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THE CANADIAN SOCIETY OF ENVIRONMENTAL BIOLOGISTS • SOCIÉTÉ CANADIENNE DES BIOLOGISTES DE L'ENVIRONNEMENT •

# THE CANADIAN SOCIETY OF ENVIRONMENTAL BIOLOGISTS Newsletter / Bulletin

## *In this Issue:*

# CSEB Newsletter / Bulletin SCBE

**VOLUME 65, NUMBER 3, 2008**

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## *In this issue*




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**Biologist, Edmonton, Alberta recording data during amphibian surveys near Wabasca, Alberta.**
**Photo Credit: Julia Berger, Edmonton, Alberta**

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# CSEB NEWSLETTER 2008

**Vol. 65, Number 3 Fall 2008**

The Canadian Society of Environmental Biologists Newsletter is a quarterly publication. The Newsletter keeps members informed of the Society's activities and updates members on the current affairs and advances in the field of environmental biology. This publication draws together the widely diverse group of Canadian environmental biologists through a national exchange of ideas. Members are invited to contribute papers, photos or announcements that are of a national biological and environmental interest. Letters to the editor are welcome. This is a volunteer non-profit organization and we rely on your participation to make the newsletter a productive forum for ideas and discussion.

**All business correspondence, changes of address, undeliverable copies and membership applications should be sent to:** CSEB National Office, P.O.Box 962, Station F, Toronto, ON., M4Y 2N9. **Editorial correspondence: Gary Ash, Editor, e-mail: gash@golder.com**

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# LE BULLETIN de la SCBE 2008

**Vol. 65, Numbre 3 Automne 2008**

Le Bulletin de la SCBE est une publication trimestriel de la Société Canadienne des Biologistes de l'Environnement. Le Bulletin informe les membres des activité de la Société sur événements courant ainsi que les progrès qui font en sciences de l'environnement. Par un échange d'idées au niveau national, cette publication intéresse un groupe très diverssifié d'environmentalistes Canadien. Les membres sont invités a contribuer des articles, photos (noir et blanc) ou des messages qui sont d'intérêt nationale en sciences biologiques et envrionmentales. Les lettres à l'editeur sont bienvenues.

**Tout la correspondence d'affaires, y compris les abonnements, les changements d'adresse, les exemplaires retournés et les formulaires:** CSEB National Office, **P.O.Box 962, Station F, Toronto, ON, M4Y 2N9. Les lettres à l'editeur: Gary Ash, Editor, courriel: gash@golder.com**

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# The Canadian Society of Environmental Biologists

## CSEB OBJECTIVES

The Canadian Society of Environmental Biologists (CSEB) is a national non-profit organization. Its primary objectives are:

- to further the conservation of Canadian natural resources.
- to ensure the prudent management of these resources so as to minimize environmental effects.
- to maintain high professional standards in education, research and management related to natural resources and the environment.

## OBJECTIFS de la SOCIÉTÉ

La Société Candienne des Biologistes de l'Environnement (SCBE) est une organisation nationale sans but lucratif. Ses objectifs premiers sont:

- de conserver les ressources naturelles candiennes.
- d'assurer l'aménagement rationnel de ces ressources tout en minimisant les effets sur l'environnement.
- de maintenir des normes professionnels élevés en enseignement, recherche, et aménagement en relation avec la notion de durabilité des ressources naturelles et de l'environnement, et cela pour le bénéfice de la communauté.

# NATIONAL

## President's Report

Greetings!

By the time you receive this newsletter, the Canadian federal election will likely be over. Nevertheless, I think it is still worthwhile to reflect on the politics of the environment. As biologists, we have a special perspective in that we have spent much of our academic and professional careers learning "the science" of the Canadian environment. As members of the CSEB, we go a step further in working towards positive change in how our Canadian environment is managed.

What are the key environmental issues in your part of Canada? Find out what the different party positions are on climate change and environmental protection. Make sure that your local candidates… and your friends and neighbours… know that the environment is an important issue. As a biologist, you can offer a science-based perspective that will greatly enrich the quality of debate. And after your Member of Parliament is confirmed, find an opportunity to remind him or her that the environment is something their constituents really do care about.

I'm really looking forward to seeing my fellow CSEBers at the annual meeting being held at the British Columbia Institute of Technology (BCIT) in Burnaby, BC, on November 13 & 14. Please make a special effort to join us. It offers a good opportunity to learn about waste management, an important environmental issue in all parts of the country. It is an opportunity for professional development, an opportunity to renew old acquaintances and, of course, an opportunity to strike up new friendships. What issues are biologists facing in your part of the country? What can the CSEB do to help support you? What can you do to help advance the objectives of the CSEB?

CSEB is a volunteer-run organization and nothing gets done without member participation. Please contact the national office or your regional director and volunteer to contribute to the success of the CSEB.

Brian Free
President □

### CSEB Slogan Contest

Still waiting for those gems! Your Board of Directors thinks that CSEB needs a by-line or slogan that reflects the essence of the CSEB. What would be a sensational, short, snappy sentence or phrase that we could feature on our website, in our recruitment drives and for general promotion of the Society. Send me your suggestion by October 31, 2008 and your slogan will be entered into the contest. First prize will be a free CSEB membership when you renew for 2009. Send your suggestions to bfree@cseb-scbe.org.

Brian Free
President □

## British Columbia News

### BC Regional Director's Report

*Submtted by Jim Armstrong*

During the first half of 2008, the direction for British Columbia has been to reconnect with the members and start to initiate new dialogue that will see a more active chapter and increase in the BC membership.

Our National Executive requested that BC host the 2008 Canadian Society of Environmental Biologists conference and this is now being held at the British Columbia Institute of Technology (BCIT) in Burnaby, BC on November 13 & 14. The theme of the conference will be the management of solid wastes from the municipal sector. With the hosting of this conference, I am finding that new members are now coming forward with enthusiasm about our association and providing new insights into building our membership base. Adding a student poster session to the conference, I think, will add considerable value to the overall structure of CSEB and give us potential Executive members to continue the valued efforts that the current members are performing.

I look forward to meeting the many CSEB members that I have met through our conference calls and those members that I have not yet met. We are planning an exciting program, wanting to hear from you if you have potential speakers and will see you at the conference. □

## Alberta News

### Joint Panel Established for the Proposed Joslyn North Mine Project

OTTAWA, August 8, 2008 - A joint federal-provincial panel was established today to review Total E&P Canada Ltd's proposed Joslyn North Mine project.

The proposed project would be located approximately 70 kilometres north of Fort McMurray in Alberta. It includes the construction, operation, and reclamation of an oil sands surface mine and bitumen extraction facilities on Oil Sands Leases. It is designed to produce a total of 15,900 cubic metres per day (100,000 barrels per day) of bitumen.

A joint panel agreement between the Government of Canada and the Energy Resources Conservation Board (ERCB) is now released after receiving public comments in April 2008. It describes the process for conducting the joint panel review and includes details on the scope of the environmental assessment.

The joint panel agreement and more information on this project are available on the Canadian Environmental Assessment Agency's (the Agency) website, registry number 08-05-37519.

The Agency administers the federal environmental assessment process, which identifies the environmental effects of proposed projects and measures to address those effects, in support of sustainable development.

The ERCB is an independent, quasi-judicial agency of the Government of Alberta. It regulates the safe, responsible, and efficient development of Alberta's energy resources: oil, natural gas, oil sands, coal, and pipelines. □

Web addresses are: Canadian Environmental Assessment Agency www.ceaa-acee.gc.ca Energy Resources Conservation Board www.ercb.ca

Media may contact:
Nicholas Girard Senior Communications Advisor
Canadian Environmental Assessment Agency
Tel.: 613-957-0958

## Funding Awarded to Participate in the Environmental Assessment of the Joslyn North Mine Project

OTTAWA, August 5, 2008 - The Canadian Environmental Assessment Agency (the Agency) has awarded a total of $100,000 to five applicants in support of their participation in the environmental assessment process of the proposed Joslyn North Mine project, near Fort McMurray in Alberta.

The funding recipients are Sierra Club Canada, The Pembina Institute, Clearwater River Paul Cree Band, Non-Status Fort McMurray Band Descendants and Off-Reserve Fort McMurray Band.

The funding is being provided to assist the recipients to participate in the public hearings phase of the environmental assessment process. The information pertaining to the public hearings will be communicated at a later date.

A Funding Review Committee, independent of the review panel, reviewed the requests and provided recommendations on available funding. The Committee's report as well as further information on the project are available on the Agency's Web site, under registry number 08-05-37519.

The proposed mining project includes the construction, operation, and reclamation of an oil sands surface mine and bitumen extraction facilities on Oil Sands Leases. It is designed to produce a total of 15,900 cubic meters per day (100,000 barrels per day) of bitumen.

The Canadian Environmental Assessment Agency administers the federal environmental assessment process, which identifies the environmental effects of proposed projects and measures to address those effects, in support of sustainable development. □

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## Martha Kostuch: Legacy and Lessons

*By, Rob Macintosh, Director, Pembina Institute Board*

Martha's greatest legacy is the example she set. The Pembina Institute celebrates the life and mourns the death of our friend and colleague, Martha Kostuch, who passed away on April 23, 2008. No one worked as hard or as effectively as Martha on behalf of present and future Albertans to contain the most environmentally destructive aspects of industrial development and energy production, to drive progress towards cleaner air and water, and to protect wild spaces.

A memorial service was held on May 31st on the Kootenay Plains, a very special place that Martha was instrumental in protecting. However, the formal tributes began earlier this year with special events by the Alberta Wilderness Association, the Parkland Airshed Management Zone and the Clean Air Strategic Alliance; the recent announcement by Alberta's Environment Minister on behalf of the Alberta Government of a training scholarship in her name; and, most recently, the Special Achievement Award from the Alberta Emerald Foundation, accepted by her family on June 3rd.

This recognition is well deserved and these awards are important. Most of us knew that Martha had little time left and her friends and colleagues rallied to provide this recognition before she died. She appreciated this, but none of it measures up to what we owe her.

Her efforts to ensure that environmental laws were improved and enforced, to push industry to use the best available technology to reduce pollution, to collaboratively develop better policies, and to stop destructive and inappropriate developments were huge and often successful. However, the sheer scale of environmental assault from energy development in Alberta, humanity's core flaw of short-term thinking, the danger of communications spin, and the prevalence of greed over stewardship leave us with an even greater challenge. If we are serious about honouring Martha for her lifetime of work, we all have to take up the challenges that motivated her.

Martha's greatest legacy is probably the example she set through the life she led, and the many lessons she taught us through her example:

* Laws matter, and sometimes we have to make sure they are enforced. Her triumphant Supreme Court decision in 1992 on environmental assessment was a landmark decision that was incorporated into Canada's legislation.

* Become informed - do your homework, listen to the science, seek the truth, and never compromise on your principles.
* Focus on the important things - your family, your friends, and the wonder of nature - and take strength from their love and beauty.
* Have fun, really live.
* Quality of life doesn't have to cost a lot of money.
* Don't let people get confused about what's motivating your work. Everything Martha did was on a voluntary basis, as she refused any form of compensation for her time and participation.
* Walk the talk and lead by example. Martha's footprint on the planet was as light as she could make it, while still being involved and effective. She was delighted with her new off-grid house and the fact that most of it was built by volunteers from many walks of life.
* Concentrate on the issue, not the person. Martha understood that many people with good intentions could disagree. She focused on resolving the sticking points to improve the environment, not on attacking someone for their views.
* Take a stand and don't quit. Martha's persistence and determination were legendary. She believed that tomorrow we would have opportunities to improve on the good we get today.
* One person can make big difference, but you can't do it all by yourself. Martha was the ultimate coach and mentor, spending much of her time supporting individuals and groups of volunteers to take action and make a difference.

*Photo Courtesy of the Red Deer Advocate*

We all have much to be thankful for. We all have much to learn from her. And, Martha would agree, we have much more left to do. All of us. □

*Reprinted from: Special Achievement Awards from Alberta Emerald Foundation Alberta*

## Coal Project Puts Mountain Goats at Risk

*September 24th, 2008, Reprinted From the Edmonton Jourtnal*
*Hanneke Brooymans, Edmonton Journal Staff Writer*

A coal mining project is jeopardizing a population of mountain goats in the Grande Cache area, says a University of Alberta scientist.

The white-fleeced goats of Caw Ridge are well known to researchers who have studied them for at least 20 years, said Aaron Shafer. Each of the 140 goats in Alberta's northernmost herd has a unique ear tag or collar.

Shafer is now piecing together the population structure of the species throughout its North American range, which includes Alberta, British Columbia, Alaska, Idaho, Montana, Washington and Yukon.

Fears of the Caw Ridge herd arose when Grande Cache Coal Corporation began drilling exploratory holes in the area at the end of the summer.

Shafer said the shy animals are easily spooked. They avoid trails commonly travelled by ATVs and are frightened by helicopters and vehicles. That fear distracts them from their feeding.

Shafer says the threats of habitat loss and increased disturbance are not trivial. When exploration took place two kilometres east of areas used by the goats in 1997 and 1998, all areas in sight were temporarily abandoned by the goats, he said.

"The bigger issue is when the mine expands, they're going to lose habitat," Shafer said. "They're going to lose the area in which they live. They're going to lose forage. Their whole area will likely be modified from it. "They may end up leaving. Some of them may die because of it. We just don't know."

Grande Cache Coal environment manager Bernd Martens said the company owns leases in the Caw Ridge area but is only drilling holes to get core samples, which will help define the depth and thickness of coal seams. None of the holes were drilled on Caw Ridge, but some were on a ridge adjacent to it, he said.

"We don't have any immediate or middle range plans (to mine the area), but we owe it to our stakeholders and investors to define what's out there."

Martens said the company is confident its goat protection plans suit the situation. He noted workers have not had any interactions with the goats so far.

During its exploration activities, the company is required to follow guidelines set by Alberta Sustainable Resource Development, said Dave Ealey, a spokesman for the department. Part of that means not interfering with wildlife movements in the area by staying any longer than they're supposed to.

"They will be required to reduce their exploration activity if there is evidence of the goats becoming alarmed by the activity," he said.

If exploration activity leads the company to think there is enough coal there to develop, it will need to submit an application that would be subject to a cross-government regulatory review process that involves public and stakeholder input, Ealey said.

Shafer acknowledged that people with Sustainable Resource Development have been influential with the mountain goat project.

"They were key in getting it started. And many of them our on our side. But the province has allowed the mine to expand and continue drilling."

He is worried the rare 20 year study - most wildlife studies last two to four years - will be disrupted.

"The ideal situation would be for the mine to stop. That's probably unlikely. But I think people need to be aware of what's happening and the decisions the province makes like this."

Shafer said data from the long-term study has affected management of mountain goats throughout North America. "It just seems like we're caught up in resource extraction and greed, and studies like the one I'm talking about at the Caw Ridge tend to be forgotten because we don't get coal, we don't get money from it." □

## Saskatchewan News

### Small Bug Officially Big Pest

August 25, 2008 - The mountain pine beetle is a tiny bug with a big appetite. Although it is not much bigger than a grain of rice, the impact it has had on western Canada's pine forest is huge, especially in British Columbia where it has devastated large areas of pine forest.

Now that the beetle has reached as far east as Grande Prairie and Slave Lake in central Alberta, there is a real threat that it could move into the jack pine trees that cover northern Saskatchewan and reach all the way to Canada's east coast.

The concern over what is often described as one of the most destructive forest pests in North America has led the Government of Saskatchewan to officially designate the mountain pine beetle as a pest.

*Photo credit: photo by Dion Manastyrski, BC Ministry of Forests.*

"The beetle has not yet arrived in Saskatchewan's northern forests and giving it an official pest designation will help us in our efforts to try to keep it out," says Dr. Rory McIntosh, the Ministry of Environment's Provincial Forest Entomologist. "It is important to do this because there is growing evidence that the beetle can survive in jack pine, a key species in the boreal forest. If mountain pine beetles moves east far enough to reach the boreal forest, the insect could kill jack pine throughout Saskatchewan and eventually right across Canada."

Saskatchewan now has more tools that can be used to deal with the threat posed by the mountain pine beetle. For example, Ministry of Environment officials will now have the ability to deal with a mountain pine beetle outbreak on private land, should one occur, and a greater ability to inspect vehicles carrying pine forest products. The designation also reinforces the 2002 restriction order that bans the movement of pine products with bark attached from British Columbia, Alberta and the United States. This reduces the risk of human-assisted transport of the mountain pine beetle into the province. The restrictions on the movement of pine products out of the Cypress Hills in the southwest are also extended.

"The mountain pine beetle is a natural part of the Lodgepole pine forest in the Cypress Hills," says McIntosh. "The most recent serious outbreak in this area occurred in the early 1980s. The ministry responded by cutting down infested and old, vulnerable trees and planting seedlings.

In addition to ongoing forest management activities, we are also carrying out aerial and land surveys for the beetle. So far we have been able to manage the infestation."

But one of the best mountain pine beetle controls is nature itself...especially cold weather. "Very cold temperatures, below -40° C over a sustained period, will kill the beetles, slowing their advance," says McIntosh. "Forest fires, nature's engine of renewal, will also slow the spread of the beetle. Fires kill insects, as well as removing older, susceptible trees and regenerating the forest. In addition to being less attractive to the beetles, this new growth provides homes for the plants and animals that need a young forest to survive. Therefore, in some instances, the most appropriate thing to do may be to step back and, within reason, allow nature to take its course."

The Ministry of Environment is working with the federal and provincial governments to develop a national approach to deal with the mountain pine beetle as well as other insects and diseases. □

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# Manitoba News

## Canada's First Interprovincial Wilderness Area

*Submitted by: Bill Paton, CSEB, Manitoba Director*

The provinces of Manitoba and Ontario have agreed to jointly develop Canada's first interprovincial wilderness area. Manitoba also released the management plan for Atikaki Provincial Park and the Bloodvein Heritage River, which is a key contribution toward the land-use planning required as part of the work underway for the UNESCO World Heritage Site nomination.

This new wilderness area lies along both provincial borders and covers more than 9,400 square kilometres. The protected area is outlined on the map below.

The area is of national ecological importance and provides an important link between the eastern and western boreal forests. It also represents significant habitat for species at risk such as Canada's woodland caribou. There have not been many systematic botanical surveys of most of this area.

The preserve also contains many world-class canoe routes including the Bloodvein, Pigeon and Bird Rivers.

A Memorandum of Understanding has recently been signed between the Province and the City of Winnipeg to work together to improve the conservation of biological diversity and the protection of natural ecosystems and watersheds in the City area. This follows on the governments earlier (2003) Protected Areas Initiative which committed to completing a network of protected areas to represent the biological diversity in Manitoba's natural regions. This initiative has already resulted in new conserved areas and has further recognized several priority areas that will be addressed over the next few years. To read about these plans www.gov.mb.ca/conservation/pai/pdf/protect... □

## Western Australia – a Biologist's Treasure

*Submitted by Bill Paton*

I am currently in Australia on sabbatical leave from Brandon University. I started out here in Perth, Western Australia, the wildflower haven. There are over 12,000 species of wildflowers found within the State borders, many of them totally unique to this region of the world. Several of them families we don't even learn about in university in North America.

Wildflowers in Wheatbelt Region

For the spring months of each year (August – November) wildflowers are scattered across 2.5 million square kilometres of terrain. The uniqueness and natural beauty of the wildflowers attract thousands of tourists and scientists every year. The south-west is particularly rich.

More than 150 species of orchids are known to inhabit the area, along with primitive grass trees and cycads, and more than 150 species of Eucalypts. The south also boasts 80 species of carnivorous plants. Many are only pollinated by birds.

Ancient Zamia cycads among the Banksias

The Mangles Kangaroo Paw *(Anigozanthos manglesii)*

The small rural towns and villages have really taken advantage of this unique biological wealth and have identified Flora Roads and volunteers man public information booths during the wildflower season in their area. This bio-tourism effort brings added economic benefit to these small farming towns and is also a major motivation for the preservation of the resource and to habitat restoration in some areas. We could learn from this experience in some of our Canadian regions where the native flora has been cleared or allowed to be choked out by weeds or wiped out by herbicide drift.

The crops grown here are mainly cereals, wheat being number one, and canola. Indeed, driving in the countryside, take away the Eucalyptus trees and the brilliant yellow wattle bushes, and you could be in many areas of the Prairies. Another major difference of course, is the number of sheep, which greatly outnumber cattle. The major animal species are marsupials, which are nocturnal, and so are not evident as one travels the countryside in daytime. Indeed, if your car does not have a "roo-bar" you are not covered by the insurance companies and particularly if you are using a hire-car. Dead kangaroos and possums are widely evident along all roads, major and minor. I have been advised that an adult kangaroo can cause significant damage to a vehicle. Evident, however, are a fantastic array of birds and also bird noises like I've never heard before, even in Africa. The really distinct ones are the Kookaburra and the Australian magpie, but the raucous noise of parrots and parakeets is everywhere. My major observation with birds here is that many of them are very aggressive towards their own and other species, and some like the native magpie will dive-bomb humans and animals.

The safest way to meet a kangaroo in Australia

I am also here in Perth interacting with biologists who have been battling both marine and freshwater blue-green algae (cyanobacteria) for many years. I am learning techniques, which I hope to be able to apply to both aquatic ecosystem and human health in Manitoba when I return.

Biologists in Canada should also know that the infamous Tasmanian Devil is in real trouble. They are now listed as a threatened species. This is due to an infectious facial tumour disease. It first appeared in 1996 and has since killed 50% of Tasmania's wild population. This viral-induced cancer results in lumps on the face or neck; these become larger and lead to death of the animal in about a year. It has been estimated that the wild population could be totally extinct in 25 years. Fortunately, breeding programs with disease-free animals have begun on the mainland. The target is to have 1500 animals in 10 years and then attempt to repopulate them back into Tasmania. The animal in my picture is part of this program at Cavendish Wildlife Park in Perth. □

Tasmanian Devil at Cavendish Park in Perth, Australia

## Ontario News

### Daddy Can't Sell the Farm: Soil Pesticide Residuals Exceed Ontario Land Use Standards

*Submitted by Wendy Thomson, CSEB Ontario Director, with the permission of the authors. Article by Theresa Phillips, Ph.D., and Jim Phimister, P.Eng., P.Geo. and Carla Reynolds, P.Ag.*

Avid country music fans are familiar with the Montgomory Gentry song "Daddy Won't Sell the Farm," but Ontario farmers might be unknowingly sitting between a new rock and a hard place: Ontario environmental soil standards[1] that could earn their valuable soil a "waste" designation and prevent them from selling the farm — even if they want to!

For decades, farmers have been using pesticides on their crops to improve yields that would otherwise suffer from the effects of insect infestations. It has now been demonstrated that pesticide use can lead to ingestion of harmful chemicals, as residues can remain on, or in, our foods long after they have made it to market. As a result, the use of many organochlorine pesticides (OCPs), has been banned. Take DDT (1,1,1-trichloro-2,2-bis (4'-chlorophenyl) ethane) for example; this OCP is the poster child of once "good" pesticides gone "bad."

In the post-war days, OCPs rode a wave of popularity due to their effectiveness against insects, particularly mosquitos. DDT, the insecticidal properties of which were discovered in 1939, became very popular worldwide in the fight against malaria and other mosquito-borne diseases. It was a low-cost, broad-spectrum insecticide that proved useful during the Second World War, for both the military and civilians. At the same time, OCPs became the pesticide of choice for agricultural applications. DDT was used to repel potato beetles, corn earworm, cotton bullworm, tobacco budworms and coddling moth (apples). In the USA, it was applied mainly to cotton, and to some extent on peanut and soybean crops, while in Canada it was a frequently applied pesticide in orchards.

DDT was first registered for use in Canada in 1946. This and other OCPs soon lost favour, however, and phasing out began during the 1970s. Although DDT has not been used in Canada for decades, significant concentrations still remain in agricultural soils across the country [2] [3] [4] [5]. Residuals at concentrations as high as 154 parts per million (ppm) DDT and 316 ppm total DDTs[3] (DDT and metabolites DDE and DDD) have been found in agricultural soils, and up to 89 ppm[2] have been reported in soils of parklands where DDT was applied to manage mosquitos and other insects.

Soil DDT concentrations reported from agricultural land in Ontario are shown below, along with current Ontario Ministry of Environment soil Standards.

| DDT in Ontario Soil (ppm) | Ontario Background Site Condition Standard (ppm)[a] | Ontario Generic Site Condition Standard: Agricultural Use, Potable Ground Water Condition (ppm) |
|---|---|---|
| 14.2[6], 154[7] | 0.12 | 1.6 |

[a]. Applies to soil that is to be moved off-property.

Valuable agricultural soil is considered "contaminated" if concentrations exceed Ontario's stringent environmental Standards, and this could prevent the sale or financing of a farm property. In addition, should the land be sold to developers who want to move topsoil off-site, it would be defined as a "waste" according to current environmental practices. An option for soil that is classified as a waste is to haul it away to a Ministry of Environment approved landfill. This is an expensive endeavour; current disposal fees at licensed facilities are approximately $100 per cubic metre of soil.

The persistence of OCPs is problematic, as these high residuals cannot be expected to decline overnight. Estimates of OCP half-lives in soil are based on a number of interacting factors including soil composition (organic content), pH, moisture content, temperature, aeration and microbial colonization. Their very low solubility and capacity to adsorb to soil account for much of the persistence. The persistence of aged OCPs is also greater than that of unaged (newly applied) pesticide, due to increased soil sorption over time. Photo-decomposition of DDT is likely negligible in soil and, while some bacteria are capable of degrading DDT, the contribution of biodegradation to its overall fate is low.

Chemical degradation is a possible route of removal for OCPs in soil, having some impact on DDT concentrations. Under aerobic conditions, dehydrochlorination leads to the formation of DDE, often considered a dead-end metabolite of DDT, although it can be degraded to some extent under the right conditions. DDD and DDE are also considered toxic, and Ontario standards are also in place for these compounds. There are some indications that DDT will disappear faster under alkaline conditions.

Volatilization is the primary route by which these pesticides are removed from soil and is influenced by the soil moisture content, pH, temperature, and organic and clay contents of the soil. DDT adsorbs to both clay and organic matter. Due to vapour pressure and sorption phenomena, OCPs tend to migrate upward and out of the soil under conditions of high moisture, a consequence of their displacement from the surfaces of soil particles by water. When surface water has evaporated, the pesticides tend to move downward in the soil column and away from the surface, due to the absence of a "wicking" effect from the water, and changes in soil-water and soil-air partitioning. Research indicates that high moisture contents in soil may improve the rate of volatilization of DDT.

Half-life estimates of 5-7 years for DDT may be realistic for a temperate soil with a fairly neutral pH, and moderate organic carbon content and that is tilled regularly. Anoxic conditions are required for reductive dechlorination, and regular tillage, resulting in aeration and drying of the soil, could inhibit degradation of this compound. Under suboptimum conditions, the half life for DDT has been estimated at 20-30 years or more.

This means that, if you are a farmer with OCP-impacted soil, you could be sitting on this problem for a long time before you can sell your property. If you are a developer considering purchasing "greenfield" land, there may be a costly soil remediation to deal with.

[1] Ontario environmental soil standards are set by the Ministry of the Environment and listed in the document *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* dated March 9, 2004, referenced by the Ontario Record of Site Condition Regulation (Reg. 153/04).
[2] Bailey P, Waite D, Quinnett-Abbott L and Ripley BD. 2005. Residues of DDT and other selected organochlorine pesticides in soils from Saskatchewan, Canada (1999). Can. J. Soil Sci. 85:265-271.
[3] Crowe AS and Smith JE. 2007. Distribution and persistence of DDT in soil at a sand dune-marsh environment: Point Pelee, Ontario, Canada. Can. J. Soil Sci. 87:315-327.
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[6] Kurt-Karakus PB, Bidleman TF, Staebler RM and Jones, KC. 2006. Measurement of DDT fluxes from a historically treated agricultural soil in Canada. Environ. Sci. Technol. 40:4578-4585.
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Soil Treatment Options

The following are options for treatment of a pesticide-impacted agricultural soil:

1) Landfill: If the property is sold for the purpose of development, topsoil must be excavated, hauled anddisposed as waste at a licenced landfill.

2) Natural attenuation: DDT will degrade faster in saturated soils, although volatilization is the most likely route of removal. Natural attenuation could take decades to bring esiduals to acceptable levels, if it works at all.

3) Bioremediation: There are existing bioremediation technologies that effectively reduce residualOCP levels beyond their threshold values. Thisoption is expensive for a large acreage and none of the current technologies are demonstrated to be particularly effective for reducing DDE or DDD concentrations in soil.

| Organochlorine Pesticides | | |
|---|---|---|
| **Pesticide** | **Regulatory Control** | **Ontario Generic Site Condition Standard: Agricultural Use, Potable Ground Water Condition (ppm)** |
| Aldrin | Last registered in Canada December 31, 1990 | 0.05 |
| Chlordane | Last registered in Canada December 31, 1985 | 0.29 |
| DDT<br>DDE<br>DDD | Last registered in Canada December 31, 1990 | 1.6<br>1.6<br>2.2 |
| Dieldrin | Last registered in Canada December 31, 1990 | 0.05 |
| Endosulfan | Currently registered for use (schedule 2) | 0.18 |
| Endrin | Last registered in Canada December 31, 1990 | 0.05 |
| Heptachlor<br>Heptachlor Epoxide | Last registered in Canada December 31, 1985 | 0.084 for sandy soil,<br>0.12 for clay soil 0.06 |
| Methoxychlor | Currently registered for use (schedule 3) | 4.0 |

## Local Solutions for Global Challenges

*Submitted by Wendy Thomson*

Registration is open for the 15th annual A.D. Latornell Conservation Symposium. The theme this year is *Local Solutions for Global Challenges*. The event takes place November 19, 20 & 21, 2008 at the Nottawasaga Inn in Alliston, Ontario.

The 2008 theme focuses on the urgent need to rethink how we manage local natural resources in order to adapt to a changing global environment. In addition to exploring some of the global challenges, delegates will discuss our role in identifying gaps in local policies and programs as well as making sure we are communicating the science in a clear and understandable way. □

Register soon, as it was sold out last year! http://www.latornell.ca/

# Atlantic News

## Atlantic Director's Report

*By Pat Stewart, CSEB Atlantic Director*

Pat Stewart, one of the Atlantic Directors of CSEB, attended a meeting of one of the subcommittees of the Canadian Environmental Network (CEN), held in South Rustico, PEI, September 19-21. The CEN Environmental Planning and Assessment caucus coordinates examination and review of the environmental assessment process in Canada, as well as taking an interest in important aspects such as public participation and education, as well as review of individual projects. CSEB has had a seat on the committee for several years, contributing its science-focused perspective to a group which consists largely of non-scientists, activists and environmental lawyers from across Canada.

Strategic Environmental Assessment and the status of ongoing legal actions in connection with environmental assessments across Canada were the subjects of presentations, including an update on the Digby Neck quarry EA Panel decision and the subsequent suit by the project proponent (the project was turned down), the Kearl Tar Sands assessment in Alberta, and Cassiar mine in B.C.

The path of EA in Canada is still imperfect, and there are many ways that projects can avoid public review, sometimes with unacceptable consequences, at government discretion and through industry manipulation of the process. One of the issues discussed was the use by Fisheries and Oceans Canada of 'Letters of Advice'— arrangements made with proponents of projects — that give advice on changing aspects of the project to lessen or remove potential impacts, often removing the need for an environmental assessment of the project. While in many cases the approach works, in some it doesn't, and it has resulted in unnecessary environmental damage. The recent Irving Oil, Saint John, New Brunswick, refinery decision to allow the company to build the largest refinery in Canada without a Federal EA of the main refinery complex, and how the Canadian Environmental Assessment Act could be improved to remove this possibility in future, were also discussed.

The CEN Environmental Planning and Assessment caucus is planning a conference on Strategic Environmental Assessment (the process of undertaking a broad environmental assessment in an area or for an industry to identify potential issues before development takes place), tentatively scheduled for June 2009 at Mount Allison University in Sackville, N.B., and hopes to hold

up to six workshops on the Canadian environmental assessment process across Canada, subject to funding, in the next six months. Members of the Caucus were pessimistic, however, that the CEN itself would survive under a Conservative majority government in Parliament, as a wide range of initiatives in both social and environmental policy and action, have been cut by the recent minority government. □

# Territory News

## Territories Director's Report

*By Anne Wilson, CSEB Territories Director*

The northern weather this fall seems to be designed to prepare me for attending our conference in Vancouver, which I understand gets a lot of rain! Please be sure to mark your calendars for November 13-14th to attend the CSEB AGM and Conference (further details are in the newsletter and on the CSEB web site). The autumn days are rapidly getting shorter, and we are doing the last of the monitoring work in the brief time remaining before the ice forms on lakes and lagoons.

One of my favorite aspects of working in environmental assessment is the opportunity to visit sites at all stages of the development process. Recently I visited the Fortune Minerals NICO Project site, and was very intrigued by the presence of a small perched lake that supports a trout population, against all expectations. Such anomalies are fascinating! If there needs to be a moral to this story, it might be that we should periodically question our assumptions and take the time and effort to check. Another recent site visit to the Ekati Diamond Mine brought the longer term perspective, as this mine is over half way into its mine life, and numerous lessons have been learned since the early 1990s exploration days when I first saw the site.

It strikes me that the main workload of biologists in the NWT and NU is driven by the activities of geologists and engineers! Each development project submission has to include extensive baseline characterization and outline future monitoring for all aspects of the environment, and this continues through the construction and life of the project ("cradle to grave"). □

## Update on NWT and NU projects:

In the NWT, there are three projects which are in the pipeline for environmental assessment. Tyhee NWT Corp.'s Yellowknife Gold Project and the Canadian Zinc Corp. Prairie Creek Mine Project are both in the scoping stage of environmental assessment (see the Mackenzie Valley Environmental Impact Review Board website for updates at http://www.mveirb.nt.ca/) while the Fortune Minerals NICO project (cobalt/gold/bismuth) has applied for permits, but is awaiting land tenure decisions before being referred to EA. Tamerlane's Pine Point Pilot Project awaits a water licence, having completed hearings recently. The Gahcho Kue Diamond Mine will soon be submitting their impact assessment report, and the Environmental Impact Review (panel level) will continue.

The Giant Mine Remediation project was referred to Environmental Assessment by the City of Yellowknife, which will unfortunately delay the start of remediation work by one to several years. I had the opportunity to tour the Con Mine (also in Yellowknife) in mid-September and was favorably impressed by the cleanup work completed to date. It appears that revegetation and reclamation of the tailings ponds will be feasible using direct seeding in areas of old tailings, which don't have high salinity, and with surface amendments in the rest.

The Taltson Hydroelectric expansion assessment is proceeding, with the Developer's Assessment Report expected shortly.

In the NWT, three uranium exploration project proposals in the Upper Thelon River basin have been rejected as causing unacceptable cultural impacts in combination with cumulative effects of other projects, and a fourth uranium project approved with measures to be implemented to mitigate impacts to caribou and heritage resources. Prospects for uranium development in the NU territory seem to be better, with a uranium project in the Baker Lake area receiving a more favorable public response.

In Nunavut, the environmental assessment has started for Sabina Silver Corp.'s proposed Hackett River Mine (lead, silver, copper, lead, and gold), while the Meadowbank Gold Project is in the construction phase. The Doris North Gold Mine construction is being done for some surface facilities only at this time, as Newmont Mining Corp. has decided to revisit mining on a more regional scale. OZ Minerals Ltd. is proceeding with pre-development work on the Izok Lake lead-zinc project, and Baffinland's Mary River iron ore project expects to submit a project description by the end of the year that will initiate that environmental assessment.

Municipal: Sampling work was done over the summer to fill gaps in the inventory of existing municipal wastewater systems and their performance; more intensive work is planned to better characterize typical systems and determine how their operation might be optimized.

As you can imagine from the above listing of activities, there is no shortage of interesting reading and monitoring work on the go! I would be happy to hear from any of my northern colleagues, to let me know what is going on with biologists north of 60, and to talk about what types of activities we might initiate in connection with the objectives of the CSEB! Meanwhile, I wish all a safe fall as we deal with the changing seasons. □

## Build Arctic Network for Sovereignty

*Randy Boswell, Canwest News Service*

June 26, 2008 - The federal government's main advisory body on Arctic issues is urging the establishment of a "pannorthern network" of research stations to not only build Canada's scientific capacity in the region but also to strengthen its sovereignty claims across the frontier.

The Canadian Polar Commission released the results Wednesday of a two-year study of the country's Arctic research facilities, concluding that the Conservative government should make a 25-year commitment to construct new facilities throughout northern Canada, an investment that would "also support the sovereignty agenda by demonstrating Canada's commitment to its North."

The Ottawa-based agency is mandated to monitor the state of Arctic affairs and give federal policy advice. "Climate change, the environment, health and social stability, economic development, sovereignty and security -- these are all major issues that will continue to demand our attention over the next few decades," commission chairman Dr. Tom Hutchinson said in a statement.

The report's key recommendation is the network of research stations -- "with a lifespan of at least 25 years, along with a funding commitment of 25 years" -- that will serve as "an essential building block for constructing a national polar science policy."

The report also recommends forging close links with northern communities to help establish and operate the new research facilities.

And anticipating the future decommissioning of two of the Canadian Coast Guard's icebreakers -- the CCGS Louis St. Laurent and CCGS Amundsen -- the polar commission urges their replacement with "science-capable vessels" better suited to research uses.

The 50-page report, says a key motivation for bolstering Canada's scientific capacity in the Arctic is the planned reinforcement of its sovereignty claims in the North, including control over the disputed Northwest Passage.The U.S. and other countries dispute Canada's claim that the passage is part of this country's internal waters. □

## Arctic research station belongs in Northwest Passage: polar commission

*Randy Boswell, Canwest News Service*
*June 26, 2008 / CBC News*

The Canadian government's promised world-class Arctic research station should be located in the Northwest Passage and connected to a network of other research bases across the North, says the Canadian Polar Commission.

In releasing the results Wednesday of a two-year study on research logistics and infrastructure in Canada's North, the commission says current interest in polar research and Arctic sovereignty would make the Northwest Passage a good location for the High Arctic research station.

Ottawa promised the new station in its most recent throne speech.

"It would be a very smart thing to have a station that could be involved in international research … and involving communities along the Northwest Passage and so on," commission chairman Tom Hutchinson told CBC News Wednesday.

The commission, a federal government agency that specializes in polar research, also concluded that Ottawa needs a 25-year plan and $25 million to set up a pan-northern network of about 12 major research stations from Labrador to the Yukon.

Many existing field research facilities in the region are old and falling apart, the commission found.

Despite a surge in polar research over the last decade, northern field stations have suffered from three decades of neglect and cannot keep up with the current demand, Hutchinson said.

John Smol, a longtime Arctic researcher with Queen's University, agreed.

"Canada is a polar nation, and we really haven't been holding up our own in infrastructure and the facilities to do this," he said Thursday.

The Canadian Polar Commission's study also recommends setting up a comprehensive northern surveillance and monitoring network, as well as replacing the Canadian coast guard research ships Amundsen, Louis St. Laurent and Nahidik with vessels capable of accommodating scientific research once the existing ships are decommissioned.

Hutchinson said a northern research network could complement work being done at the federal High Arctic research station.

Basing the new High Arctic station by the Northwest Passage would also make logistical sense, as ships can enter the area, added Bill Doidge, director of the Nunavik Research Centre in Kuujjuaq, Que.

"But I think there's a lot of things to weigh up in terms of what the scientific priorities may be in a certain area," Doidge said.

"Actually, if you get a bunch of scientists together, they won't agree totally on where the location should be."

It isn't just scientists who may disagree on where a High Arctic research station would go — Nunavut, the Northwest Territories and the Yukon have all been hoping to have a major research centre based on their territory. □

## Ban chinook salmon fishing on Yukon River

### *Less than half the usual number of salmon have reached river this year*

*Randy Boswell, Canwest News Service*
*June 26, 2008 / CBC News*

A total moratorium on chinook salmon fishing on the Yukon River may be necessary to save the fish, said the chairman of the Yukon Salmon Committee.

This year's Yukon River salmon run appears to be in trouble, said Richard Sidney, whose committee is mandated to look after the salmon's welfare. About 32,000 Yukon-bound chinook salmon have reached the mouth of the river to date — less than half the normal numbers, he said.

"My family has gone without salmon for … this is going to be the third year we don't get any," Sidney told CBC News.

While a ban on sport and commercial salmon fishing is likely in the Yukon this year, Sidney said a voluntary moratorium on First Nations subsistence fishing may be needed as well.

"This fish is in so much trouble, you know? I think we should just leave it alone for at least five years," he said.

"We all have to get in this together. … [Otherwise], we may as well just kiss it goodbye."

While Yukon First Nations know that dramatic conservation measures are needed, fisheries managers upstream in Alaska don't seem to be ready to do what it takes to protect the fish, Sidney said.

"We are at the end of the line, and we're the ones that see this fish is in trouble … and they will not listen," he said. "They wouldn't listen, and they kept [their] commercial fishing and their subsistence fishery over there. That's totally out of hand."

Earlier this week, Alaskan officials cut the subsistence fishery in half. Nevertheless, Sidney said, people there are still fishing salmon, even though there are currently not enough fish to meet the minimum number required under a U.S.-Canadian treaty. □

## Canada's Environment Minister Calls for National Roundtable on Polar Bears

### *Will bring Environmental Groups, Inuit and First Nations, Provinces and Experts Together*

INUVIK, NWT, August 28, 2008 - Canada's Environment Minister John Baird today announced he will convene a national roundtable later this year dedicated to the conservation and protection of Canada's polar bear population.

"As I have said before, our Government believes that the polar bear is an iconic symbol of Canada," said Minister Baird. "Clearly, we need to ensure that the polar bear does not become endangered or threatened in Canada."

"At the same time, we have a constitutional duty to work with a number of groups like the Inuit on protecting the polar bear, we can also learn from traditional aboriginal and Inuit knowledge. That's why I am calling a national roundtable of key stakeholders by the end of November 2008. This will bring together environmental groups, the Inuit and First Nations, provinces and territories, and other experts in one place to chart Canada's course on protecting this majestic animal."

Minister Baird's commitment comes as the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) issued its detailed scientific polar bear assessment, part of COSEWIC's 2008 Annual Report. The arm's length, independent scientific committee continues to assess polar bears as a species of "Special Concern," the same designation they've held since 1991.

"COSEWIC's work is vital to our understanding of the challenges ahead," said Minister Baird. "Their scientific work shows that while there are many encouraging signs for most sub-populations, there are others that need help. The time to act is now."

COSEWIC assesses the status of the wildlife in Canada, based on the best scientific, community and Aboriginal knowledge available. Certain Environment Canada scientists are members of COSEWIC and provide science expertise for the development of these assessments.

The national roundtable proposed by Minister Baird would bring together key players to consider the science of COSEWIC and traditional Northern knowledge. This meeting will take place by the end of November 2008. Minister Baird strongly believes that by working cooperatively now, we can protect polar bears across the full range of their habitat for generations to come.

"I also want to be clear that a previous government had the opportunity to take action to protect the polar bear in 2005," said Minister Baird. "At that time, COSEWIC made the same ruling that the bear was an issue of special concern. However, instead of taking action, the Minister did not want to have to make a decision and sent the matter back for three more years of study. That was a failure of leadership, one this Government will not repeat."

The COSEWIC Annual Report and status assessments of polar bears and 45 other species are available online at: www.sararegistry.gc.ca. □

Related Document: Conservation of Polar Bears in Canada [Backgrounder, 2008-08-28]

For more information, please contact:

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# 47th ANNUAL MEETING of the CANADIAN SOCIETY of ENVIRONMENTAL BIOLOGISTS

THE CANADIAN SOCIETY OF ENVIRONMENTAL BIOLOGISTS • SOCIÉTÉ CANADIENNE DES BIOLOGISTES DE L'ENVIRONNEMENT •

NOVEMBER 13TH & 14TH, 2008

## MUNICIPAL WASTE MANAGEMENT

### ENVIRONMENTAL CHALLENGES & SUCCESSES

**REGISTRATION**

| | member | non-member |
|---|---|---|
| FULL: | $75.00 | $115.00 |
| STUDENT: | $25.00 | $45.00 |
| BANQUET (not included in above) | $35.00 | $35.00 |

*registration includes field trip on November 14th

**Location:**
BC Institute of Technology
Burnaby Campus
3700 Wellingdon Avenue, Burnaby BC

**Discussion Topics:**
- metro vancouver solid waste initiative
- metro vancouver waste to energy
- metro vancouver bio solids management
- commercial composting initiative
- role of biologists in waste management

**Date:**
- Thursday, November 13th, 2008
- Field Trip, Burnaby Waste - to - Energy Facility, Friday, November 14th, 2008

**Accommodations:**
Holiday Inn Express, Metrotown
4405 Central Boulevard, Burnaby, BC
1 • 877 • 323 • 1177

CONTACT - JIM ARMSTRONG
METRO VANCOUVER POLICY & PLANNING DEPARTMENT
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# Our National Research Forests: Continuing to Answer Important Forestry Questions

*Submitted by: Katalijn Kooper*

Canada's two oldest national research forests, Petawawa and Acadia, are celebrating their 90th and 75th anniversaries, respectively, this year, marking many years of renowned and remarkable research.

Over the years, both Petawawa and Acadia have been front-runners in answering many different forestry questions. The research conducted at these forests is very diverse, ranging from tree breeding and tree seed to fire research, forest ecology, forest ecosystem and remote sensing. Results derived from this research form the basis of real-life management plans and regeneration models, along with several growth and yield models.

In fact, Gary Warren, an NRC and forest pathologist from Newfoundland, is currently tackling the mysteries of a hidden enemy — root and butt rot in balsam fir — and the effect this important disease has on this species. Although there are differing opinions on what types of forestry practices can manage this disease, his recent research at Acadia indicates that pre-commercial thinning in balsam fir has increased the incidence of rot in mature trees. This research shows that it is fundamental for forest managers to account for this in their harvesting options and wood supply calculations.

Similarly, at Petawawa, university researchers from Toronto, Laval and Montreal are setting up studies in 40 to 60 year old white spruce plantations to learn about the effects of root rot on crown size and wood quality. We look forward to the results this interesting study will produce.

The Petawawa Research Forest was the first place in Canada where systematic research was conducted on how to establish and grow stands of trees. Numerous species were planted at a variety of spacings and on many different sites. This allowed researchers to measure trees at regular intervals and track and analyze the growth, development and performance of the plantations.

A prime example is a red pine spacing and thinning trial established in 1953 at Petawawa by Will Stiell. He examined a variety of different planting distances ranging from 1.2 to 6.1 m, along with different thinning treatments. Recently, these plots have been examined by NRCan researchers and scientists from FPInnovations. After more than 50 years, it has recently been determined that the most promising red pine spacing option is1.8 to 2.4 m with periodic thinning and a rotation of about 60 years. A narrower spacing had higher establishment costs and lower growth, while wider spacings had lower revenue due to lower fibre quality. These results have been incorporated into the latest growth and yield predictive models.

Petawawa was the first place in North America where research was done on logging damage in conifers. Outcomes of these studies allowed loggers and other forest workers to use different methods in order to minimize damage and forest managers were allowed to better predict the expected logging damage. This research at Acadia continues today. NRCan forester Ed Swift recently completed commercial thinning studies using mechanized harvesters on balsam fir stands.

"Supporting forester operator training and motivation is important," says Ed. In fact, motivated, well-trained operators had significantly lower damage on residual balsam fir trees than had been previously reported in the literature (5–10% damage compared to 30–60%).

Fire research at Petawawa is also well recognized. For example, results of research on prescribed understorey burning in white pine stands have been included in training and operational understorey burns in Ontario and Quebec. Ontario's understorey prescribed burn expert system for white pine management (UPBX), a large rule-based/neural network expert system that guides managers in their decisions as to the appropriateness of a specific site, incorporates the research and experience with the types of burns conducted at Petawawa.

Fire research at Petawawa also formed the basis for the development of a Fire Weather Index System, which is used worldwide to help predict fire hazards. As well, Charlie van Wagner's research on fire behaviour is widely used in explaining and calculating fire cycles for forest planning across Canada.

The Petawawa area, situated in the Great Lakes–St. Lawrence Forest Region, is well known for its red and white pine, and some impressive research was done on these species at Petawawa, both in plantations and natural stands. Results from two major experiments on regeneration of these species, Cartier Lake Silviculture Area and Meridian Road Silviculture Area, have been used in the current silvicultural guide of the Ontario Ministry of Natural Resources.

For over 90 years, the Acadia and Petawawa national research forests have played an important role in helping the forest industry tackle some of its major issues. By working together with industry and academia, these national forests will continue to provide answers to the many pertinent forestry questions that are challenging our industry today. □

# Forest Research Today: Taking Advantage of Generations of Knowledge

*Submitted by Nancy Macdonald*

Natural Resources Canada's national research forests, Acadia and Petawawa, are two living laboratories that have historical scientific data spanning over 90 years. This unique data provides researchers and forestry practitioners with long-term trends to help address current and future ecological and operational forestry issues.

Situated in the heart of the Acadian forest, the Acadia National Research Forest was established in 1933. Its sister forest, the Petawawa National Research Forest, nestled in the Great Lakes–St. Lawrence Forest Region, was established in 1918. Together, these forests cover over 19 000 ha and have some of the oldest continually measured sample plots.

The Acadia and Petawawa national research forests provide stakeholders with an opportunity to learn first-hand the results of past and current projects and to plan future collaborative studies. With their combination of history, experimental sites and data, these forests provide a unique opportunity for both long- and short-term research. Researchers conducting studies at the forests enjoy multiple benefits from enhanced site security to opportunities to revisit a variety of historical databases.

"I am quite excited to do work in Acadia and to work with the Canadian Forest Service [Natural Resources Canada]," says Dr. Fan-Rui Meng, Research Director of Nexfor-Bowater Forest Watershed Research Centre and University of New Brunswick professor. "I work there because it is dedicated to forest research. Forest research suffers from not having secure land for long-term studies. Trees take a long time to grow and we need to have sites that will continue to be there. I like the fact that I can plan for a longer time, and should my funding run out, I know that the study or site can be easily used by someone else to keep it going. There is great research history there and I will be taking advantage of its availability."

Fen-Rui is currently working with a variety of partners to erect an environmental tower that will measure a variety of ecological parameters such as soil respiration, weather and carbon monitoring. The hope is that many scientists can benefit from its monitoring abilities. Researchers will be able to save money by not having to measure all the ecological parameters separately.

Dr. Mike Wotton, currently a researcher at the University of Toronto, helped develop a collaborative new graduate program focused on forest fire behaviour research with the Canadian Forest Service. "I think that local understanding of the research forest that the staff and the network of former staff still available for consultation provide, coupled with the possibility of working in stands that have been monitored and characterized in detail (in many situations for decades) is rather unique, and exceptionally valuable," says Dr. Wotton.

"It [the forest] offers an established base from which to operate. I am able to go there or even just pick up the phone and say 'I'd really like to do some work in a stand that has qualities X,Y,Z' and within a short time I have a number of options presented to me. It is really exceptional," says Dr. Wotton. "In addition, the location is staffed daily and there is radio contact over the entire property. As a supervisor of research assistants and graduate students, this is very attractive from a safety and logistics point of view."

Research activities at the national research forests have covered most of the topics in forestry at one time or another, responding to the changing research priorities of the forest industry. Some of these research studies and potential collaborative opportunities include the following:

- enhanced forest productivity through silviculture treatments;
- biological evaluation of alternative harvesting treatments;
- forest health;
- forest vegetation management alternatives;
- forest diversity and natural succession;
- biodiversity;
- provenance trials using seed from various locations; and
- clonal studies including somatic embryogenesis.

Already, universities, colleges and provincial governments are taking advantage of the opportunity to collaborate with Natural Resources Canada at these forests. For instance, the Ontario Ministry of Natural Resources, along with many partners like the University of Montreal, Bowater, and the Forest Engineering Research Institute, have established a 20-year study at Petawawa National Research Forest to examine the effects of natural disturbance and silviculture on tree survival, growth, wood quality and species and genetic diversity on mix-wood white pine stands. This fundamental research will help forest practitioners maintain or enhance fibre quantity and quality, maintain soil and water resources, conserve biological diversity, and reduce risk of losses to fire, insect or disease.

Through collaborative research at these forests, many important questions plaguing the forest industry will be addressed. The knowledge gained from this research will continue to enhance forest management practices around the world. To learn more about the forests or the opportunities to collaborate visit: www.cfs.nrcan.gc.ca/subsite/research forests or contact Dean Toole, National Research Forests Program Manager dtoole@nrcan.gc.ca □

# Another Bright Idea

## *Poisonous vapor so bad, researchers recommend families no longer use CFLs*

*Presented from WorldNetDaily August 11, 2008*

The Mercury Policy Project summary paper quotes an estimate that the U.S. currently releases two tons of mercury vapor into the environment each year from broken fluorescent bulbs alone. Two tons contrasts startlingly with the level the EPA has established as dangerous to human health: a mere 300 billionths of a gram.

Breaking a single compact fluorescent bulb on the floor can spike mercury vapor levels in a room – particularly at a child's height – to over 300 times the EPA's standard accepted safety level. Furthermore, for days after a CFL has been broken, vacuuming or simply crawling across a carpeted floor where the bulb was broken can cause mercury vapor levels to shoot back upwards of 100 times the accepted level of safety.

Some states, though not the federal government, have also established a safety threshold for a one-time, acute exposure to mercury vapor. California, for example, has established that any level of exposure over 1,800 ng/m$^3$ has potentially harmful health effects.

The Maine study, however, discovered that upon breakage of a CFL, mercury vapors can rise "with short excursions over 25,000 ng/m$^3$, sometimes over 50,000 ng/m$^3$, and possibly over 100,000 ng/m$^3$ from the breakage of a single compact fluorescent lamp." In other words, the study found breaking a single bulb can send mercury vapor levels in a room to over 50 times the level that California considers dangerous and to over 300 times what the EPA has established as a safe level for prolonged exposure.

Researchers in the study broke 45 bulbs in a variety of flooring surfaces and then studied lingering gas levels after a variety of cleanup techniques. The results contradicted a number of commonly held thoughts on CFLs, for example:

- Though proponents of CFLs often argue a single bulb only contains 5 mg of mercury, the study found it was an average. The bulbs actually range from 0.9 to 18 mg of mercury.
- And for cleanup on carpets, the Energy Star guidelines suggest vacuuming and disposing of the dust bag. The Maine study, however, discovered that vacuuming served to simply stir the vapor into the air and "irreversibly contaminate the vacuum". The researchers, acknowledging it was inconvenient, recommended only one course of action for broken bulbs on carpet: remove the carpet.
- Though the EPA's Energy Star program recommends placing a broken bulb "in a glass jar with a metal lid or in a sealed plastic bag," the study discovered mercury vapor leaches right through plastic bags. "Of the 12 different types of containers tested during the 23 different tests, the plastic bag was found to be the worst choice for containing mercury emissions," researchers stated. "Based upon this study, the DEP now suggests that a glass container with metal screw lid with a gum seal be used to contain debris."

The NIEHS website states, "Today's CFLs underscore mercury's volatile vapor form, which is still a significant health concern – ventilation reduces but does not eliminate this toxicant. Mercury vapor inhalation can cause significant neural damage in developing fetuses and children."

"Elderly and unhealthy individuals may already be at comprised health and be more susceptible to mercury effects than a healthy individual. For example, mercury does kidney damage, which could exacerbate an already existing kidney disease."

"It is well established that the developing organism may be much more sensitive than the adult to neurotoxic agents. For example, methylmercury exposure can produce devastating effects in the fetus, including cerebral palsy, blindness, deafness, and even death, while producing no or minimal effects in the mother."

"There are a number of studies documenting neurotoxicity as a consequence of inhalation of elemental mercury in adults. … Studies documented changes in EEG, deficits in peripheral nerve function, autonomic effects, psychological and sleep changes, and deficits in fine motor performance, visuomotor coordination, visual reaction time, visual scanning, memory, concentration, and executive function."

"Infants and toddlers also have a much higher rate of respiration than adults. Therefore, they have a higher exposure to similar concentrations. They also are lower to the floor and therefore closer to the source of the exposure and presumably more apt to obtain a concentrated dose of mercury." □

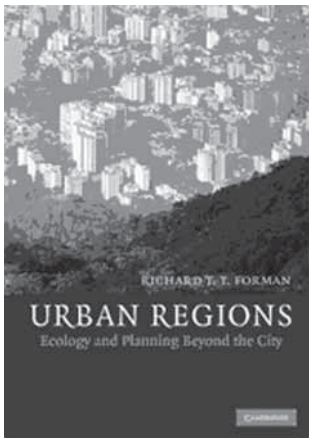
# New Books Of Interest

**Plants at the Margin--Ecological Limits and Climate Change**. *R. M. M. Crawford. 2008. $80.00 (Can).*

Margins are by their very nature environmentally unstable - does it therefore follow that plant populations adapted for life in such areas will prove to be pre-adapted to withstand the changes that may be brought about by a warmer world? Biogeography, demography, reproductive biology, physiology and genetics all provide cogent explanations as to why limits occur where they do, and the purpose of this book is to bring together these different avenues of enquiry. Crawford's numerous beautiful illustrations of plants in their natural habitats remind us that the environment remains essential to our understanding of plants and their function. This book is suited to students, researchers and anyone with an interest in the impact of climate change on our world.

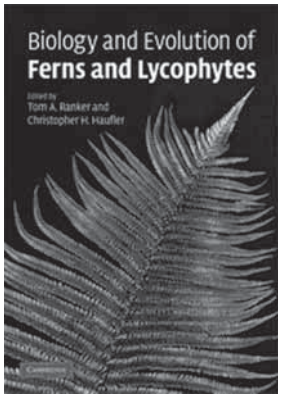
**Urban Regions: Ecology and Planning Beyond the City.** *Richard T.T. Forman. 2008.*

With land planning, socioeconomics and natural systems as foundations, this book combines urban planning and ecological science in examining urban regions. Writing for graduate students, academic researchers, planners, conservationists and policy makers, and with the use of informative urban-region color maps, Richard Forman analyzes 38 urban regions from 32 nations, including London, Chicago, Ottawa, Brasilia, Cairo, Seoul, Bangkok, Canberra, and a major case study of the Greater Barcelona region. Alternative patterns of urbanization spread (including sprawl) are evaluated from the perspective of nature and people, stating land-use principles extracted from landscape ecology, transportation and hydrology. Good, bad and interesting spatial patterns for creating sustainable land mosaics are pinpointed, and urban regions are considered in broader contexts, from climate change to biodiversity loss, disasters and sense of place.




**Biology and Evolution of Ferns and Lycophytes**. *Tom A. Ranker, ed. 2008. $70.00 (Can).*

With their team of contemporary scholars, the editors present a thorough coverage of fundamental topics necessary for obtaining an up-to-date understanding of the biology of ferns and lycophytes. The book is organized into major topics that build from the individual and its biochemistry and structure, to genetics and populations, to interactions among individuals and the conservation of species, and concludes with perspectives on evolutionary history and classification. Each chapter is organized to review past work, explore current questions, and suggest productive directions for continued discoveries about these fascinating groups of organisms. Written for upper undergraduates, graduates and academic researchers, "Biology and Evolution of Ferns and Lycophytes" fills a major gap in biological, organism-level, evolutionary literature by providing a review of the biology and evolution of this important group of vascular land plants.




**Acid Toxicity and Aquatic Animals.** *R. Morris, E.W. Taylor, D.J.A. Brown and J.A. Brown, eds. 2008.*

Society for Experimental Biology Seminar Series (No. 34). This book reviews and presents recent research on acid waters and their effects on aquatic animals. Starting with the environment, in order to assess why the problems have arisen in particular areas, the volume then deals with field and survival studies on invertebrates and vertebrates; examines the extent of the biological problem and the attempts that have been made to relate water quality and the susceptibility of animals. The natural progression of environmental and field studies, toxicity, and survival tests provide the background information for the physiological studies that follow. These form the major component of the book and they seek to analyze the toxic effects of acid waters and trace metals with cardiovascular and endocrinological effects.

**Biological Diversity and Function in Soils**. *Richard Bardgett, Michael Usher, and David Hopkins, eds. 2008.*

Although soil provides physical support for plants and contributes to a variety of important environmental functions, many questions about the ecological significance of its biological diversity, and how ecosystem function is affected, have never been asked. Recent technical developments, as well as new experimental and modelling approaches, have led to a renaissance in soil biodiversity research. The key areas are reflected in this new volume, which brings together many leading contributions on the role and importance of soil biota. □

# The Role of Fisheries Science in Habitat Management and Habitat Compliance Implementation

*Edited and submitted by: Joseph M. Hnatiuk, National Director, CSEB; The minutes were prepared by Susanna D. Fuller, Ecology Action Centre*

## Workshop Summary

I attended the above noted workshop as a representative of the CSEB.

The workshop was intended to facilitate communication and collaboration between environmental non-government organizations (ENGOs) and the Department of Fisheries and Oceans (DFO), a National Fish Habitat Coordinating Committee was established in 2006 comprised of DFO and ENGO members of the Canadian Environmental Network (RCEN).

Initial workshops were held in Ottawa (October 2006) and in the Pacific Region (March 2007). Following on the success of those workshops, a national DFO-ENGO workshop facilitated by the RCEN was held on November 5th and 6th 2007 to discuss the Habitat Management Program's Risk Management Framework, including the role of science, and DFO's Compliance Framework. This national workshop was jointly organized and co-chaired by ENGO members of the RCEN and staff of the DFO Habitat Management Directorate in Ottawa, and brought together ENGOs across Canada to discuss with DFO ways to improve implementation of the Habitat Management Program (HMP) and address the various concerns of ENGOs from across Canada.

The primary objective of the workshop was to bring together DFO staff and representatives from ENGOs (including fish habitat stewardship groups) from across Canada to discuss ways to improve the implementation of the Habitat Management Program. More specifically, this national workshop focused on the Risk Management Framework and Compliance Framework (RMCF).

During the workshop, ENGOs expressed a fundamental disagreement with the use of Letters of Advice (LoA) and Operational Position Statements (OS) as authorizations for activities deemed to have a low risk of damaging fish or fish habitat. LoAs and OS developed to reduce the number of low risk habitat referrals to the Department each year are seen as decreasing public awareness and subsequent participation in reviewing project applications that could be reviewed as part of environmental assessments triggered by the potential issuance of an Authorization of Habitat Alteration, Disruption or Destruction (HADD), as well as allowing unacceptable habitat destruction.

The voluntary nature of compliance with the LoAs and OSs was also of concern, particularly if the use of these leads to destruction of fish or fish habitat, without a clear authorization to do so. ENGO's presented case studies from the regions, with specific examples of where habitat is being destroyed, and where there is difficulty in gaining the necessary cooperation from DFO to ensure that we don't continue to lose habitat.

Several organizations raised issues regarding Memorandums of Understanding (MoU) with various levels of government and industry and suggestions were made to create goal based MoUs so that habitat protection is achieved. Some NGOs noted that there is a need for a system where information that is collected by ENGOs can be given to DFO for action.

The DFO presentations demonstrated a clear need for increased capacity, and that the development and implementation of the Environmental Process Modernization Plan (EPMP) was a response, in part, to the large number of referr(als it was receiving each year. The EPMP, including the Risk Management Framework, will redistribute the large workload, previously focused on requests for reviews of project referrals, into a broader risk management approach.

The history behind the development of the Environmental Process Modernization Plan (EPMP) was described, as well as the development of the Risk Management Framework (RMF), particularly with respect to the life cycle approach. The RMF was described as needing continual improvement through communication, consultation and collaboration with stakeholders. The RMF was also addressed by DFO staff in terms of a decision making process that considers science and values to reach a conclusion.

Following the ENGO case studies, examples of regional implementation of the RMF, with a focus on successful protection of fish and fish habitat, were presented and discussed. There are regional differences, particularly in the relationship between ENGOs and DFO, and hence the level of collaboration around fish habitat protection.

A representative from the Natural Resources Industry Association (NRIA) was invited to offer an example of where the EPMP and the RMF as it is currently applied, resulted in successful protection of fish habitat. While the regulatory process has become streamlined, and there is increased predictability for industry regarding activities that may cause a HADD, it was difficult to see where improvements had been made in actual protection of fish or fish habitat. Examples of best practices in the forestry industry in Alberta were offered by ENGOs. The discussion with the NRIA representative was useful, and indicated that a joint meeting between the ENGOs and the NRIA may provide an opening to find some common ground.

On the second day of the workshop, the focus of the discussion switched to achieving compliance with the habitat protection provisions of the Fisheries Act. The discussion was productive, and lead to several ideas for how ENGOs can help promote compliance and become involved in reporting and prosecution when a HADD occurs. Challenges to on the ground enforcement were clearly articulated by C&P representatives.

In summary, the discussion covered some difficult topics, and there remained a desire to have more information on the scientific information that is being used to make habitat authorization decisions, in the context of the EPMP and the RMF. There was an increased level of understanding of the challenges facing ENGOs who are often called upon to address habitat destruction and the task of DFO to protect fish and fish habitat. Recommendations were put forth to improve both communication and collaboration between DFO and ENGOs as well as how to improve the protection of fish and fish habitat in Canada. □

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