

The Log

Autumn 1999

FRIENDS OF ECOLOGICAL RESERVES NEWSLETTER

Bogs and the Economics of Carbon

The recent issue concerning the uses of Burn's Bog has rekindled an interest in the ecology of bogs, as well as illustrated the potential lunacy of building earthquake resistant structures on a 4,000 hectare waterbed. Global wetlands play an enormous role in the regulation of environmental stability, in addition to providing habitat to numerous rare and endangered species of plants and animals. Participation of wetlands in the global carbon cycle is perhaps one of the most intriguing aspects of bog ecology. By building a theme park on Burn's Bog, Canada potentially could abdicate its role in the recent international agreement on the reduction of greenhouse gas emissions.

Swamps, marshes, fens and bogs are wetlands. Swamps are dominated by trees. Grasses are the dominant plant form in marshes, while sphagnum mosses form the bulk of fens and bogs. Fens are fed by streams. Bogs obtain their moisture from rainfall. Peat is decaying vegetation. In other words, when we look at Burn's Bog, we see before us a



huge pile of decaying, soggy acidic plant material that has taken at least 5,000 years to accumulate.

Burn's Bog technically is called a "raised bog" and is quite a rarity. It is the result of a long period of ecological succession. Initially, grasses and sedges peacefully grew on a sandbar in the Fraser River. The dead material from the grassland gradually accumulated to form peat. Water was retained and became acid from decay. Sphagnum moss, which is one of the most tolerant of plant forms, came to dominate the flora as the habitat became unhealthy for most other types of plants. The surface of the bog gradually rose into the atmosphere as new moss grew on top of old moss and peat.

Back to global warming. Many of us remember a line drawing of a cow in a field eating grass. The drawing always occupied a prominent place in our grade nine science texts. Few of us remember all of the details of the little arrows which surrounded the cow and drawing. When we, as animals, digest vegetation

or other animals, we emit carbon dioxide, water vapour and heat. During the process of photosynthesis, plants use sunlight to convert that carbon dioxide and water back into vegetation. Plants are said to "fix" carbon during this process. For this reason, living, as well as dead, vegetation is called a carbon "sink".

In a perfect world, the total amount of carbon dioxide given off by plant and animal respiration would equal that fixed during photosynthesis. The carbon dioxide content of the atmosphere would remain constant from one year to the next. However,

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The Log

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The Log is published twice 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 February 1, 2000.

Editor

Tom Mace
Nichola Gerts

Design and Production

Indigo Sky Graphic Design

Directors

Cheryl Borris, *President*
Lynne Milnes, *Recording Secretary*
Pen Brown, *Membership Secretary*
Mary Rannie, *Treasurer*

Catherine Ascah
Syd Cannings
Don Eastman
Bristol Foster
Trevor Goward
Evelyn Hamilton
Briony Penn

Contributors to this edition were:

Tom Mace
Cheryl Borris
Pam Janszen
Harvey Janzen
Lynne Milnes

Friends of Ecological Reserves
PO Box 8477 Stn Central
Victoria BC V8W 3S1
ecoreserves@hotmail.com

PRESIDENT'S MESSAGE

As 1999 draws to a close, I am pleased to bring you another issue of *The Log*. I apologise for its tardiness – our editor Tom Mace has been ill for several weeks and was unable to complete the production of this issue. He is now on the mend and I am sure that you join me in wishing him a speedy recovery.

With this issue of *The Log*, a new editorial practice of featuring specific ecological reserves begins. ER 15 on Saturna Island was chosen for this issue because of Pam and Harvey Janszen's recent scholarly work that has been funded, in part, by the society. You will read in this issue of the results of their research and, if you attend the lecture following our Annual General Meeting in February, you will have an opportunity to hear Pam speak and to meet her. I hope I will see you there! With future issues, ecological reserves in other regions of the province will be featured.

Tom Reimchen and Leanna Warman's work are also reported in this issue. Both Tom and Leanna received research funds from the society this past year as well.

FER has also committed to providing more information about the warden system to our membership. Lynne Milnes provides you with an overview of the Warden Program. Wardens are dedicated volunteers who manage and protect ecological reserves throughout BC. Sadly, approximately one third of ecological reserves are without wardens, and thus are open to unlawful behaviours and other abuses. If you are interested in becoming a warden, or want to know more about the warden program, I invite you to make inquiries to us or to your local BC Parks manager.

This year, FER joined 1200 volunteers in the Capital Region on a sunny Saturday in September to pick up marine debris on the beaches of the Trial Island ecological reserve. The International Coastal Cleanup is an annual event and so we have issued a challenge to BC Parks staff and local wardens to participate in a larger effort in September 2000. If you wish to know more about how you can participate in your communities next fall, please write to me for more information. While this is an annual event, it doesn't mean that waterway cleanups cannot happen on a regular basis. The cleanup team for Trial Island was amazed that they found so much garbage and wished that they had had the time to do more work in other local ecological reserves. Next year!

Other news is that FER has received the green light from the BC Gaming Commission to proceed with a raffle for Fenwick Lansdowne's beautiful painting of a meadowlark. The painting was done to celebrate the first annual Meadowlark Festival in the Okanagan and is featured in the centre of our botanical placemat "The Interior Grasslands". Tickets go on sale (\$5 each, in books of 10) on January 20 and the draw will take place on the May long weekend in Penticton, at the Meadowlark Festival. You will find an order form in this issue (page 11) if you wish to place an order for tickets. Only 1200 tickets will be sold.

In this issue you will also find your membership renewal form for 2000. Dues are renewable on a calendar year basis, so please take a moment to return this form to us with your cheque. Your membership and charitable donations are absolutely vital to keeping the society working to protect the special places that we call ecological reserves. We receive no other subsidies. Our society is unique in British Columbia and you are special people for wanting to be part of it. No other group is specifically concerned with supporting the ecological reserve system in BC.

With my best wishes for a good year ahead,

Cheryl Borris, President

The Great BC Beach Clean-Up '99

September 18th. Trial Island ER.

9:30 a.m. It's hot and sunny and we have about a 4.0 tide. FER volunteer Pauline Barnes, warden Marilyn Lambert and I are here to clean up the beaches. We are part of a global initiative called the International Coastal Clean Up, sponsored by the US Centre for Marine Conservation (CMC), which takes place on the third Saturday of every September. In BC, the Cleanup is sponsored by Canada Trust Friends of the Environment Fund and the Vancouver Aquarium Marine Centre.

Part of the work we are here to do requires sorting and categorizing the trash we find as to types and amounts, and recording this information on data cards. The data cards are then returned to the CMC, which processes and compiles the information into a detailed report that registers the pulse of the worldwide marine debris problem. This report is used to evaluate the world's progress in combating marine debris and to monitor the effectiveness of legislation and waste reduction programs.

As I sort and count items, I reflect on the problem of plastic. Plastics, lightweight and durable, still account for more than 50% of all marine debris. Plastic pellets and plastic bags are often mistaken for real food by marine animals. Ingested plastics can cause internal injury, intestinal blockage, and starvation. Thousands of seals, sea turtles, whales, and birds die every year from entanglement in monofilament fishing line, strapping bands, six-pack holders, and other plastic debris. Marilyn reminds us as to how plastic can be a menace to navigation, fouling propellers, blocking seawater intake valves, and causing accidents.

C. Borris photo



Volunteers Pauline Barnes and Marilyn Lambert

As the morning progresses and as our crew fill their buckets with trash, they come and dump it at my feet, where I count and tally it. By 11 a.m., we have collected 906 pieces of garbage! Of these, 643 items, or 71%, are plastics. Hard plastic (bottles and bottle lids/caps of various kinds, pieces of rope, drinking straws, among other things) accounts for 364 items. Foamed plastic (largely, pieces of styrofoam of all sizes) accounts for 279 of the total number of plastic items.

As ERs are not public places, we do not encounter the sort of garbage on this island's beaches that we would generally come across. But, wine corks, bits of rope, fishing floats, bait trays and beverage bottles set the tone of our findings. When we leave, the zodiac laden with our haul, the beach looks much the same as when we arrived. Only we know that it is much cleaner!

Next year, we would like to be more organized and work at cleaning up all of the marine ecological reserves. So, if you didn't get around to being part of this year's cleanup, watch for the International Coastal Clean up coming to a beach near you a year from now! ■

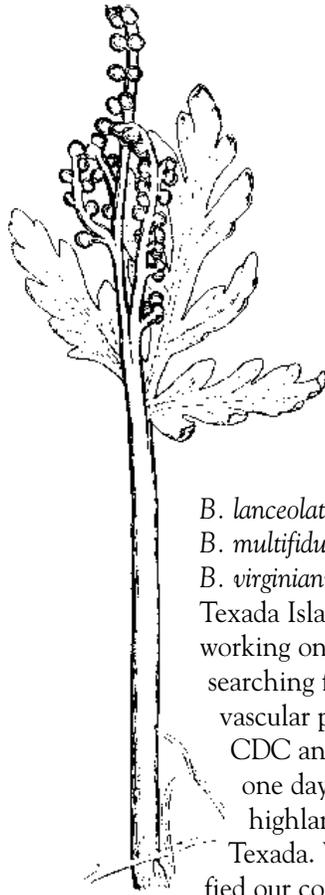
Cheryl Borris, CRD Clean-up Coordinator

PLASTIC	
Food Bags/wrappers	31
Other bags	2
Pop/beverage bottles	7
bleach/cleaner bottles	4
milk/water jugs	3
oil/lube bottles	3
other bottles/jars	4
Buckets	3
Bottle caps/lids	39
cigarette butts	6
cigarette lighters	2
cups/utensils	7
fishing lures/floats	2
fishing nets	1
misc. pieces	147
rope	54
sheeting—more than 2 feet	4
6-pack holders	3
strapping bands	3
straws	12
tampon applicators	3
toys	4
vegetable sacks	3
other plastic—piping	1
other plastic—cellophane	13
other plastic—food containers	3
FOAMED PLASTIC	
buoys	6
cups	1
meat trays	6
packaging materials	3
misc. pieces	263
GLASS	
beverage bottles	2
light bulbs	2
misc. pieces	230
other glass—pottery/china	2
RUBBER	
balloons	4
condoms	1
METAL	
Bottle caps/lids	1
aerosol cans	1
misc. pieces	5
wire	1
other metal—foil	1
PAPER	
cartons	3
misc. pieces	4
WOOD	
other woods—float	1
other woods—wine corks	4
CLOTH	
clothing/pieces	1

Rare Fern Research on Texada Island

The Ophioglossaceae is a family of ferns with an unusually high number of rare species in British Columbia. The BC Ministry of Environment's Conservation Data Center (CDC) currently tracks 9 of the 16 species known to occur in B.C. including *Botrychium ascendens*, *B. boreale*, *B. crenulatum*, *B. hesperium*, *B. montanum*, *B. paradoxum*, *B. pedunculatum*, *B. simplex*, and *Ophioglossum pusillum*. Most species show narrow habitat specificity and populations of the uncommon species rarely exceed 20 individuals. Several species often share the same habitats, creating associations or mixed populations. Because their populations are generally small, sparsely distributed and difficult to locate, it is fortunate for field biologists that they form these associations. Preferred habitats include vernal pools, meadows, river and lake shores, old forests, old trails and old logging roads. Regions particularly rich in species of Ophioglossaceae have been called "hotspots". It is not known why certain regions demonstrate high diversity of Ophioglossaceous species. However, once located, the regions provide excellent opportunities for research. By characterizing the ecological attributes and associated plants of these "hotspots", it may be possible to ascertain whether these species might occur elsewhere in the province. These "hotspots" should be considered potential ecological reserves or for other protected designation of parsimonious conservation.

In June, 1997, Pam Janszen, Marie Fontaine and I located a number of sites for *Ophioglossum pusillum*, *Botrychium ascendens*, *B. simplex*,



B. lanceolatum,
B. multifidum and
B. virginianum on
Texada Island. We were
working on contract,
searching for listed
vascular plants for the
CDC and spent only
one day on the
highland plateau of
Texada. We identi-
fied our collections

before a return trip in July and, on checking the literature on *Botrychium*, I discovered, as noted above, that W.H. and F.S. Wagner had described a number of new species from North America and that these species tended to grow in association and were mostly rare. On our return in late July, we searched for more sites but, by that time, some of the areas that we had found in June had been grazed and the season had passed on dryer sites. We did locate several more sites for *Botrychium simplex* and one more each for *Botrychium ascendens* and *Botrychium lanceolatum*. However, in total we located 21 sites for *Ophioglossum pusillum*. This species seems to be unaffected by herbivores and was invariably present on the sites where we found *Botrychium* species.

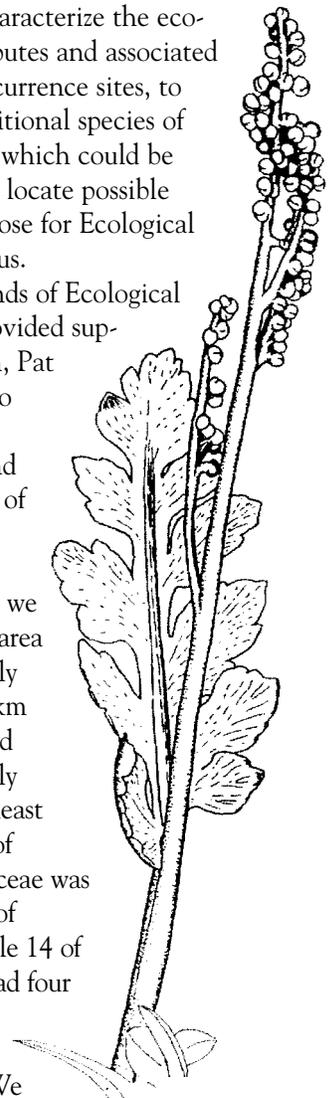
There are only six other locations for *Ophioglossum pusillum* known in BC On the highland plateau of Texada Island, however, appropriate habitat is widespread and numbers of individuals are unusually large.

Similarly, *Botrychium simplex* is known from ten other locations in the province and *Botrychium ascendens* is known from nine. Each of these populations is very local but, on Texada Island, we found the above species of Ophioglossaceae over a range of 42 km. The highland plateau on Texada Island is a series of low, rolling basalt hills and ridges with many creeks, swales and boggy wetlands. Drainage is to the steep edges of the plateau either southwest or northeast and the land between is dry Douglas-fir Lodgepole Pine forest.

Pat Williston, a graduate student at UBC working on Ophioglossaceae in British Columbia, contacted Pam and I this spring and proposed that we visit Texada Island to do a dedicated survey to add to our knowledge of the distribution of the species found, to characterize the ecological attributes and associated plants of occurrence sites, to look for additional species of *Botrychium* which could be present, and locate possible sites to propose for Ecological Reserve status.

The Friends of Ecological Reserves provided support for Pam, Pat and myself to return to Texada Island in early July of this year.

Working for five days, we searched an area approximately 14 km by 3 km and inspected approximately 90 sites. At least one species of Ophioglossaceae was found at 56 of the sites while 14 of these sites had four or more species of the family. We



found 11 sites for *Botrychium ascendens*, 24 for *Botrychium simplex* and 43 for *Ophioglossum pusillum*, including several sites where each of these was very abundant. In addition, we located *Botrychium lanceolatum* at five sites and *Botrychium pinnatum*, a species new for Texada Island, at four sites. The more common species, *Botrychium multifidum* and *Botrychium virginianum* were found to be very widespread in the area as well.

All data required for a CDC Field Observation Form were recorded at each site for each species of Ophioglossaceae, including number of individuals, as well as a description of the habitat and associated vegetation. Pat permanently marked a number of individuals at several of the sites for future relocation.

Other CDC-listed vascular plants in the area include *Malaxis monophyllus* var. *brachypoda* which was located at 14 sites, *Senecio macounii*, which is abundant and widespread on Texada, and *Glyceria leptostachya*, located at one site. *Clavea rosea*, a fungus not previously known from western North America was also located at several sites.

I have informed BC Parks, the Conservation Data Center and the Ministry of Forests of the preliminary results of our survey and I have initiated discussion with them on appropriate designations that may be applied to some of the sites. ■

Harvey Janszen. Saturna Island

Harvey Janszen lives on Saturna Island with his wife Pam Janszen. He has been the warden for ER #15, Saturna Island, since the inception of the volunteer warden program. He works on contracts with the Conservation Data Center.



“Bogs and the Economics of Carbon” continued from page 1

few of us live in a perfect world. We live in a modern human population with its demand for electricity, transportation and heat. These items usually require the consumption of hydrocarbons, i.e. coal, petroleum and natural gas. Hydrocarbons contain carbons that were fixed and removed from the atmosphere thousands of years ago. By consuming these fuels, we are adding old carbon dioxide as well as new carbon dioxide into the atmosphere. The plant biomass of the world is not sufficient to consume this extra gas and, as a consequence, carbon dioxide levels are on the increase. By some baroque law of physics, increasing levels result in less heat being dissipated into space and therefore our average air temperature is on the increase. In order to reduce the rate of global warming we must either reduce gas emission or increase the rate of carbon fixation. One of the things that we do not want to do is reduce the plant biomass that is working away to scrub carbon dioxide from the air. Wetlands contain almost twice as much fixed carbon as is contained in all of the world's forests. A quarter of the world's wetlands are in Canada and 90% of these are peat bogs. Our wetlands play a significant and valuable role in trapping atmospheric carbon dioxide out of commission and storing it for the next few thousand years as an organic form of carbon. That is something to think about the next time that you drive through Delta or have cranberry sauce with your poultry. ■

Tom Mace

Ecological Reserves Volunteer Warden Program

*If you want to be happy for a night—
get drunk,
If you want to be happy for a weekend—
get married,
If you want to be happy for a week—
win the lottery,
If you want to be happy for the rest of
your life—
become an Ecological Reserves
volunteer warden.*

This modified Chinese proverb became the rallying cry for the recruitment of the first volunteer wardens of Ecological Reserves at the AGM of the Federation of BC Naturalists in Castlegar held May 1980. Naturalists answered the appeal of the 3-person Ecological Reserves Unit based in Victoria and 13 people volunteered right away. Within 6 months that number had doubled. A year later there were 42 wardens monitoring over one-half of the existing Ecological Reserves scattered throughout British Columbia.

The warden program was proposed a year earlier by Trudy Carson, the biology technician and assistant to the director Dr. Bristol Foster and botanist Dr. Hans Roemer. Trudy modeled the warden program on the existing archaeological sites warden program of the Heritage Branch. With a quarterly newsletter, an annual meeting in Vancouver and constant contact with letters and by phone (this was pre-e-mail), the volunteer wardens were to be the ER Unit's link to all parts of the province. It was a cost effective (i.e. cheap) way for the government to manage Reserves without hiring staff. I was hired prior to the meeting in Castlegar to establish a system of wardens.

Meanwhile Bristol, Hans and myself continued to push for the creation of new Reserves (Trudy had left to finish her studies and do field research). With the help of the

volunteer wardens we were kept aware of habitat at risk and the discovery of rare plants and animals that required protection. In the 3 years I worked as the warden coordinator there were on-going provincial campaigns to save South Moresby, the Khutzeymateen, the Stein River Valley, the Valhalla Wilderness, the Tahsish River, the tall trees at Nimpkish, the Vancouver Island Marmot colony at Green Mountain, Meares Island, and Spruce Lake, to name just a few. Most of these areas involved on-going public involvement meetings which members of the ER Unit tried to attend. Wardens played an important part in representing regional interests to public officials and in keeping the ER Unit informed about local conservation concerns.

The whales at Robson Bight would not be protected today without the tireless efforts of Jim Borrowman, (the warden of Stubbs Island) and his friends in Telegraph Cove. The students at Pearson College contacted the premier and the appropriate ministers weekly until Race Rocks was declared an Ecological Reserve. Mary Mack and the naturalists near Enderby sloshed through the Mara Meadows fen time and time again, to survey and map the rare orchids in order to let the world know that they deserved protection. In other words, wardens were a critical part of the political process to establish and maintain Ecological Reserves.

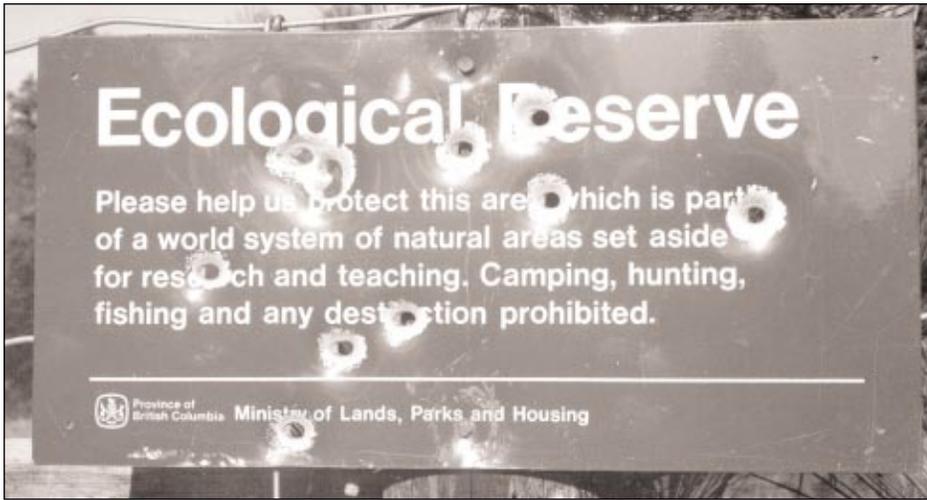
Once a Reserve was declared, wardens played an even more important role in their management. Wardens posted signs, picked up garbage, led school trips where applicable, and generally educated the local community about the Ecological Reserves Program and the reasons for the establishment of their Reserve(s). Enid Maynard, the warden for the

Summerland Ecological Reserve, talked to the golfers and other skeptical land users in the area about the need for conserving representative habitat. These were new concepts to many people but the wardens did not give up. They developed a personal attachment and sense of responsibility toward their Reserve(s). They also kept records of the plants and animals they observed.

Harvey Janszen identified the flora of the Saturna Island Ecological Reserve. Dr. Tom Reimchen studied the relationship between stickleback fish and loons at the Drizzle Lake Ecological Reserve on the Queen Charlotte Islands. Not all wardens were scientists and yet each one made a valuable contribution. Frank Stoney, a fisherman, kept record of all the seabirds he sighted on his trips up and down the coast. Our own FER board member Pen Brown was the



L. Milnes photo



lighthouse keeper for Pine, Storm and Tree Islets, the most remote lighthouse on the west coast, and his natural history observations are part of the baseline data for that Reserve.

As time passed Reserves, which at one time had been isolated representative habitats, became islands surrounded by a sea of development. Fencing became a priority. Without the necessary funds to do the job, the ER Unit scrounged materials from various government departments and relied on volunteer wardens to provide the muscle. Joan and Harold King and the naturalists of the Okanagan-Similkameen Parks Society fenced Haynes Lease near Osoyoos. Bart Vogelzang and the Cowichan Naturalists helped to fence the Mt Tzuhalem Reserve. On Saltspring, a team of Katimavik students fenced a partial section of the Mt Maxwell Ecological Reserve.

As the conservation movement heated up, the Ecological Reserves Unit became more and more visible to the press much to the consternation of the politicians. Wardens in the hinterland had direct access to Regional Directors, foresters and other resource personnel who were cousins, nephews and neighbors. The efficiency of our new lobby group was too much for the senior bureaucrats who decided to clip our wings and canceled our quarterly newsletter claiming it

was too expensive. The postage at the time amounted to \$32.00. At the same time I had been urging Bristol to start a non-profit section of Ecological Reserves so that we could raise funds for research, fencing and survey work in the rapidly disappearing pristine forests of the province.

With the cancellation of our newsletter we knew the timing was right and the Friends was born with an article in the paper and an appeal to all the wardens. The Society and bylaws were written with the help of the Friends of the Provincial Museum and a friend in Ottawa assisted our application for non-profit status in record time. The Friends of Ecological Reserves, a non-profit society promoting the Ecological Reserves Program in BC was born with Peter Legg from Vernon representing the ER wardens on the first board. The first thing I did as a volunteer with the Friends was to put out a newsletter to all the wardens as honorary members of our new group.

My position with the government was coming to a close. The time had come to push for change outside the bureaucratic process. Bristol, Hans and I were aware that if I did leave, my position would never be replaced. One of the last management issues I dealt with in the spring of 1983 was a development permit on Salt Spring Island just beyond the Mt Tuam Ecological Reserve. A developer wanted to declare

the track within the Reserve a gazetted road so he could subdivide. The ER Unit said “no” but pointed out that a development permit could be issued with water access only. I walked the area with the warden and the developer and we all seemed to be in agreement. The next week the warden informed me that a bulldozer was in the Reserve “making a road”. The matter was sent to the Ombudsman’s Office who sided with the Ecological Reserve Unit. But, this was an election year. The development went ahead, the trespasser was never tried and I quit.

One of the best parts of my job as warden coordinator with the Ecological Reserves Unit was traveling throughout the province meeting volunteers. Invariably the wardens were the “doers” in their hometowns. They did not just volunteer as wardens but were active in local naturalist groups, service clubs and were the eyes and ears of their community. They took the Ecological Reserves staff into their homes, fed us, informed us as to what was really going on and encouraged us to keep up the good fight within government. Sixteen years has passed and not much has changed except for the continued need to protect representative and endangered habitat and the necessity of maintaining that habitat once it has been set aside. It is a never-ending challenge. The wardens of Ecological Reserves are an essential part of that stewardship process. ■



Lynne Milnes

Macro-Fungi Inventory and Long-term Fungi Study

In August of 1997, I received a Park Use Permit to do an inventory and long term study of the fungi of the Saturna Island Ecological Reserve. I have undertaken this work, not because of any institutional affiliation, but rather because I am deeply fascinated by its subject.

I grew up in the country and have always loved the gifts that it has to offer. My windowsills are filled with rocks, shells, bones, fossils, feathers, lichens and more. This interest is shared by my husband, Harvey Janszen. His specialty is vascular plants which he pursues in a very scientific, systematic manner. He encouraged me to do the same with my interest in fungi and now I, too, am a keeper of lists with microscopes, chemicals, the beginnings of an excellent mycological library and over 450 species of catalogued and dried fungi.

As my collection grew, so did my desire to know more about the fungi of Saturna, their life cycles, seasons and abundance. To accomplish this, I decided to study a specific area and visit it regularly. I chose the Ecological Reserve as it is easily accessible and relatively undisturbed. I have made 51 trips into the reserve and have collected and identified 224 species. I have established four main trails and each year the area that I cover expands. My main thrust for the first two years of this project has been an inventory of all species encountered.

While still continuing this inventory, I have also begun the second phase of my study, which is noting how regularly these fungi occur in the reserve. From my records, I have made field

checklists and I now record each time that I come across an already identified fungus. Harvey is completing plant and soil surveys for the entire reserve. Eventually we hope to have a complete picture of the ecology of the reserve.

The Friend's support of this work has been extremely important. With funding, I was able to purchase several technical mycology books. These books are invaluable in their extension beyond that of the usual field guides of the species they identify and in their technical details which increase the certainty of my identifications. I was also able to complete my collection of the chemical reagents and stains necessary to do the tests and microscopic work that is essential to making accurate identifications.

I have purchased camera equipment and can now record fungi as I find them in the wild - alive and vibrant. It is there that the true beauty of the fungus and its place in the environment show most clearly.

This Spring I gave a presentation and slide show to members of the Vancouver Mycological Society, which resulted in a follow-up field trip to the reserve. This spring I will present a similar slide show and field trip to members of FER. I have also been asked to do a slide show for the community on Saturna. The saying "a picture is worth a thousand words" is especially appropriate when trying to share enthusiasm for a fungus that most people have never seen.

Fungi are an integral part of our ecology, but the understanding and appreciation of their role is in its infancy in North America. Their diversity of form and beauty are seldom seen. The phrase "can you eat it?" is about the height of most general interest. The government's appreciation of fungi seems limited to "does it damage timber production?" In Europe, fungi are given classifications such as rare, common or endangered, just like plants and animals. We have no equivalent in British Columbia, or

in Canada, to the best of my knowledge. It has been estimated that at least one third of all fungi in North America are as yet undescribed.

My study of the fungi on Saturna is just beginning. Life cycles and growth patterns, weather influences and habitat significance will take many years to establish. Financial support has helped equip me to begin this study on a level that would not have been possible otherwise. Together, we have already made a significant contribution to the knowledge of the fungi of this Reserve. Perhaps one day, the fungi of the Saturna Island Ecological Reserve will become as appreciated and as well known a part of our forest as are the trees. ■

Pam Janszen, Saturna Island

Pam Janszen will present some of her findings following our AGM on February 18, 2000. For more information please see below, or contact Nichola Gerts at (250) 385-9246.

Annual General Meeting

The Annual General Meeting of the Friends of Ecological Reserves will be held on February 18, 2000.

Time: 6:00 pm

Place: University of
Victoria, Classroom
Building*,
Room C114.

The meeting will be followed by an illustrated lecture of Pam Janszen's fungi research.

Time: 8:00 pm

Place: Classroom Building,
Room C116.

* located between the University Centre and the Cornett Building

Identifying Priority Conservation Areas for Rare Species in the South Okanagan

For a second year, Friends of Ecological Reserves has financially supported a 2-year research project by Leanna Warman and Dr. Tony Sinclair in the South Okanagan. While their research is not focused upon any one ecological reserve, their findings will have far-reaching consequences for the designation of future protected areas. The results of this research project will assist Leanna in attaining her Master's degree. Leanna and Tony report on last year's activities.

The habitat found in the South Okanagan and Lower Similkameen valleys, extending from the United States border north to Okanagan Mountain Provincial Park and east to west from Anarchist Mountain to the Ashnola River, is considered to be one of Canada's three most endangered ecosystems. This area is commonly referred to as Canada's "pocket desert" because the microclimate of the valley is very hot and dry. Much of the natural habitat in these valleys has been converted to urban developments and agricultural areas. Due to the rapid loss of habitat, this area has many endangered (red-listed) and vulnerable (blue-listed) species. If the rate of habitat loss continues without protecting the essential habitats required for their survival, the extirpation of many of these species will likely follow.

Tony and Leanne chose the South Okanagan and Lower Similkameen valleys as a test case for their research because of the high amount of national endemism present in this area and the imminent threat of habitat loss from human habitation. As well, a well-developed and extensive data set for the endangered and vulnerable species and habitat exists for the area.

Leanna and Tony argue that most ecological reserves, provincial parks and wildlife management areas in the South Okanagan and Lower Similkameen valleys have been selected using an ad hoc approach. This has led to an uneven representation of natural features within the protected areas thereby decreasing the potential for conservation of the biological diversity within the region. They point out that the essential problem facing conservation is that planning approaches need to identify the optimum allocation of resources, in terms of land and funds, to save the maximum amount of habitat and species given that the resources for conservation are insufficient to save everything.

Leanna states, "Every remaining species and type of habitat cannot be conserved because there is a limit to the resources that are available for conservation and because of the demands of a growing human population. Therefore, we need to identify the optimum allocation of resources (in terms of land and funds) to save the maximum amount of habitat and species given these limited resources."

She continues, "To do so, we are using a relatively new conservation planning approach called *complementarity*. Complementarity can be used to identify new sets of areas that provide the greatest contribution of unprotected biodiversity to existing conservation networks and can be used as a tool for land negotiations. Another method that has recently been developed to identify conservation areas in landscapes that are subject to the effects of human

development is called C-Plan. C-Plan is designed to be a decision-support system that together with a geographic information system (GIS) maps the options for achieving explicit regional conservation goals. Sites, areas of land or water, are selected in such a way as to maximize the conservation of biodiversity for the least cost. As well, this method calculates an objective measure of the degree to which a site is required to conserve a species or habitat (its irreplaceability value) within a region. Irreplaceability values identify sites that are essential for achieving explicit regional conservation goals."

The methods developed during this project can be applied to any region or ecosystem to prioritize the areas that need to be placed in ecological reserves or other protected areas.

Leanna and Tony's project is aimed at identifying multi-species conservation areas in the region and how well the current conservation network conserves the habitat for the rare species and additional areas that are essential to meet different conservation goals for the region. With this emphasis on identifying conservation areas for endangered and vulnerable biota, the overall goal of the project is to identify priority areas for the conservation of rare biodiversity, given economic, socio-cultural and biological constraints that influence the selection of priority sets of areas for conservation. The project will compare the priority sets of conservation areas generated with these constraints to identify the consequences of political, economic or biological decisions on achieving

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"Identifying Priority..." continued from page 9
explicit regional conservation goals.

To date, data with geographical coordinates consisting of species distributions and ecosystem mapping have been compiled in order to identify priority sets of conservation areas. Using an initial conservation target of identifying 12% of the total area available for life history requirements of 29 species within the study area and applying C-Plan methodology has resulted in a preliminary finding that 5% of the study area is 100% irreplaceable in order to achieve the conservation target of 12%. However, the habitat requirements for only five (bobolink, long-billed curlew, sandhill crane, western screech owl, and yellow-breasted chat) of the 29 species have been completely satisfied within this area. The habitat requirements for some or all of the life requisites of 13 bird species, four mammal species and seven herptile species are not completely satisfied.

Leanna says, "Ultimately, this region provides a pilot study to demonstrate the advantages of planning conservation areas using a systematic technique. The methods developed during this project can be applied to any region or ecosystem to prioritise the areas that need to be placed in ecological reserves or other protected areas. The efficiency of identifying reserve systems is critical if the goal is to conserve the biological diversity of a region before the opportunities for reserve selection are limited by development. Systematic and objective conservation planning approaches have been developed and implemented on other continents, it is time to apply these approaches to current conservation crises within North America."

Tony adds, "In the final analysis, we will be looking at sites such as ecological reserves specifically and assessing what other sites need to be conserved to complement these." ■

Congratulations to UVic Student Lindsay Cole

FER offers its congratulations to Lindsay Cole, 22, who is the first recipient of the Vicky Husband Scholarship. Lindsay, who is from Kelowna, is in her 4th year of a double major in Environmental Studies and Marine Biology.

Lindsay is also the co-founder of the University of Victoria Sustainability Project, which began in March 1999. This is a student-based initiative that is exploring and encouraging sustainability as an everyday function on campus. Lindsay manages 14 paid students and a team of volunteers who are currently doing a campus-wide audit to collect baseline information in areas such as solid waste management, energy efficiency, curriculum issues, purchasing practices, environmental health and campus ecology. Lindsay's group will be developing recommendations for improvements in these and other areas and for a campus sustainability policy. Lindsay plans to graduate in May 2000. Congratulations, Lindsay! ■

The Vicky Husband Scholarship was created this year to honour Vicky's past work with the Friends of Ecological Reserves and in the BC environmental community. The scholarship is worth \$1000 and is awarded to a 3rd or 4th year student in the UVic Environmental Studies program, showing academic merit and who has made outstanding contributions to the volunteer sector.

Changes to Constitution

At the Annual General Meeting on February 18, 2000, the following special resolution will be proposed in accordance with the bylaws of the society:

"RESOLVED, that the following changes to the existing Articles and Bylaws of the Constitution of Friends of Ecological Reserves be adopted:

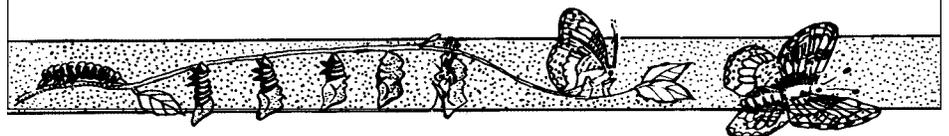
That the following be added to (6) BOARD OF DIRECTORS, OFFICERS, EXECUTIVE COMMITTEE

- 6.(h) No voting member of the executive or board of directors may receive remuneration or other financial benefits for their services to the Society, regardless of the type of service performed.

That the following be added to (10) WINDING UP OR DISSOLUTION

- 10.(b) Upon the winding up of the Society or on dissolution thereof ... [Add:] This provision shall be unalterable."

These changes are proposed so that the society is in compliance with the Rules and Regulations of the BC Gaming Commission. ■



Web Sites of Interest

Endangered Seabird Hatched in Captivity

British Columbia is the only province in Canada where marbled murrelets nest. Marbled murrelets are on the endangered species lists in BC, Washington and Oregon. Thanks to the work of Fred Cooke of the Canadian Wildlife Service and Chair of Wildlife Ecology at Simon Fraser University, the first marbled murrelet was successfully hatched in captivity. Check out Environment Canada's new Endangered Species website. <http://www.speciesatrisk.gc.ca>

Panel on the Ecological Integrity of Canada's National Parks

The Panel's objective is to assess the approach Parks Canada is taking to maintain the ecological integrity of Canada's National Parks. Based on this assessment, the Panel will provide advice and recommendations on how to ensure that ecological integrity is maintained across the system of Canada's National Parks. The creation of this Panel fulfils a Liberal Red Book commitment and reinforces the commitment of the Government of Canada to protect our natural heritage. <http://ecolog.org>

Trees of the Pacific Northwest

This site will help you identify common conifers in the Pacific

Northwest. Feel free to skip through the pages to learn more about specific genera, or to try your hand at identifying a tree specimen with a user-friendly dichotomous key. If you don't have a specimen handy, go to the mystery tree pages to try to identify the trees pictured.

<http://www.orst.edu/instruct/for241/>

Virtual Birding in British Columbia

Visit this site and try your hand at identifying birds by their call or by song. Visit King's Pond or a West Coast Rainforest to listen to birds in their environment. This site is in its infancy, but promises to be extraordinary. Anyone with photos, videos or recordings are invited to submit them to help build the site. Birding in British Columbia's site also includes a BC Bird Watch Field Report section where naturalists can share their birding experiences.

<http://www.islandnet.com/~boom/birding/virtual>

Stories from the Basin

From Environment Canada's Georgia Basin Ecosystem Initiative. "Stories from the Basin" focuses on community action and environmental science happening within the Georgia Basin. This site features the Millennium Eco-Communities page where you can both

find and share information – it is a comprehensive resource on environmental issues, best practices, tools, tips, and networking opportunities to help expand the success stories in the Basin. Keep up to date on recent changes through the "Basin News" link and explore even further through the "Basin Links" which will take you to a number of local organizations and initiatives. <http://www.pyr.ec.gc.ca/GeorgiaBasin>

The Log



Friends of Ecological Reserves
PO Box 8477 Stn Central
Victoria BC V8W 3S1

Email: ecoreserves@hotmail.com

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