The Log
www.ecoreserves.bc.ca

Spring 2007

FRIENDS OF ECOLOGICAL RESERVES NEWSLETTER

Minister Penner Responds to Concerns Raised by Friends of Ecological Reserves

Friends of Ecological Reserves
Dear Mr. Fenger:

Thank you for your email dated November 13, 2006 regarding our meeting on the status of ecological reserves in British Columbia. I appreciate the time given to presenting your recommendations on managing these special protected areas. I apologize for the delay in responding.

This ministry is fully committed to ensuring ecological reserves are managed to protect the values for which the areas were designated, and to ensure use is consistent with direction and purpose outlined in the *Ecological Reserve Act* and Ecological Reserve Regulations.

The Ecological Reserve Warden program is an important component of managing these areas and the time and effort each warden contributes is greatly appreciated. We will certainly endeavour to work with the Friends of Ecological Reserves to have a volunteer warden for each of the ecological reserves in the province.

Your specific recommendations will be taken into consideration. It is important to note that all protected areas staff have ecological reserve management as part of their responsibilities. Management regimes, such as conservation risk assessments, are done for ecological reserves as well as for parks, protected areas and conservancies.

I appreciate the invitation to tour Trail Island Ecological Reserve on April 29, 2007. My staff will check my availability and advise you closer to that date.

Once again, I appreciate the efforts you and the Friends of Ecological Reserves are making towards the long term protection of these special places.

Sincerely,
Barry Penner
Minister of Environment

Inside ...

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The Log

Spring 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 Autumn issue of *The LOG* is September, 2007.

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Spring Beauty to White-Tailed Ptarmigan

FER researchers protect BC's biodiversity

By Evelyn Hamilton, Chair, FER's Science Advisory Committee

This edition of the *Log* features research undertaken in the last few years by a handful of keen scientists and funded in part by Friends of Ecological Reserves. Donations from our supporters made this possible and we thank them for their generous contributions.

Carla Rae Mellot's work on western spring beauty is helping to ensure the persistence of this little plant, important as a food source to many First Nations in the southern interior. Her MSc thesis will help inform management decisions including the suitability of grazing in this area.

The taxonomic status of the mysterious coastal fern, ***Polystichum kwakiutlii***, were unearthed by Patrick Williston, Paula Bertemucci and Chris Sears. Their work helped determine whether special protection is warranted for this fern.

Amy Wilson's Ph.D. research on song sparrows is helping resource managers design protected areas that maintain the genetic diversity of bird species. Her work on the Gulf Islands is identifying barriers to dispersal in this species.

Vancouver Island white-tailed ptarmigans are the subject of Brad Fedy's Ph.D. work. He is helping to determine the habitat requirements of this threatened sub-species.

In the Klaskish E.R., Krista Roessingh and Ingmar Lee's research on the riparian ecosystem in the reserve will help guide future management actions. They assessed threats to the reserve and made recommendations regarding management, including the re-establishment of a heritage trail.

Chunoz Ch'ez (Potato Mountain) site of
Carla Rae Mellot's work on western spring beauty

President's Report

By Mike Fenger

It has been a very successful year thanks to efforts of Board members, wardens, and supporters of Friends of Ecological Reserves. We have made real progress and I am reminded of the words of Margaret Mead who said, "Never doubt that a small, group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has." Friends of Ecological Reserves are just such as group.

The Year in Review

Tom Reimchen, at the 2006 AGM, provided his insightful lecture on Kermodi bears and re-enforced the importance of supporting research into natural areas such as Ecological Reserves. We were pleased to present Tom a cheque for $5,000.00 to continue his research.

Thanks to a June Board Retreat and the skill of our facilitator Colin Rankin, we now have a strategic plan with a mission statement "to support the role of Ecological Reserves in furthering understanding of natural processes and human interactions."

There are five areas in the newly minted Strategic Plan that form an excellent framework to report on the activities from March 2006 to March 2007.

Goal 1: To support the protection and management of a strong Ecological Reserve System through a strong warden program, systematic inventory and monitoring, timely assessment of reserves and an effective government presence, especially where ERs are most at risk.

Activities:

- Thanks to a grant from Ministry of Environment regional warden meetings were held so government staff and wardens could renew the partnership and coordinate efforts on care of ecological reserves. Thanks go to Elizabeth Purkiss, Eva Durance, Bev Ramey, and Marilyn Lambert for getting these off the ground. Thanks also goes to Nancy Wilkin for providing the funds to make this happen and to Scott Benton who approved participation of area supervisors. (See Winter *Log* for details of these regional warden meetings.)
- The State of Ecological Reserves Report, two years in the making, was released in November 2006. The condition of a third of reserves was rated as poor to very poor and only half the reserves had wardens to assist in a watchdog role. Baseline plants and animals inventorying and a data management system is largely incomplete.
- Looking ahead to 2007- 08, FER will be working with Ministry staff to recruit new wardens where wardens want to step down or where we do not currently have a warden. (see Minister's letter of support in this issue for warden recruitment). There are also two regional area supervisor/ranger staff to fill.

Goal 2: To support the study of Ecological Reserves that builds understanding of ecosystem resiliency, ecological process and natural elements.

Activities:

- A science panel to advise on research priorities was formed (see Autumn *Log*) Evelyn Hamilton, Dr. Art Tautz, Dr. Jenny Balke and Dr. Adolf Ceska all rose to the occasion when asked to guide FER research priorities and respond to proposals. There was, however no call for new proposals this year as there were no surplus funds for research. Funding was continued to Tom Reimchen for his research into Kermodi bears and to Jane Watson for her work on marine ecology.
- Moving forward, we expect to develop strategic research priorities and to reach out to research organizations and to Ministry of Environment to make these known. We will continue to seek funding to support research of natural systems.

Continued on page 5

Ethnobotany of Western Spring Beauty

By Carla Rae Mellot

For two and half years I have been studying the ethnobotany of sunt'iny, known in English as western spring beauty (*Claytonia lanceolata*), as a Master of Science thesis project through the school of Environmental Studies at the University of Victoria. My research is based on a mountain called Chunoz Ch'ez (Potato Mountain) located within the Nemiah Aboriginal Wilderness Preserve, a park that centres around Chilko Lake, in the West Chilcotin region of British Columbia. This park was declared a protected area by the Tsilqot'in People of Xeni (also known as the Nemiah Valley Indian Band) on August 23, 1989 for the purpose of protecting the region from industrial activities such as commercial logging and mining.

I have heard from many people here that the sunt'iny on Potato Mountain were planted by a woman named Eniyud many years ago before she died and became a mountain to the west of Chunoz Ch'ez. Since then, thousands of Tsilqot'in people have climbed the slopes of Chunoz Ch'ez in the springtime to harvest the potato-like sunt'iny. Many Tsilhqot'in elders have fond memories of hiking up the slopes of Chunoz Ch'ez and some elders and their families continue to harvest sunt'iny to this day.

For the past sixty years, sunt'iny harvesters have shared the mountain with cattle, which graze the meadows of Chunoz Ch'ez from mid-July to mid-September. Many Tsilhqot'in elders and community leaders are concerned about the impact that this grazing is having on the sunt'iny and on its habitat. For my thesis project I have interviewed elders, sunt'iny harvesters and Chilcotin old-time ranchers and collected basic ecological data with the hope that this information will help local communities address the issue of cattle grazing on Chunoz Ch'ez.

An incredible number organizations, institutions and individuals, including the Friends of Ecological Reserves, have made this project a possibility. I am enormously grateful for their time, resources and insights.

Sechanalyagh! (Thank-you in Tsilhqotin).

Potato-like sunt'iny known in English as western spring beauty

CALENDAR

June 9
Enjoying the Last Wildflowers of the Season

Victoria Natural History Society – field trip to the Northwest area of Shawnigan Lake. View interesting native grasses and other late wildflowers such as Clarkia. Meet at Helmcken Park & Ride at 9:00 am to car pool. Bring a lunch and plenty to drink for an all-day outing. Contact: Agnes Lynn at, 721-0634 or thelynns@shaw.ca

June 15 - 17
Manning Park Bird Blitz

Contact Kelly Pearce at, (604) 869-3745 or kpearce@uniserve.com for more details.

September 7 - 12
Federation of B.C. Naturalists – Bamfield Camp

$900 fee covers return boat transportation from Port Alberni to Bamfield, all field activities and meals. Contact Anne Murray at, (604) 943-4460 or sanderling@uniserve.com for more details.

"President's Report".....continued from page 3

Goal 3: To support the development of a resilient and enduring science based reserve system.

- A paper was presented by Mike Fenger and Matthew Wheatley at the Parks and Protected Areas Research Forum in December on gaps in natural research benchmarks with a focus on representative watersheds in the mountain pine beetle affected forests in the interior of BC.
- Looking ahead to 2007- 08, we expect to be able to indicate where the biggest gaps in the Ecological Reserve system are found and to work with other interested groups and organizations on a strategy to fill these natural area benchmark gaps. To be successful this initiative of a network of natural research watersheds will need to involve government, industry, research organizations, conservation organizations and First Nations.

Goal 4: To raise awareness of the value of ecological reserves among targeted groups, including: local and provincial elected officials; public civil servants; and neighbours of ecological reserves.

- The FER website is a critical link to getting our information on ER out to a wider readership.
- The board outlined the findings of the State of Ecological Reserves Report in a letter to the Minister of the Environment (Minister Penner, (see the 2006 Winter *Log*).
- The Board met with the Minister in November and discussed how to address concerns raised by the report.
- The Minister responded to FER (see Minister Penner's response on page 1) and has agreed to recruit wardens.
- A letter of concern was sent to the Ministry of Environment regional staff regarding Vance Creek ER and the expansion on Silver Star that potentially impacts this reserve. (See letter on page 13)
- Looking ahead we hope to take the Minister or senior Environment staff on the Trail Island ER April 29th field trip.

Goal 5: To sustain a nurturing and effective organization that supports the maintenance and development of ecological reserves and concepts underpinning them.

- The new *Log* Editor, Louise Beinhauer, completed the Autumn and Winter Logs using a new format.
- Board held a retreat on Hornby.
- Field trips to Trial Island and Race Rocks were held.
- We will work with Ministry staff to implement the measures in the Minister's letter. Looking ahead, the Board is planning to visit some of the ERs on the east side of Vancouver Island with the wardens.
- We will have a board member as part of the team reviewing boundaries of the Grand Portage, a proposed Ecological Reserve within the Spatsizi area, near Gladys Lake ER.
- We will seek ways to fund raise and to increase membership in FER as well as securing research funding.

Two board members have stepped down this year. We all owe them a huge huge thank you for putting their shoulders to the wheel. Don Eastman served a two-year term as President and a two-year term as past president. Don provided continuity and has served FER admirably and will be missed. Thank you Don for your service. Saila Hull served as treasurer over the past three years and lent considerable much needed youthful energy and optimism to meetings. We miss you Saila.

We are pleased to have Garry Fletcher join the Board and bring his considerable experience as warden of Race Rocks. His skill in garnering research funds and projects and extending these with his award-winning web site will be greatly appreciated. Thank you Garry for stepping up at this time.

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

The Preservation of Genetic Diversity within Ecological Reserves

By Amy Wilson

Genetic variability gives populations the resources to adapt to changing circumstances, and has been shown to be important for population survival. Reserve design is increasingly adopting genetic considerations, but certain sites or designs targeting biodiversity may not preserve genetic diversity very well. The relative genetic value of a reserve can be assessed on the basis of either: i) the genetic uniqueness of individuals within a reserve; or ii) how much of the total possible genetic variation is represented within a reserve. Factors which should affect these values are reserve size and isolation.

If ecological reserves are too isolated, they will suffer from reduced numbers of immigrants. Reduced immigration will lower the amount of genetic variation, because small population sizes will lead to inbreeding and when individuals die, their genetic diversity will not be replaced.

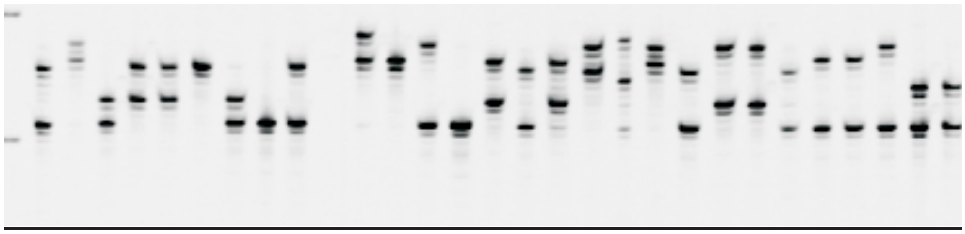
These genetic patterns also give us insight into population stability and whether dispersal is occurring between populations. It is well known that immigration augments declining populations and prevents extinction; this becomes very important if populations are small and extinction prone.

Song sparrows are an ideal study species because they do not move large distances, so should be more vulnerable to dispersal barriers. This makes them suitable models for many other species with limited mobility such as some mammals, reptiles and invertebrates. Song sparrows are also well studied in this area helping us better understand the patterns we see.

Song sparrow that was captured and released for this genetic study

Preliminary Results: Survey and genetic results suggest that islands in the Haro Strait are connected by dispersal, but are less genetically diverse than the mainland sites. This would suggest that although song sparrows can cross the water barriers, they seem to disperse further over land barriers. In our surveys, we found that song sparrows are also patchily distributed, leading to the expectation that with increased development the mainland populations will increasingly become island-like.

Implications and Future Directions: The support received by the Friends of Ecological Reserves enabled us to: i) understand how well islands preserve genetic variation compared to mainland sites, ii) understand how close reserves need to be to other reserves or protected areas in order to maintain connectivity between populations, and iii) establish a genetic baseline for song sparrows, enabling accurate detection of future declines. This work was particularly novel in that there is almost a complete absence of genetic data for many vertebrate species on Vancouver Island or the Southern Gulf Islands. This information will be further incorporated into habitat and population viability models, using the estimates of dispersal developed in this genetic survey. Protecting various types of species with differing characteristics is a challenging one and would be more efficient with increased data on population connectivity which can be attained through a mixture of genetic surveys and population monitoring.



Example of genetic data called 'microsatellites' that were used in this study. Each lane is a single individual and the bands are portions of their specific genetic fingerprint. Individuals which share a band are more closely related than those who do not share bands. The frequency of each band may be different across populations, allowing us to assign individuals to particular populations.

Ecological Reserves Lacking Wardens

By Eva Durance

The following list was compiled in late 2006 from issues of the *Log*, a listing for the Gathering, 2003, and recent updates from Parks Regional offices. If anyone is already a warden of any of these ERs, please contact your Regional Office as well as either Eva Durance (BC Nature) at edurance@vip.net or Marilyn Lambert (FER) at marilynlambert@pacificcoast.net so that records and contact information can be updated.

Many of the ERs below are in remote areas; however, we are looking at possible ways to have some of them monitored once a year. It is very important to have volunteer wardens for as many ERs as possible. Wardens act as eyes and ears for Park's staff and help gather data on the Reserve through observation, monitoring, and/or surveys.

Anyone interested in becoming a volunteer warden for one or more of the more accessible Reserves should contact the Parks and Protected Areas Head of their Region. Names and telephone numbers are listed below. Being an ER warden is very rewarding and is much appreciated by extremely busy Parks staff.

Vancouver Island:
Bill Woodhouse, 250-337-2407 or Ron Quilter, 250-337-2402
Lower Mainland:
Ian Pepper, 604-582-5302
Thompson:
Earl Sinclair, 250-371-6247
Kootenays:
Gary Glinz, 250-489-8591
Cariboo:
Maurice Lirette, 250-398-4540
Skeena:
Larry Boudreau, 250-847-7655
Omineca:
Rob MacDonald, 250-614-9909
Peace:
Andy Ackerman (Regional Manager), 250-787-3426
Okanagan:
James Hopkins, 250-490-8268

Vancouver Island & Gulf Islands Region
South:
- ER1, Cleland Island (Clayquot Sound W. of Tofino): no warden on record, spring 2005
- ER 139, Ladysmith Bog/Yellow Point Bog, (S. of Nanaimo): no warden on record, autumn 2005, but Del Ferguson had applied: check that he was confirmed as warden
- ER 90, Sutton Pass (W. of Port Alberni)
- ER 105, Megin River (NW of Tofino): no warden on record, winter, 2004

North:
- ER 119, Tahsish River (S. of Pt. McNeill): no warden on record, winter, 2004
- ER 123, Mt. Derby (S. of Pt. McNeill): no warden on record, winter, 2004
- ER 125, Mt. Elliott (S. of Pt. McNeill): no warden on record, winter, 2004
- ER 140, Misty Lake (NW of Pt. McNeill): no warden on record, winter, 2004
- ER 11, Sartine Island (part of Scott Islands): no warden on record, spring, 2004
- ER 12, Bereford Island (part of Scott Islands): no warden on record, spring, 2004
- ER 13, Anne Vallee/Triangle Island (part of Scott Islands): no warden on record, spring, 2004
- ER 14, Solander Island (W. of Brooks Peninsula): no warden on record, spring, 2004
- ER 120, Duke of Edinburgh (Pine/Storm/Tree) Islands (NW of Port Hardy): no warden on record, spring, 2004

Lower Mainland Region
- ER 2, East Redonda Island (North end of Georgia Str.)
- ER 143, Liumchen (S. of Chilliwack)

Thompson Region
- ER 131, Stoyoma Creek (near Boston Bar)

Kootenay Region
- ER 20, Mt. Sabine (North of Canal Flats)
- ER 21, Columbia Lake (East side of lake)
- ER 32, Lew Creek (East of Upper Arrow Lake)
- ER 33, Evans Lake (Valhalla PP)

Cariboo Region
- ER 36, Westwick Lake (South of Williams Lake)
- ER 70, Mt. Tinsdale (ESE of Barkerville)
- ER 53, Narcosli Lake (between Coglistiko and Baezaeko rivers) not on ER map

Peace Region
- ER 62, Fort Nelson River): no warden on record, spring 2006 (No mammal surveys)
- ER 50, Cecil Lake (NE of Ft. St. John): no warden on record, spring 2006
- ER 150, Rolla Canyon (near Dawson Cr.)
- ER 148, Kotcho Lake Islands (ENE of Ft. Nelson): no MP though said to be in process, no warden on record, spring 2006
- ER 147, Grayling River Hot Springs (NE of Muncho Lk.): no warden on record, autumn, 2006
- ER 80, Smith River (near junction with Liard River): no warden on record, autumn, 2006
- ER 47, Parker Lake (West of Ft. Nelson): no warden on record, spring 2006 (No recent surveys)

Continued on page 9

Threatened Alpine Grouse and Climate Change

By Bradley Fedy

Climate change is, arguably, the most important global environmental challenge facing society. We hear alarming predictions of melting ice caps and disappearing glaciers, but how will these events actually affect animal species? For some species, global warming results in earlier and longer breeding seasons, and greater reproductive success. For others species, it means a shift in the phenology of their prey and food is no longer available at the most critical stages of reproduction. Will species be able to adjust to changing climate? Will longer summers and warmer winters affect them negatively or positively?

For species that live in alpine areas, habitat quality ranges along a gradient from low elevation (low quality) to high elevation (high quality). Climate change is causing an upward shift of low elevation vegetation communities resulting in a decrease of available high quality alpine habitat. To predict the impacts of climate change on alpine species, biologists can compare the ecology of populations in high and low quality habitats.

Climate models predict an upward shift of vegetation communities for Vancouver Island. Therefore, the continuous snow-capped mountains of the central and northern regions of the island could eventually resemble the lower-elevation mountains around Port Alberni and along the Beaufort Range. As a biologist studying the threatened Vancouver Island white-tailed ptarmigan (an alpine grouse), I measured population performance (e.g. reproductive success, survival) in the Southern portion of Vancouver Island (along the Beaufort Range and outside Port Alberni) and in the more continuous, higher elevation Central and Northern portions of Vancouver Island. Ptarmigan in the Central portion of the island produced more young and had higher survival than their counterparts in the low quality Southern ranges. Higher population performance in the Central and Northern regions of the Island suggest that, for alpine species such as the white-tailed ptarmigan, climate change could result in decreased population performance and perhaps the extirpation of this species from Vancouver Island.

White-Tailed Ptarmigan (Photo by Mark Wong)

However, for these personable little grouse there is a small ray of hope amidst a fairly dire forecast. Historical data show that white-tailed ptarmigan have been present in the South island for most of the last century. My research on the DNA structure of Island populations also suggests that Vancouver Island white-tailed ptarmigan are quite resistant to the negative impacts of inbreeding; thus, allowing them to persist in relatively isolated pockets of suitable habitat for long periods.

Our goal as conservationists is to recognize these potential threats to our wilderness areas and employ our responsibility as land stewards to help mitigate the impacts. White-tailed ptarmigan will require the preservation of high-elevation habitats and low-elevation connecting corridors to survive our warming climate.

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

The Klaskish-East Creek Heritage Trail Project

By Krista Roessingh and Ingmar Lee

The Klaskish River Ecological Reserve (KRER) is located southwest of the town of Port Alice on the northwest coast of Vancouver Island, in Quatsino First Nation territory. The main feature of the reserve is the near-pristine estuary of the Klaskish River and adjacent alluvial forest, with its giant Sitka spruce trees, mossy hemlocks, and lush, bear-pleasing salmonberry swales. The Klaskish estuary has formed at the upper end of Klaskish Basin, a steep-walled lagoon connected to Klaskish Inlet by a narrow channel.

Until the end of the 19th century, the Klaskish Inlet area was the home of the Klaskino people, whose remaining "footprint" is seen only in their shell middens, Culturally Modified Trees (CMTs), and trails now maintained by wildlife. A relic trail connects the KRER to an ancient village site surrounded by the Brooks Peninsula Provincial Park by way of the unprotected, but undamaged, East Creek estuary. We wanted to investigate the potential impact to the KRER of re-establishing this heritage trail. This trail restoration project was conceived partly as a means of garnering a measure of protection for the remote and beautiful East Creek watershed, home to significant runs of all six species of salmon as well as other wildlife.

Since the KRER was designated in 1990, the upper Klaskish and East Creek watersheds have been severely impacted by clearcut logging and associated road-building. Before the start of logging operations, the KRER was accessible only by floatplane or by boat. Although it is still very remote from permanent settlements, the reserve is now within a few kilometres easy walk of the Klaskish Mainline.

Along the south side of the lower Klaskish River, we found a trailbed running parallel to the river bank, which bore evidence of bear, wolf and deer use. An old grown-in logging road running inland from the trail also showed signs of bear use, but as a trail route it would be less disruptive to bears fishing along the river and would avoid the more sensitive alluvial ecosystem that we surveyed.

A GIS analysis done previously by Krista Roessingh, based on logging plans for the adjacent East Creek watershed, indicated that riparian protection was insufficient based on current legislation and that proposed Wildlife Habitat Areas would be fragmented by roads. Without making assumptions about the effects of logging in the Klaskish on water quality, it was observed that the clearcuts in the Klaskish are large and on very steep slopes and must have some sediment losses. We feel that it is important that changes to the KRER brought by logging, road development and use, and a potential increase in foot traffic be actively monitored, and that awareness of the KRER be raised by means of boundary signage. We hope to revisit the area this summer as volunteer wardens of the KRER.

We gratefully acknowledge the financial support of the Friends of Ecological Reserves, and the Quatsino First Nation for permission to study this part of their territory.

"ERs Lacking Warden".....continued from page 7

- ER 62, Fort Nelson River (N. of Fort Nelson and Muskwa rivers

Omineca Region

- ER 91, Raspberry Harbour, Williston Lake (NW of Finlay Forks): no warden on record, autumn, 2006
- ER 107, Chunamon Creek (NE of Germanson Landing)
- ER 152, Ospika Cones (ENE of the N. end of Williston Lk.): no warden on record, autumn, 2006
- ER 46, Sikanni Chief River Headwaters
- ER 71, Blackwater Creek (NW of Mackenzie)
- ER 85, Patsuk Creek (N. of Mackenzie)

Skeena Region

- ER 57, Chickens Neck (N. of Dease Lake)
- ER 58, Blue/Dease Rivers (W. of Lower Post)
- ER 59, Ningunsaw (SE of Bob Quinn Lake)
- ER 149, Portage Brule Rapids (SE of Watson Lake): : no MP, no warden on record, autumn, 2006
- ER 80, Smith River (near junction with Liard River): no warden on record, autumn, 2006 (MP?)
- ER 68, Gladys Lake (in Spatzizi PP)
- ER 102, Charlie Cole Creek (S.of Teslin Lake)
- ER 133, Gamble Island (E. of Pr. Rupert)
- ER 146, Catherine Creek (S. of Hazelton)
- ER 149, Portage Brule Rapids (SE of Watson Lake): no warden on record, autumn, 2006
- Tow Hill, NE Graham Island (Haida Gwai)
- Rose Spit, NE Pt. of Graham Island (Haida Gwai)

Okanagan Region

- ER 27, Whipsaw Creek (SW of Princeton; current warden seeking replacement)

The Story of the Kwakiutl Sword Fern

By Patrick Williston

In 1990, botanist David Wagner described a fern new to science, the Kwakiutl sword fern (*Polystichum kwakiutlii*); a species endemic to British Columbia's remote northern coast (Wagner 1990). The fern was described from a single specimen collected in 1934 by Arthur York, a postmaster stationed in Alice Arm. The specimen is housed at the University of British Columbia herbarium.

In the 1970s, D.H. Wagner prepared a monograph of the genus *Polystichum* in western North America. In his thesis, he discussed the ancestry of the Anderson's sword fern, a tetraploid with 82 chromosomes (Taylor and Lang 1963). Using a model that had been developed in European fern research (Sleep and Reichstein 1967), Wagner hypothesized that Anderson's sword fern was the product of two species that had crossed, followed by chromosome doubling (a stable allotetraploid). Based on shared characteristics, Wagner hypothesized that common sword fern (*Polystichum munitum*) was one diploid parent (41 chromosomes), and that the other had not yet been found (Wagner 1976).

Then Wagner encountered the Alice Arm specimen in the UBC herbarium; it appeared to fit the profile of the missing ancestor. Unfortunately, lacking fresh material, it was not possible to determine the chromosome number. If the plant had 41 chromosomes, it could be the missing ancestor, but if it had 82, it would be an aberrant form of Anderson's sword fern. Without chromosomal evidence, a strong argument could not be made for the putative new species, and so Wagner delayed publishing a description.

Kwakiutl sword fern (*Polystichum kwakiutlii)*

As an authority on the genus, Wagner was asked to prepare the treatment of *Polystichum for The Flora of North America*. According to the guidelines set by the editors, he could not include a discussion about the ancestor of Anderson's sword fern unless it was accepted as a published species. In 1990, Wagner described the putative ancestor in the American Fern Journal as a new species, Kwakiutl sword fern (*Polystichum kwakiutlii*), recognizing a west coast aboriginal group, the Kwakiutl. The specimen, however, was collected from an area belonging to an unrelated aboriginal group, the Nisga'a (the Kwakiutl live on Vancouver Island, 800 km south).

Kwakiutl sword fern was differentiated from Anderson's sword fern on the basis of a leaflet-shape and microscopic characters (Wagner 1990). In 2001, the Canadian Endangered Species Conservation Council recognized the Kwakiutl sword fern as one of Canada's rarest plants. This demonstrates the integral role taxonomy plays in plant conservation. If a valid taxon, Kwakiutl sword fern truly must be Canada's rarest fern, or could possibly be extinct. If a synonym of Anderson's sword fern, then this collection represented variation within a western endemic that is not considered threatened, at least in the coastal mountains (it is rare in inland British Columbia).

A recent examination of the type specimen using electron microscopy revealed that microscopic features used to describe Kwakiutl sword fern were indistinguishable from

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Anderson's sword fern. This discovery stimulated further investigation to determine whether or not the two species were synonymous.

Our research seeks to determine, using microscopic, morphometric, and molecular comparisons, whether the Kwakiutl sword fern fits within the range of variation demonstrated by Anderson's sword fern. As a part of this investigation, we travelled to Alice Arm and discovered plants that matched the morphology of 1934 specimen.

The research is ongoing. We are steadily making progress and continue to work on molecular analysis. We are also preparing a final paper summarizing our work.

We are very grateful for the support from the Friends of Ecological Reserves and will keep you informed of our progress.

References

Canadian Endangered Species Conservation Council (CESCC). 2001. Wild Species 2000: The General Status of Species in Canada. Ottawa: Minister of Public Works and Government Services Canada. 48 p.

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Wagner, D.H. 1990. Polystichum kwakiutlii sp. nov., the elusive bipinnate ancestor of *P. andersonii.* American Fern Journal 80:50-52.

Discovering a match to the type specimen
L to R: Paula Bartemucci, Chris Sears, Patrick Williston

FER Board of Directors Visit Comox Bluffs and Bowser ERs

By Evelyn Hamilton

Chris Pielou (ER Warden) guided a number of FER Board of Directors on a trip to see the Comox Bluffs Ecological Reserve on May 6, 2007.

We drove to the parking lot near the ER and then hiked the short distance into the reserve. The first part of the trail wound through Douglas-fir forest in which some blow down from last winter's storms was evident. The trail then led to the open mossy cliffs. We hiked a short distance along the bluffs.

This Ecological Reserve features a number of species that are unusual on the coast, being more common in the dry interior of the province. *Arctostaphylos columbiana* (hairy manzanita), and the hybrid *Artostaphylos media,* which is a cross between *Arctostaphylos columbiana* and *Arctostaphylos uva-ursi* (kinnikinnick), were scattered along the slope. A few large *Juniperus scopulorum* (Rocky Mountain juniper) trees were evident along with a number of smaller specimens. We located *Polystichum imbricans* (narrow leaved sword fern) as well as *Aspidotis densa* (Indian's-dream fern), *Cryptogramma crispa* (parsley fern), *Asplenium trichomanes* (maidenhair spleenwort) and a few fronds of *Botrychium* (moonwort) and *Selaginella wallecei* (Wallace's selaginella).

.....continued on back page

Garry Fletcher, Warden of Race Rocks ER Guest Speaker at Friends' AGM

By Louise Beinhauer

The annual general meeting of the Friends of Ecological Reserves was held on March 2, 2007 in the David F. Strong Building at the University of Victoria.

President, Mike Fenger called the meeting to order and last year's minutes were approved. He then introduced and thanked all of the current directors for their hard work over the past year. Mike gave his report on the past year's activities and achievements. (Please see the President's Report on page 3 for details.)

Our past president, Don Eastman as well as our treasurer Saila Hull were not able to stand as board members for the coming year. Garry Fletcher, Race Rocks Ecological Reserve warden was nominated as a new board member. Welcome Garry!

Following the business portion of the AGM, our guest speaker, Garry Fletcher gave an in-depth presentation on the various programs and research being carried out at Race Rocks ER. Garry outlined the Tidal Turbine Generator project at Race Rocks emphasizing the collaborative process with Pearson College, EnCana and Clean Current Power Systems to get this project up and running. The Tidal Turbine Generator project garnered national prominence with Prime Minister Stephen Harper's visit on January 19, 2007 to announce the ecoEnergy Renewable Initiative. Along with the power generated by the turbine, solar energy panels were recently installed at Race Rocks. These renewable energy initiatives will provide valuable data over the next few years. Garry emphasized that there has been no detrimental impact to marine mammal populations as a result of the turbine but close monitoring with the aid of an underwater video will be ongoing.

FER President Mike Fenger (L) and guest speaker Garry Fletcher, Race Rocks Ecological Reserve Warden prepare to start the FER annual general meeting

Garry continued his presentation with a fascinating overview of UVic anthropology student Darcy Mathews' work on the Straits Salish peoples' burial cairns that are scattered over the island. The recent hurricane in November actually moved boulders from the cairns! Garry entertained us with a story about a housewife from England who uses the videocam set up at Race Rocks almost daily. She creates and emails still photos from some of the videoclips which resulted in the recording of a rare species of bird for this region.

Garry also detailed the deteriorating condition of the lighthouse itself and how it is hoped that money will be found to restore the structure.

For details on all of these projects and more being carried on at Race Rocks Ecological Reserve, please visit their website at: http://www.racerocks.com/

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

Silver Star Development Causes Concern for Vance Creek Ecological Reserve

FRIENDS OF ECOLOGICAL RESERVES
BOX 8477, VICTORIA, B.C. V8W 3S1
CANADA

Drew Carmichael Feb 3 2007
Regional Manager Southern Interior Region, Penticton
Ken Cunningham
Manager Water Stewardship Division
Southern Interior Region (Penticton)

Re: Vance Creek Ecological reserve and expansion plans at Silver Star.

Friends of Ecological Reserves (FER) is organization of volunteers that has worked closely to support Ministry staff to safeguard the system of ecological reserves. Volunteers act as additional eyes and ears to Ministry Staff to ensure responsible stewardardship of BC Ecological Reserves, see http://www.ecoreserves.bc.ca/

We are writing to you to express our concern regarding possible impacts on the Vance Creek Ecological Reserve resulting from developments by Silver Star. We were alerted to this situation by the Vance Creek warden.

Attached is the purpose statement for Vance Creek Ecological Reserves, signed in February of 2006 for government by Nancy Wilkin and Drew Carmichael. The primary purpose of the 47-hectare ER is to "*protect a portion of the Douglas Fir ecosystems and the riparian values associated with Vance Creek*" . We draw this statement to the attention of the Water Stewardship Division staff due to reports that there are major developments, apparently creek diversions and water licenses, that are under review to assist the expansion of Silver Star that involve ecological changes in Vance Creek watershed. Our concern is that expansion involving changes to Vance Creek water flow may prevent maintenance of the ecological values in the ER. .

In a recent meeting with the Minister Penner, FER received assurances that,
"*This ministry is fully committed to ensuring ecological reserves are managed to protect the values for which the areas were designated, and to ensure use is consistent with direction and purpose outlined in the Ecological Reserve Act and Ecological Reserve Regulations." (Letter from Minister Penner, dated January 24th 2007).*

FER does not know the details of the expansion plans by Silver Star but we write to express our concern, because it is our understanding that February 5th, 2007 is the deadline for submitting comments on the water license applications above the ER. We strongly opposed to licensing which adversely impacts the approved purpose of this ER.

Mike Fenger
President of Friends of Ecological Reserves.
cc.
Nancy Wilkin Assistant Deputy Environmental Stewardship Division
Jim Mattison Assistant Deputy Water Stewardship Division

Trial Island Field Trip

By Marilyn Lambert

Sunday morning dawned bright and sunny for our annual outing to Trial Island Ecological Reserve. The Lamberts and Don Mais launched the zodiacs at Cattle Point for the ten-minute run around to the meeting place. Rounding the golf course point, we felt the full blast of the strong westerly wind and the cold spray blowing off the cresting waves. A hardy group of plant enthusiasts waited at the beach and despite warnings of a rough, wet ride, all were keen to go. Three boats were put to work and in short order tranferred everyone safely to the island.

First boat load bound for Trial Island

Following a brief talk on ecological reserves and Trial Island, Adolf and Oluna Ceska, our guides for the day, led us on a search to find the rare plants that are the reason Trial Island has been set aside as an Ecological Reserve.

The camas bloom was exquisite – vast meadows interspersed with the rare Bear's Foot Sanicle (*Sanicula arctopoides*), California buttercup (*Ranunculus californicus*) and Golden paintbrush (*Castilleja levisecta*). We found a small patch of Purple sanicle (*Sanicula bipinnatifida*) and the delightful Naked broomrape (*Orobanche uniflora*) peeked out from under its host, Spring gold (*Lomatium utriculatum*).

Looking for lupines

Meredith Dickman, one of the lightkeepers on Trial Island informed us that the winds were gusting to 35 knots, so the boat operators decided it would be best to head home early. So, with a number of wet bottoms later, our adventurous group was safely transported back to the mainland.

We are deeply indebted to Adolf and Oluna Ceska who volunteer their time every year to come on our annual outing and share their knowledge of and joy for the rare plants on Trial Island.

FRIENDS OF ECOLOGICAL RESERVES MEMBERSHIP FORM

Box 8477 Stn Central, Victoria, BC V8W 3S1

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Board of Directors Visit Comox Bluffs ER

.....continued from page 11

This site is reported to support the northern most populations of *Lomatium utriculatum* (spring gold). This plant and three other *Lomatium* species are the subject of a study by a young graduate student from Indiana, Travis, who caught up to us on our tour.

On the way back down to Victoria, the group stopped at the Bowser E.R. where one of the wardens, Maggie Little led us on a tour of the reserve. Some illegal logging had been reported in the ER (see Winter 2006 *Log*) and Parks staff have now trenched the access road to prevent future incidents. The reserve features some large old Douglas-fir trees.

FER group at Comox Bluffs. Back, L to R: Emily Gonzales, Mike Fenger, Helen Fletcher, Peggy Frank, Maggie Little. Front: L to R: Evelyn Hamilton, Garry Fletcher & Chris Pielou

The Log

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