit of current and future generations."

Because we are smaller and more focused on ERs, in my estimation, FER will greatly benefit by participating with EC. Progress was made towards the desired workshop outcomes but there is more to do. I am pleased that FER was invited to this event as there is a great deal of overlap in thinking and shared concerns. FER was extended an invitation by EC to attend future meetings and I have accepted their offer.

Alphabetical List of attendees:

Jamie Alley, Ed Andrusiak, Gwen Barlee, Brian Bawtinheimer, Scott Benton, Colin Campbell, Ric Careless, Jim Christakos, Eva Durance, Harold Eidsvik, Mike Fenger, Bristol Foster, Julia Gardner, Christine Houghton, Jason Lee, Ed Mankelow, David Marshall, Jeremy McCall, Ken Morrison, Dave Neads, Chloe O'Loughlin, Georgette Parsons, Bob Peart, Ross Peck, Susan Pinkus, Eva Riccius, Gail Ross, Wayne Sawchuk, Kevin Scott, Rick Searle, Chris Tunnoch, Nancy Wilkin, Loretta Woodcock, Ellen Zimmerman.

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North Okanagan ER Fall Trip

By Kathryn and David McCourt



Group at old forestry education shelter at Vance Creek ER

September 29 dawned crisp and clear, a good start for the tour of Cougar Canyon and Vance Creek Ecological Reserves organized by Senior Ranger Sara Bunge. Rangers Kevin and Curt of the Vernon Parks Office woke everyone up with coffee and a slide show of Cougar Canyon presented by wardens Roseanne Van Ee and Dennis Seymour. Then the group of eleven piled into vehicles and drove along the east side of Kalamalka Lake to the access point for Cougar Canyon.

Hiking along the height of land west of the canyon, we enjoyed the last summer flowers, berries, cougar scratches on trees, and

beautiful views of Kalamalka Lake behind us. Just before noon, we came to a point where we could see down into the Canyon, catching tantalizing glimpses of the bottom and imagining the stream and lakes that we had seen in the slides. It was quickly decided that, given the depth of the canyon and the distance to Vance Creek, we would not attempt to hike down and back up. It was a pleasure to eat lunch at the edge, enjoying the sun, the view, and the lively conversation.

After lunch and the hike back to the cars, we struck out for the Vance Creek Reserve north of Lumby, stopping in

Lavington for a quick coffee and treat. Vance Creek proved to be a treat, too. Ecological Reserve warden Rick Fairbairn led us to the old forestry education shelter and then upstream along the creek. We learned about the diversity of trees in the Reserve, listened to the few remaining birds, and examined hollow trunks, the huge leaves of skunk cabbage, and fascinating lichens and fungi.

Sara fed us well, and there was enough left for a quick snack before we disbursed, tired, but appreciating what we had discovered about each other's reserves. We looked forward to the next tour, planned for the spring of 2008.



Fungi on a tree near Vance Creek

Ecological Reserves and Their Buffer Zones

By Adolf Ceska

Many factors play a role in determining Ecological Reserve boundaries. Final boundaries are usually a result of complex negotiations between the land owners and the land users. Or the boundaries are set by the boundaries of the Crown land available for the protection of ecologically important areas. In the case of donations, the boundaries are determined by the boundaries of the property the donor is willing or able to donate.

Ecological Reserves legislation was established “to reserve Crown land for ecological purposes.” Through the limitation of this process, the ecological phenomena the reserve should protect are often missed, or are at the very edges of the Ecological Reserve. Katherine Tye Ecological Reserve is an

example; the largest portion of Phantom orchid (*Cephalanthera austiniiae*) population is outside the Ecological Reserve.

These considerations usually do not play an important role at the time the particular Ecological Reserve is being established. The investigators proposing the reserve see surrounding areas similar to those they propose and they go for the best result they can negotiate. They rarely think about the potential use of the areas outside the ER they propose. Through these limitations, the Ecological Reserves boundaries themselves do not properly secure those ecological phenomena that are on or close to the ER boundaries.

The *Manitoba Ecological Reserves Act* is more flexible in this respect because an

ecological consideration can be used to acquire the land for ecological reserves that is not Crown land: “Any land in the province that is not Crown land that in the opinion of the minister is required for establishment as a reserve, or for use in administering a reserve, may be acquired by the government by purchase, lease, exchange, gift, devise, expropriation under the *Expropriation Act*, or otherwise.”

We in British Columbia do not have a similar law, and the ER boundaries are determined by political considerations rather than the ecological parameters. The law is followed to the letter in some cases (e.g. the radio towers would have had to have been removed if the Trial Island ER included that area), but ignored in some other cases

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Trail Island ER Field Trip – Spring 2008

Saturday, April 26, 2008

Join Adolf and Oluna Ceska on our annual outing to view the spring wildflowers on this beautiful island off the Victoria waterfront. Camas and buttercups prevail, but the Trial Island Ecological Reserve protects the most outstanding variety of rare and endangered plants in the Province. Each year the bloom is a bit different, so come along and see what delicate little beauties are waiting for us this year. This is a rare opportunity to visit as Trial Island is closed to the public.

Fee: FER members \$10.00, Non-members \$30.00, Seniors/students \$25.00 (Fee includes a one-year membership to FER).

To register or for more information, call Marilyn at: (250) 477-5922.

(e.g., allowing grazing in several BC interior Ecological Reserves).

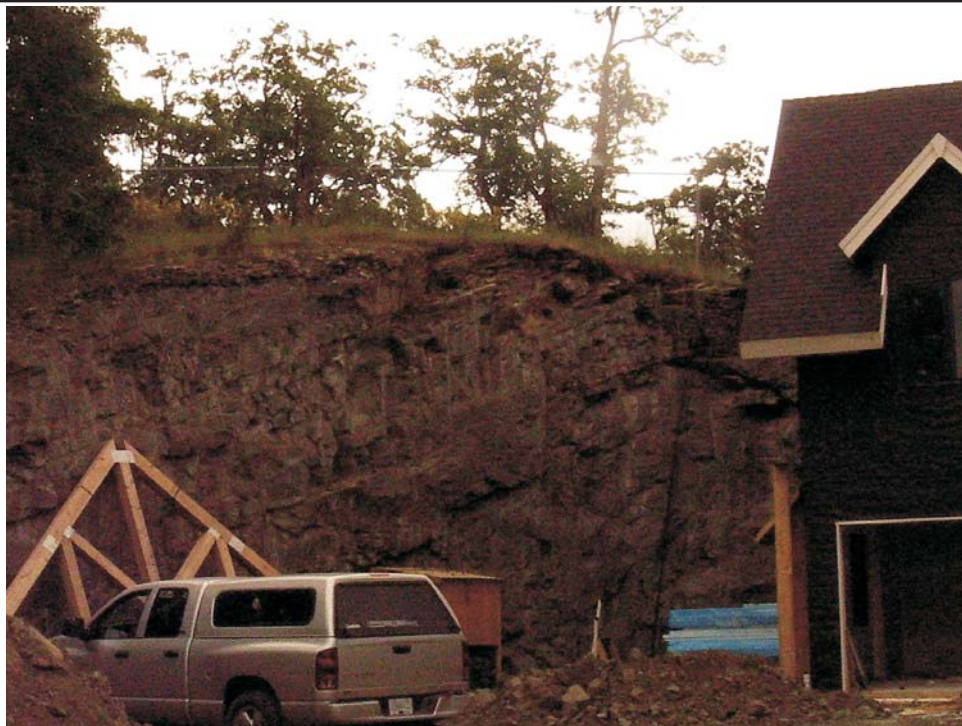
After this rather long introduction, I think it's safe to say that Buffer Zones play an important role in ERs in British Columbia.

Case Study No. 1 – Mount Tzouhalem Ecological Reserve ER # 112

I remember a nice population of White-head aster (*Aster curtus*) that was at the very entrance to the Mt. Tzouhalem ER in Duncan. That population disappeared shortly after the "lower" entrance to the reserve was established. But look at the Mt. Tzouhalem ER boundary now: the sign "Ecological Reserve" is still on the oak at the margin of the artificial cliff. The role of the fence has drastically changed. Before the house was built, the fence was erected to keep intruders from entering the reserve, now it serves to protect the ER intruders from falling into the abyss.

Case Study No. 2 – Field's Lease Ecological Reserve ER # 33

The same situation occurs here as in Case No. 1, except that the neighbours did not blast the rock up to the ER boundary in order to make room for their house. Only a chicken wire fence is marking the boundary between the reserve and the house. This resulted in many more introduced plants in this corner than in the rest of the Field's Lease ER.



Artificial cliff at the edge of Mount Tzouhalem Ecological Reserve

Case Study No. 3 – Haynes' Lease Ecological Reserve ER # 100

There is only a narrow field road that divides the Borrowing Owl Winery from the Haynes' Lease ER. It is commendable that the burrowing owl still live in the Okanagan Valley, but we should be concerned by the ecological impact of vineyard watering on the ecological reserve. It is hard to predict what impact the vineyard operations or vineyard watering will have on the Haynes' Lease Ecological Reserve, but it will hardly be positive.

Case Study No. 4 – Trout Creek Ecological Reserve ER # 7

There is a sharp contrast between the heavily used area, the golf course, and this ecological reserve. A simple fence separates the golf course

from the protected area. The fence is easy to negotiate with the help of a few wooden steps. The steps apparently aid the golfers in retrieving their lost golf balls.

The transition between the natural area and the golf course is sharp, BUT no negative impact of the golf course on the neighbouring reserve can be observed. In this case, it would seem the golf course is acting as a large buffer area for this ecological reserve.

Case Study No. 5 – Mahoney Lake Ecological Reserve ER # 130

Eva Durance, the volunteer warden for this ecological reserve, told us: "The fence should be built at the perimeter of this ecological reserve." This would also delineate the functional and managerial division between

the neighbouring Provincial Park and the ecological reserve proper.

Because of the drier period over the last five or more years, the water level of Mahoney Lake (and other lakes in this area) is much lower. At the time Mahoney Lake Ecological Reserve was established, the winter water level of the lake used to reach the road. Now it is much lower and the area is open to dirt bikes and all-terrain-vehicles.

The lake was proposed as an ecological reserve to preserve the rare purple sulphur bacteria that are considered unique. With the rather drastic drop in the water level, do we know the impact on the purple sulphur phenomenon in the Mahoney Lake?

I have brought up several issues but unfortunately I do not have any solutions to the problem. I hope that my rumbling will inspire the readers to think about this problem and consider the idea of buffer zones for the ecological reserves they know.

Do we need more than a dirt road between the reserves and the development of the surrounding land? In some cases yes, in some cases no. We have to think about this with each individual case in mind.

I also like the broader flexibility of the *Manitoba Ecological Reserves Act* that does not restrict the creation of ecological reserves on Crown land only. In British Columbia, the provincial governments over the years have happily given away Crown land without any ecological considerations,



Narrow field road divides the Haynes' Lease ER from the Borrowing Owl Winery



Lower winter water levels at Mahoney Lake ER

and the chances to establish new ecological reserves with natural boundaries are getting more remote. Will we

eventually end up with ecological reserves that would not be worth preserving?

Race Rocks – From Pungent to Educational

By Kirsten Grove-White

Quick, what's the first animal you think of that you'd go out to see in its natural habitat?

Around here, (Victoria area) the most common answer is probably, "Birds." So when I was invited to go out to Race Rocks to view sea lions, of all things, of course I had to accept. I found out that a few other people were coming along with us, so I grabbed my best buddy (whose father happens to be a former marine biologist, so he bade her to take lots of pictures) to join in. I dreaded the early morning start time, but told her to be over about fifteen minutes before we were to be picked up.

So, bright and early at around 8:30 (well, bright and early for me, but I'm a stereotypical teenager and not a morning person to begin with) there she and I were, in our jackets and slubby pants and armed with healthy snack food to last us through the trip.

The drive to Pearson College, our jump-off destination to Race Rocks, was a long one, but it gave me time to wake up. The other passengers in the car talked idly, the usual prattle. After a brief stint of being uncertain as to where exactly we were supposed to be (and even consulting an oh-so handy campus map that we passed), we joined the assembly of fourteen or so and off we went to get our life jackets. I was surprised and happy to see that the group was spread across the age spectrum – from kids to teenagers to adults – all camps were there. The Pearson College students stared at us as we went by – I suppose they weren't expecting to see a group of trussed-up people walking past so early. Their breakfast smelled very, very nice, not to mention warm.



California Sea Lions Greeting Race Rocks ER Tour Participants

On the boat ride out to Race Rocks, we learned four new types of seabirds in as many minutes and were mock-threatened by Garry Fletcher, the Race Rocks ER Warden with a test on everything we'd learned.

We weren't even sure if we would see sea lions – something about DND firing test blasts – so when we did, it was exciting. They were quite far away at first, but were still highly aware of us. It was amazing to see just how many of them were crammed onto one rock, and I marveled at how the birds took any space for themselves with those larger mammals around.

And then we got to the dock situated alongside the rocks where the big creatures were sitting. Up close, they were magnificent, regal-ish, gargantuan, and... well, pungent doesn't do it justice. I'm a little embarrassed to

say that I had to check my gag reflex and delicately cover my mouth and nose with my sleeve at first, before I got used to the smell. I never thought that my olfactory sense was that keen, but I think I was the only one who had to do that.

We were instructed that there are two types of sea lions there, California sea lions and Northern sea lions. Northern sea lions are the ones you put to the image in your head – big, chestnut brown, and weighing up to over a ton. California sea lions can get just as big, but they all seemed smaller than the Northerns. Of course, all we saw were male sea lions, since the females don't usually come to Race Rocks. The California sea lions yapped and yapped at us, sounding like trained seals you'd see at a circus. The Northern sea lions, well, belched at us. Or that's what it sounded like: a

loud, drawn-out burp. It was easy to tell who the dominant male was – he was the biggest.

When we walked up the path on the little island, we were told that none of the flowers there were tended to; they just grew. It was odd, considering how contrived their arrangement was – lining the pathway perfectly like a wild Butchart. Another prominent aspect of the island was that it was crawling with Canadian geese. We were told that their numbers were an issue, and that they were eating up a lot of the food that the other parts of the ecosystem needed.

We went up into the lighthouse after that, which was a bit of a steep climb, and even involved a tiny ladder. We were split up into two groups, and went up in turns. There were cobwebs in one of the windows. Kudos to that spider, it must be very brave to set up house there. Just getting there would've been an epic trek. The view from the top of the lighthouse was, of course

gorgeous. The ocean was calm that day, and the sky overcast but not ominously so. Up there I spotted one particularly adorable harbour seal perched on a rock and stretched out.

We stayed up there for a while, and when we came out, our attention was drawn to the cannon. It was found in a shipwreck, we learned. Of course, the younger members of our group were intrigued by it. Even I inspected it, noting the warping of the metal and iridescence, if it caught the light just right. Then I went to watch the seals swim and lounge for a while, waiting for the other group in the lighthouse.

Afterwards, we went into the Marine Science Centre and checked out the website on the computer there. We were shown the camera that you can control from the Race Rocks website, and some absolutely stunning photos that Pam Birley had taken with the camera. They're well worth looking at on the web (follow the Race Rocks link from

www.ecoreserves.bc.ca).

After a debate over the species of a LBB (little brown bird, for the uninitiated like me) and a solid conclusion drawn, it was time to leave the isolated little island. The boat ride back was much quieter, though we had much to discuss. I just enjoyed the wind and ocean.

We found out that there was one more surprise waiting for us on the shore. Turns out that a while ago a hapless grey whale corpse was found near Pearson College. The theory was that it was a victim of a boat accident. Still, the skeleton was intriguing. What stunned me was that its ear bones – they would be smaller than my fingernail in a human – were as big as my fist, if not bigger! The baleen was preserved in a small panel on the wall near the skeleton, which was novel in itself. A few of the vertebrae had to be replaced, but for the most part the skeleton was whole and in very good shape for being displayed outside. We marveled at the length of an arm bone that we had forgotten the name of.

After that, it was time to get home. We thanked Garry, said our goodbyes, and walked off to the parking lot. Two woodpeckers, one downy and one pileated later, and we were piling into the van for the drive home. A little way in, we remembered the name of the bone – humerus. And wasn't it humorous that we forgot that bone?

On Monday, back at school, it was hard to explain the trip to our friends. It didn't sound all that exciting to them, really. I begged to differ, but let them think that. Even if it doesn't sound like your typical nature outing, I enjoyed it thoroughly, and it was a lovely experience I don't ever think I could recreate. Though, I think I could do without the smell.



View from the top of the lighthouse at Race Rocks

cedar within 50 years (?), but who knows whether or not they'll be growing around Lower Post unless someone plants them there. Boreal grasslands are at high risk. They are already rare in the landscape and are being invaded by woody vegetation. Will likely persist only on the driest warmest south-facing sites, and perhaps only if humans augment the herbivory of beaver, moose, elk, deer with prescribed fire.

- 40-60% of the glaciers in BC will disappear and others will diminish greatly. Beyond the effects on biodiversity, the resultant effects on provincial water systems and watershed management will have substantial consequences on industrial and community water supply, hydro production, fisheries, tourism, agriculture and forest management.
- Freshwater fish populations will be affected dramatically. For example, there is evidence that anadromous salmon may be unable to migrate through the Fraser River due to overly warm waters.

Through the steep climate gradients of BC's mountains, ecosystems are highly sensitive to climate fluctuations. Mountain systems offer the greatest opportunities for biodiversity conservation - beyond the typical north-south and east-west opportunities for biodiversity migration, mountains also offer up-down altitudinal and 'contouring around the mountain' avenues for species migration.

The implications of climate warming for freshwater

biodiversity are not certain, with strong variation expected among watersheds - but clearly wetland and riverine ecosystems will change. Beyond the changes in the timing and amount of the spring melt and peak flows, warming is also expected to accelerate the water cycle (increasing rates at which water enters the atmosphere and rains down again). The effects of this on hydrology, fish and invertebrate populations remains to be seen. Freshwater species have few migration options as their habitat is within the stream system.

Climate change will act synergistically with many of the biggest existing impacts to biodiversity: in other words, each individual impact will have a total greater cumulative effect leading to drastic unpredictable changes to the current web of life.

These changes will occur during a single century, rather than over a period of several thousand years and lead to temperatures Earth hasn't seen for millions of years. Many species will simply be unable to adapt to these rapid changes.

This pressure on species has been termed the Big Squeeze or Bottleneck, with the most harmful time forecast to be 70-150 years from now. This period will be an unstable time for species and their habitats. The challenge for the future of biodiversity is to get as many species as possible through this Big Squeeze into the different habitats and hydrological cycles that will emerge in the future.

It is highly probable that species richness will diminish over the next few decades - some specialized creatures will disappear and many coarse or

weedy species will expand their range. It is this loss of genetic diversity (including whole species) that will be the most difficult, and sometimes not possible, loss to recoup.

Loss of diversity will lead to less resilient ecosystems and wide-ranging ecological disruption. The best management approach is to conserve large ecosystems with associated migration connectivity. Such an approach will build resiliency into natural systems, increasing their adaptive capacity and enabling as many species as possible to survive the Big Squeeze - thus reducing the negative effects of climate change on biodiversity and human well-being. This point is not to negate the important contributions of restoration, seed collection and storage, DNA storage, etc."

It is not clear what the short medium and long term management implications are for Ecological Reserves. It seems prudent to continue to consider the risks and impacts to the systems as we understand them today while improving ER baselines. Monitoring baselines will be immensely useful and a place to begin to fully document what we have now. The 'Big Squeeze' analogy used by E. O. Wilson on conservation is useful. To illustrate his concept think of an egg timer -) (- with the goal to have as many species as possible 'squeeze through the next few decades' and emerge into the future habitats of that time. This also requires understanding of which species are at greatest risk. Seems conservation now has added urgency and added complexity. We do live in challenging times.

FRIENDS OF ECOLOGICAL RESERVES MEMBERSHIP FORM

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Just So You Know....

Ecological Reserve Wardens' Notes

Thank you to Malcolm Martin, Cougar Canyon Ecological Reserve Warden and to Chris Pielou, Warden for Comox Lake Bluffs Ecological Reserve for submitting reports and pictures from their respective ERs. Our Autumn 2007 issue of the *Log* featured information on FER's new initiative to include ER

Warden's material on our website. We look forward to receiving more submissions over the coming year.

A big thank you also goes to Garry Fletcher, Race Rocks ER Warden and FER Board member for his invaluable assistance in producing these new web pages.

Friends of Ecological Reserves Annual General Meeting

When: March 7, 2008
Time: 7:00 - 10:00 pm (lecture begins at 8:00 pm)
Where: Room C118, David F. Strong Bldg., University of Victoria

Guest Speaker, Dr. Werner Kurz, member of the 2007 Nobel Peace Prize winning Intergovernmental Panel on Climate Change. His lecture is titled "Climate Change and Forests: Impacts and Interactions."

The Log



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