

Vol. 64, Number 4 • Winter 2007



# **THE CANADIAN SOCIETY OF ENVIRONMENTAL BIOLOGISTS Newsletter / Bulletin**

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INTERNAL PHOSPHORUS LOADING IN  
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MINUTES OF CSEB BOARD OF DIRECTORS MEETING





# CSEB Newsletter / Bulletin SCBE

VOLUME 64, NUMBER 4, 2007

CSEB Website <http://www.cseb-scbe.org>

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**CSEB NEWSLETTER 2007**

Vol. 64, Number 4 Winter 2007

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.

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**LE BULLETIN de la SCBE 2007**

Vol. 64, Numbre 4 L'hiver 2007

Le Bulletin de la SCBE est une publication trimestriel de la Société Canadienne des Biologistes de l'Environnement. Le Bulletin informe les membres des activités 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 diversifié d'environnementalistes Canadien. Les membres sont invités à contribuer des articles, photos (noir et blanc) ou des messages qui sont d'intérêt nationale en sciences biologiques et environnementales. Les lettres à l'éditeur sont bienvenues.

**Tout la correspondance 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'éditeur:** 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 Canadienne des Biologistes de l'Environnement (SCBE) est une organisation nationale sans but lucratif. Ses objectifs premiers sont:

- de conserver les ressources naturelles canadiennes.
- 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.

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# NATIONAL

## President's Report

*Submitted by: Shawn Martin, President (2006-2007)  
Canadian Society of Environmental Biologists*

### President's Message November 28, 2007

In October of 2007, it came to our attention that budgets within Environment Canada had been "frozen" or cut. We learned of huge cutbacks to the budgets of the Migratory Bird program, the national Environmental Monitoring and Assessment Network, and our Canadian treasures, the National Wildlife Areas. Several CSEB members collaborated to write a letter to the Minister of the Environment regarding the budget cuts, and the letter can be found on the website in the "What's New" section and is also reprinted below.

As this will be my last President's report, I'd like to thank the Board of Directors for their support throughout the last two years and acknowledge that we have a terrific group of volunteers who put in countless hours to ensure that we have a well run society. I'd like to thank Jackie Spry for her work as Secretary/Treasurer for the 2006/2007 term and welcome Karen March into the position. Brian Free has accepted a nomination to move from 1st VP to President this year, and his role as 1st VP will be taken over by Anne Wilson. Gary Ash will remain as our capable membership chairperson and interim newsletter editor and Natalie Nelferty will remain as 2nd VP.

I look forward to working with everyone in the new year, and will continue to support the society as webmaster for our website and as the listserv manager. Happy Holidays, everyone!

*Following is a copy of the letter sent by CSEB to The Honourable John Baird, Minister of the Environment on October 22, 2007 in reference to recent cuts in funding to Environment Canada and in particular to the Canadian Wildlife Service. If this is something you have a strong opinion on, the executive of CSEB urges you to contact the Minister or your local Member of Parliament, and make your views known.*

The Honourable John Baird  
Minister of the Environment  
Les Terrasses de la Chaudière  
10 Wellington Street, 28th Floor  
Gatineau, Quebec  
K1A 0H3

October 22, 2007

Dear Hon. John Baird,

Subject: Frozen budgets within Environment Canada

The Canadian Society of Environmental Biologists is a non-profit society, whose primary focus is to further the conservation and prudent management of Canada's natural resources based on sound ecological principles. Members are professionally trained biologists and biology students. CSEB currently has over 200 members, found throughout the workforce and in all Canadian provinces and territories.

As biologists, we are very aware that human activity can have serious effects on Canada's natural environment. These impacts must be managed carefully, using a solid foundation of scientific knowledge. Canadians are fortunate to have a strong contingent of environmental scientists in your department. Indeed, Environment Canada has an international reputation as a leader in scientific research related to environmental management.

It has come to our attention that several budgets within Environment Canada have recently been "frozen" or cut. We have learned of huge cutbacks to the budgets of the Migratory Bird program, the national Environmental Monitoring and Assessment Network, and our Canadian treasures, the National Wildlife Areas. The overall budget of the Canadian Wildlife Service has apparently been frozen.

Among the important benefits of these programs, they all contribute to our understanding of the effects of global warming, a top environmental priority of your Government. We agree with the observation in the recent Throne Speech that "the North needs new attention...." and we support your Government's proposal for a world-class Arctic research station. However, these current budget cuts in Environment Canada work against this new direction and will hinder our responses to global warming.

The CWS has been a key player in many important achievements that Canadians take for granted, such as the banning of DDT and recovery of endangered species, like the peregrine falcon, whooping crane, swift fox and burrowing owl. CWS scientists continue to expand our knowledge about many northern species. Yet these cutbacks prevent scientists from completing their fieldwork and other important activities. Field seasons missed can never be regained. The strength and value of research programs are often carefully nurtured over many years. Gaps in data collection can threaten a significant financial investment. And without a clear commitment to research, Environment Canada will have difficulty continuing to attract the high-quality scientists Canada needs.

Ongoing research is very important for fisheries and wildlife managers, forest managers and others who must make key decisions in a timely manner. As well, decision-makers in industry and in other Canadian governments rely heavily on Environment Canada's excellent research.

The CSEB wants you to understand the long-term consequences of these budget freezes and cuts. In a time when public support for the environment is strong and growing, it is hard to understand the rationale behind these decisions. Please see that these budgets are restored and Environment Canada continues its pursuit of the highest quality scientific research and environmental management.

Respectfully,

Shawn Martin  
President,  
Canadian Society of Environmental Biologists

cc: The Right Hon. Stephen Harper, Prime Minister

## British Columbia News

*Submitted by: Jim Armstrong CSEB B.C. Director*

December 1/07 - Metro Vancouver just started the Burrard Inlet Ambient Monitoring Program, which consists of water column monitoring and biota sampling. At the present time, the water column monitoring was completed during the week of November 26/07 and the biota sampling will continue into December (dependent on the number of fish and sex caught at each site).

The Greater Vancouver Regional District conducted an assessment of sanitary sewer overflow on blueberry crops. The GVRD commissioned a sanitary sewer overflow tank in Cloverdale, BC during 2007. Its purpose is to collect and store raw sanitary sewage during abnormally high flow periods (mainly during rain events) rather than have the sewage overflow from the pump station and flow onto the nearby blueberry fields.

Current members can forward their comments to my attention at: [Jim.Armstrong@metrovanancouver.org](mailto:Jim.Armstrong@metrovanancouver.org).

## Alberta News

*Submitted by: Jim Bob Gainer, CSEB Member*

### Mercury Emissions from Coal Fired Power Stations in Alberta: Advancements in Removal and Regulation

As a community member in Hanna, I have participated in ATCO Power's Environmental Committee for 10 years. This Committee was formed to address some of the local issues people have in the area surrounding the Sheerness Generating Station (approximately 20% of the Province's power).

During this time I was also invited to participate at all three public levels with CASA (Clean Air Strategic Alliance), a non-profit association of government, industry and NGOs such as environmental or health groups. CASA's vision is that the air will be odorless, tasteless, look clear and have no measurable short or long term adverse effects on people, animals or the environment. The public discussions were mostly concerning emissions of such gases as CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub> and Hg. In January 2002, the Ministry of Environment had asked CASA to develop recommendations based on public meetings, almost all of which the Province subsequently adopted.

My particular interest was mercury. To me, getting the Hg out of the coal power stacks was like getting the lead out of car gas. The problem was that at the moment the technology did not exist anywhere in the world for this to be done. The final level of public meetings still recommended that faster reductions in emissions be made with the ultimate goal that Hg be completely eliminated as soon as possible. The Province adopted these recommendations and implemented regulations that 70% of Hg emissions be eliminated by 2010 with 100% the ultimate goal.

The three major power utilities in the Province, ATCO, Transalta and Epcor, started two joint research projects, one near

Edmonton and one near Hanna. Activated charcoal emerged as the only basis for capturing Hg (and many other undesirables), Edmonton used electrostatic precipitation (ESP) and Hanna used a baghouse. The baghouse was quickly abandoned and now ESP is being implemented. The technology is still in its infancy but at the moment at least 70% of Hg emissions are being removed.

In addition to the research on the Hg recovery, the Hanna plant has for the last three years participated in a Mercury Deposition Network that monitors the non power-plant, baseline Hg levels in the area. This is part of the North American Deposition Network, this plant being one of only a handful of locations in Canada to participate.

Although my involvement was only at the superficial level, it made me aware of the fact that industry, government and NGOs have made improvements in Hg emissions especially, and pollution in general. The Province's regulations and reductions in Hg emissions lead the country, if not (except small isolated situations) the world in general.

## Saskatchewan News

*By Robert Stedwill, CSEB Saskatchewan Chapter Chair*

### So What's Happening in Saskatchewan?

Word is out that Saskatchewan is now a "have province." What does this mean to the environment of Saskatchewan? I think it means that we, as professional biologists and people concerned about the environment, need to be diligent about what is taking place here in the Province; and learn from the possible mistakes of others.

For example, the Saskatchewan Chapter of the CSEB is on record with the previous NDP government, and certainly now with the new administration under the Saskatchewan Party (read conservative) banner, of the concern we have for the fallout from the oil sands in Alberta whose emissions float this way, and its consumptive use of water; but also the oil sands here in Saskatchewan, which are being viewed as a generator of significant royalties to the Province; as the new government rubs its hands together as they are exploited. This is not to suggest that the resource should not be developed; however, if we can learn anything from the Alberta experience, let's be pragmatic and not be blinded by dollar signs.

The vast prospect held by Oil sands Quest Inc. began when mining claims were staked on 1.4 million Crown acres to the north of Laloche and across to the Saskatchewan/Alberta border. Assuming hypothetically that the hydrocarbon intensity is similar to that of Alberta's, the new oil sands play could demonstrate in-place resources of approximately 60 billion barrels, or more, as the exploratory drilling is still identifying new boundaries.

Bitumen on that scale could support at least four oil sands projects within two or three decades, generating possibly 400,000 barrels of synthetic crude per day.

Energy for such developments is significant. When one reads that a third of the energy (typically natural gas) contained in Alberta bitumen is required to extract the synthetic crude, not to mention the 10 barrels of water for processing each barrel of crude, one needs to question the long-term sustainability of the whole exercise. The newly elected government (November 2007) views this energy need in a new Saskatchewan oil sands development, as well as the nearby existing and future Alberta oil sands developments, as possible justification for the development of nuclear power generation in the Province in the vicinity of the current exploration and future development if it proceeds, which is currently the belief.

The issue of "value added" has been a topic of discussion in Saskatchewan in recent years. No longer prepared to be viewed as "hewers of wood and drawers of water," Saskatchewan views its natural resources as opportunities to add value to its products leaving the Province. As one of the world's richest suppliers of uranium, the only processing occurring in the province at this time is the processing to yellowcake. There is a firm belief that further value needs to be added, perhaps in the form of a uranium refinery, a conversion plant, or the long-term responsibility of nuclear waste storage/disposal. In the eyes of the current government, this will mean jobs, employment, and opportunities for growth of the province.

This is not a bad thing, but we need to constantly be vigilant in bringing our concerns to government, regardless of the political party in power, to ensure that the development of our natural resources does not impact our environment for the sake of the mighty dollar!

## Manitoba News

### Floodway Recreation Park Announced



A new Duff Roblin Park Reserve was announced by Manitoba Conservation during December 2007. Recreational development and economic opportunities are dominant themes for the park with protected lands being absent from the *Provincial Parks Act* regulation, December 11, 2007.

The new 56 hectare Duff Roblin Park Reserve will be relocated to the Winnipeg Floodway Inlet Control Structure in St. Norbert as part of the commitment to support recreational and economic opportunities along an expanded floodway. The development of the new park will focus on infrastructure components, such as picnic areas and shelters, walking and cycling trails, washrooms, drinking water, fishing facilities, bike racks, a toboggan run, parking lot, and landscape improvements. Approximately 25,000 Manitoba residents and tourists are expected to visit the expanded park at its new location.

The area will see construction of trails and facilities, including washrooms and picnic shelters, with 24 ha under an Access land use category. The remaining area is classified as Heritage to recognize the historical and socio-economic importance of the floodway, and its floodgates.

"Duff Roblin reminds us of what it means to be a visionary," said Minister Toews. "A man of action, Duff saw what could be and inspired a province. The Government of Canada is proud to recognize his achievements with the new Duff Roblin Park Reserve."

"Manitoba Wildlands supported recreational developments for the expanded floodway during the public licensing review. Built heritage structures and non-original habitat, of course, do not provide protection for biodiversity," said Gaile Whelan Enns of Manitoba Wildlands.

*Source: Manitoba Environment and Manitoba Wilderness*

### New Study: Polar Bears in Northern Manitoba on Thin Ice



Researchers at the Canadian Wildlife Service and the U.S. Geological Survey (Alaska) confirm that the sharp decline that is taking place in the northern Manitoba polar bear population is likely a blueprint for the future of the entire Canadian polar bear population.

With ice break-up occurring earlier in the spring, the survival rate of younger bears is declining. Over the past 50 years or so, Environment Canada has recorded an average warming in Northern Manitoba of 2 to 3 degrees Celsius. With less time for the bears to find food on the ice in the spring, the researchers are seeing "a large number of nutritionally stressed polar bears."

"Polar bears depend on sea ice for their survival. It is their only predictable substrate for foraging (for seals, their main food item)," the researchers reported.

The research team handled 1,963 bears in the course of its study, which concluded that the west Hudson Bay polar bear population fell from 1,194 bears to 935 in less than 10 years.

*Source: Winnipeg Free Press*

### BIPOLE III: East or West of Lake Winnipeg

*Submitted by: Bill Paton, CSEB Manitoba Director*

BIPOLE III, the Manitoba Hydro Power line from northern to southern Manitoba, has been at the centre of debate in the province since the NDP government's decision in 2007 to run the line on the west side of Lake Winnipegosis and Lake Manitoba. It has been acknowledged by all parties in the controversy that the economic evidence clearly shows that a line built on the east side would be significantly cheaper (estimated at \$600 million).

In December 2007, Finance Minister Greg Selinger, minister responsible for Manitoba Hydro, released a study on routing options for the transmission line that emphasizes the threat to export markets by a route on the east side of Lake Winnipeg. The report was commissioned by Manitoba Hydro and prepared by CMC Consultants. This report provides an overview of the major issues related to the alternatives of routing BIPOLE III on the east or west side of the lake. Highlights include the following:

- “there is already significant demonstrated opposition to an east-side route, which has the potential to translate into a long and divisive licensing process with unbudgeted costs and delays.” This opposition involves a variety of environmental groups, the Green Party and some aboriginal bands. A counter position favouring the east side is presented by the opposition parties (the Conservative and Liberal parties) in the legislature, some economists and some aboriginal groups. Jon Gerrard, Liberal leader, has called for a non legally binding plebiscite involving residents on both sides and that those participating be given full details of both options along with associated economic, social and environmental costs and benefits. The MKO First Nations have also requested a referendum for First Nations people on the east side.
- “an east-side route would present significant threats to corporate image including export markets.”
- “an east-side route would dissect boreal forest that is significantly intact and of high ecological integrity.” According to the Canadian Parks and Wilderness Society, there is 100,000 square kilometre expanse of nearly pristine boreal forest and magnificent wild rivers in Eastern Manitoba, known as the East Side Forest. It is bounded by the eastern shore of Lake Winnipeg to the west, the Manitoba-Ontario border to the east, and the Hudson’s Bay Lowlands to the north. Logging, road development, hydro transmission lines and mining are all seen as potential threats to the region.
- “an east-side route has the potential to undermine efforts to achieve UNESCO World Heritage Site designation.” The opposition parties argue that the choice of the east-side route doesn’t preclude the designation of the UNESCO site.
- “the west side can provide desired system reliability enhancements and can serve to accomodate future new generations.”

In January 2008, David Schindler, the Killam Memorial Professor of Ecology at the University of Alberta, in a letter to the Winnipeg Free Press, endorsed the government’s position.

“One power line might not seem like a big deal. But it becomes a magnet for other sorts of developments and disturbances of many kinds. What would happen on the eastern shores should be compared to another boreal area that was equally beautiful 40 years ago — the lower foothills and adjacent boreal plains of western Alberta.”

This project is an excellent case study for students and others interested in critically examining sustainable development and the very diverse stakeholders involved.

## Ontario News

### CSEB Ontario Wishes Everyone a Happy New Year.

We are looking for our members input on how we can develop the chapter for 2008 and are seeking active volunteers to help rejuvenate the chapter.

If you would like to help please contact Wendy Thomson or Natalie Helferty at [cseb\\_on@hotmail.com](mailto:cseb_on@hotmail.com)

## Quebec News

*By Claude E. Delisle, Ph.D., Quebec CSEB Director*

### The Strategic Environmental Assessment (SEA): A Must to Justify PPP and Mega Projects—Not Only a Wish!

Environmental Impact Assessment (EIA) is mainly helpful in minimizing or compensating the environmental impacts of a project but it rarely provides the opportunity for constructive debate on the justification of the choice of development pattern that is based on a series of projects.

For example, an EIA can be carried out on the construction of a maritime gas terminal (e.g., Cacouna Energy project...) in order to bring liquefied natural gas from Europe but without being able to compare it with the need for such energy at a second location (e.g., Rabaska project) nearby, in the St. Lawrence River. The EIAs of these two major projects were submitted in six month intervals without any SEA (Strategic Environmental Assessment) studies on their justification.

The same applied for the construction of a bridge or highway in order to solve a problem of road congestion without being able to compare it to the development of public transport.

The EIA process does not permit stakeholders to assess, review and debate the national or provincial energy strategy and the social consensus issues obtained from a SEA.

Therefore an EIA would appear to be pertinent but a limited tool if a SEA does not precede it in the case of some major expansive projects.

To go beyond these limits, it is necessary to carry out SEA upstream of important project developments involving Policies, Plans or Programmes (PPP) where the decisions have a direct or indirect impact on air, land or water uses and on the justification of such projects.

This is unfortunately not what happened in Quebec. These two projects on the implementation of an LNG (Liquefied Natural Gas) terminal in Cacouna and Lévis, QC were rapidly accepted but the Rabaska-Lévis project is now seriously contested. Some other important projects in Quebec also suffer because a SEA was not done.

Due to an unforgivable delay in adopting SEA in Quebec, the EIA process is becoming more difficult to carry on in some important issues concerning policies on energy and transport plan (planification).

I agree that SEA faces some major challenges, but with the multiplicity of PPP and mega-projects, it is now a must to do it. The government should have clear justification for their PPP and projects and not be at the mercy of the project proponent. During a public hearing, the proponent exposes and defends only his project without an holistic and sustainable development view on the more global issues and society choices.

SEA appears more and more as an essential tool. Its implementation over the next few years is inevitable and already done in some countries. Its success depends very much on the political will and on the articulation between the assessment of PPPs and the projects that are attached to them. Being proactive in the environmental assessment field means knowing where we are going and the SEA is certainly one of the key processes.

Ref. André, Delisle and Revêret (2004). *Environmental Assessment for Sustainable Development: Processes, Actors and Practice*. Presses Internationales Polytechnique, 511p.

Citizens can obtain information on these projects by contacting the BAPE at: [www.communication@bape.gouv.qc.ca](mailto:www.communication@bape.gouv.qc.ca), or:

[www.acee-ceaa@gc.ca](mailto:www.acee-ceaa@gc.ca) under the title "Project Rabaska-Implementation of an LNG terminal at Lévis, QC and related infrastructures. Inquiry and Public Hearing Report 241. May 2007, 104 p.

## Bio-Humour



A vulture boards an airplane, carrying two dead raccoons. The stewardess looks at him and says, "I'm sorry, sir, only one carrion allowed per passenger."

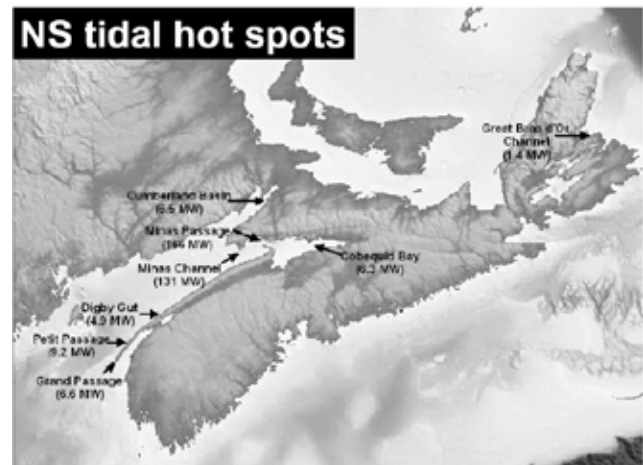
Two fish swim into a concrete wall.  
One turns to the other and says "Dam!"



## Atlantic News

### Strategic Environmental Assessment of Bay of Fundy Tidal Power

Submitted by: Patrick Stewart, CSEB Atlantic Director



Sites in Nova Scotia having potential for tidal power development.

Recent interest in commercial development of Bay of Fundy tides for electricity generation has prompted the provinces of Nova Scotia and New Brunswick to mobilize a strategic environmental assessment (SEA) process to identify potential issues and impacts of several core energy-from-tides technologies.

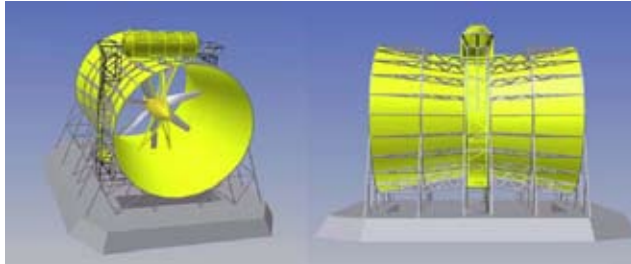
The SEA will consist of two main parts: an Environmental and Socioeconomic Impact Assessment and extensive stakeholder feedback and consultation. A study by the US based Electric Power Research Institute (EPRI), in 2006, identified various sites having potential throughout North America, including eight in Nova Scotia and eight on the New Brunswick side of the Bay of Fundy. Several private interests have proposed pilot studies here.

The SEA process, due for completion in April 2008, will provide a common footing for pilot studies, identifying potential areas for trials and commercial development that will be most suitable environmentally and socially. An Environmental and Socioeconomic Impact Assessment (ESIA) for the project is presently being completed by Jacques Whitford Environment Limited, due to be completed this month (November). The process is being overseen by a consortium of Nova Scotia universities and the Office of Offshore Energy Environmental Research Association (OEER).

The Bay's high tides have long been an attraction to promoters of tidal energy development. In the 1970s, a mega-project proposed to create a tidal barrage across the inner Bay of Fundy was studied extensively and eventually dropped because of serious potential impacts. A small tidal power plant employing a barrage-style approach was installed at Annapolis Royal, Nova Scotia, and commissioned in 1984, and has been operating since.



New tidal technologies being developed use massive in-stream turbines mounted on the seabed, sometimes far from shore and in other cases in narrow passages between islands where tidal currents can reach extremes. Tidal technology comes largely from Europe where there are many potential sites both inshore and offshore, including environments such as the turbulent English Channel.



*Lunar Energy Mark 1 prototype turbine design.*

The Bay of Fundy has many potential issues that will have to be addressed, including the use of these areas by marine mammals such as the endangered Northern Right Whale, common near the mouth of the Bay, and migratory fish species, such as gaspereau and Atlantic salmon (the latter which has endangered populations in the Inner Bay of Fundy), which must pass some of the major potential generating sites to get to spawning rivers. Many of the areas are used for fisheries, and tidal installations will restrict use by fishers in areas that are already impacted by reduced fish stocks.

The projects may also have considerable local opposition, as seen this year in environmental hearings for a large aggregate quarry at Whites Point on Digby Neck, Nova Scotia, at the mouth of the Bay of Fundy, where community opposition to the project was an important factor in the project being rejected by the Environmental Review Panel.

Putting in place the SEA process means that no pilot projects will be approved until the assessment is completed. Even with pilot projects in place, it will be a long time before commercial use of tides in the Bay of Fundy takes place, although it will likely be inevitable. Installations will likely proceed at a small scale, though, with localized installations supporting needs of coastal communities, which are still highly scattered around Nova Scotia and New Brunswick shores, much like dedicated wind-power facilities seen to be appearing around communities around the world.

For more information on the SEA process and Bay of Fundy tides go to [www.bayoffundyseal.ca](http://www.bayoffundyseal.ca).



*Marine Current Turbine's (MCT) Seaflow test turbine.*

## Environmental Review Panel Nixes Whites Point Quarry

*Submitted by: Patrick Stewart, CSEB Atlantic Director*

In a surprising turn of events, a proposal for a major aggregate quarry and marine transfer facility at Whites Point on Digby Neck, west of Digby, Nova Scotia, has been turned down following rejection by a federal CEAA Panel Review and the acceptance of its recommendations by the Nova Scotia government.

The proposal by Bilcon of Nova Scotia, a subsidiary of a New Jersey rock and aggregate supplier, would have seen a 150-hectare basalt quarry developed on the Bay of Fundy coast mid-way between the Town of Digby and Brier Island at the tip of Digby Neck, to provide aggregate for shipment to the United States. Digby Neck is the finger of land extending off western Nova Scotia into the Bay.

The Review Panel report, which came out in October, cited issues such as what it felt were unsatisfactory responses by the company during the *Canadian Environmental Assessment Act* (CEAA) process concerning various environmental issues, the effect of the project on local groundwater, uncertainty about the effects of the associated blasting and shipping on whales and other marine mammals (which concentrate in the nearby waters at the mouth of the Bay), possible interference with coastal fisheries, and in particular its sharp contrast with the community vision for a sustainable economy, which includes ecotourism such as whale watching.

The Review Panel also recommended a temporary moratorium on development of coastal rock quarries, and suggested that the Province develop a coastal zone management policy, which would aid in dealing with similar issues in future.

In fact, permitting this project could 'open the door' to other similar projects, which could cumulatively cause greater problems if some sort of management regime isn't in place. It also suggested that the Province's approach to development of quarries and gravel pits should be changed to include all quarries (at present those under 4 ha are excluded).

The rejection has been controversial since projects are rarely rejected under the CEAA Panel Review Process, and it is probably the first time "community vision" has been cited as a reason for turning down a project. Although opposition was voiced to the project during public hearings, many individuals in the affected communities supported the project since it would bring sizeable employment and tax revenues for an extended period, estimated at 50 years or more. Usually projects of this type can be accommodated at the operational phase by restrictions placed on the operator by the Review Panel and the Province. Issues, such as the approval of future quarries, could be dealt with under the 'cumulative effects' provisions of the CEAA review process.

There is no indication of how the company or the Province will proceed, since development of a coastal zone management policy is likely to be a long way off. Mining interests have expressed disappointment and fear that the decision will send a message

that Nova Scotia isn't 'open for business' and supporters of the project in the community are again faced with the everyday issue of generating economic development in sectors other than fisheries and tourism in a sparsely populated rural area.

## Don't Dump Mining Waste in Placentia Bay

*Submitted by Pat Ryan, Past President, CSEB*

### *News Release of the Newfoundland and Labrador New Democratic Party*

Dec. 21, 2007 - NDP Leader, Lorraine Michael (M.H.A., Signal Hill – Quidi Vidi) said today that governments should not allow Voisey's Bay Nickel Company (VBNC) to discharge mine effluent into the ocean at the proposed Long Harbour hydromet plant site. "Placentia Bay fishermen are objecting to this plan," said Michael. "They are right to be concerned about the cumulative effect of large amounts of waste pumped into the bay each year. There is a risk that it will harm fish habitat and species." On Thursday the Fisheries, Food and Allied Workers Union (FFAW) released their letter to the Department of Environment's call for comments on the VBNC environmental impact statement. The FFAW cited concerns expressed by local fish harvesters. VBNC wants to build a 6-km pipeline from the hydromet plant to the mouth of Long Harbour near prime fishing grounds. Michael is demanding that the Canadian Environmental Assessment Agency (CEAA) and the provincial Department of Environment conduct a Comprehensive Study of the proposed project which would include public hearings. The comprehensive study would involve also a study of the VBNC proposal to dump tailings into Sandy Pond. Michael said, "Currently CEAA is doing a screening scoping study of this major project. The screening has identified what we consider to be a serious issue. We need to collect more information on potential risks and negative impacts of dumping mine wastes into the ocean. We need a thorough review."

"In the case of Voisey's Bay mine and mill site, the proposal for submarine dumping was rejected by the Environmental Assessment Panel. There cannot be a general statement of impact. All areas are unique and require a full environmental impact assessment for the ocean dumping of mine waste," said Michael. "The days of pumping toxic mining wastes into the ocean should be over. Another means of treatment must be found," concluded Michael.

*For additional project details refer to:*

*Government of Newfoundland and Labrador - Registration 1243. Long Harbour Nickel Commercial Processing Plant. Proponent: Voisey's Bay Nickel Company Limited: Summary of Environmental Assessment Process.*

<http://www.env.gov.nl.ca/env/Env/EA%202001/Project%20Info/1243.htm>

## Territories News

*Submitted by :Anne Wilson, CSEB Territories Director*

Greetings all!

As 2007 shoots to a close (there is nothing slow about this year!), it is interesting to review all the activity and how it has turned out. Many projects have been approved and are proceeding, but that is not a guaranteed outcome. Recently stakeholders in the Thelon area said no to uranium exploration activity, and the Mackenzie Valley Environmental Impact Review Board has listened and rejected the proposal. This will be cause for concern for the four other uranium projects under review in the NWT. Other mining developments have proceeded through environmental assessment and are now in the regulatory phase, applying for water licences. Other new projects are entering the EA process, driven by the high prices in the gold and base metal markets. Energy and transportation proposals are being put forth in support of all the activity in the mining sector. The Mackenzie Gas Project hearings are winding up, and it will be interesting to hear the panels' conclusions next year. And, in the bigger picture, the ecosystems north of 60 are showing unmistakable signs that climate change is here.

### Notes from the Northern News

#### Wind energy:

A wind energy conference was held Nov. 28-30th in Tuktoyaktuk, NT with the objectives of developing strategic plans for Arctic wind energy, advancing public policy, educating communities and decision makers about wind energy, and building a knowledge base. I wondered at the choice of Tuk as a venue... then noted the current conditions on the weather site showed 20-50 km/h winds in Tuk this week! More information on this conference is available at <http://www.remotewindenergy.ca/main.aspx>.

#### Taltson Hydro Expansion:

The NWT Energy Corporation proposes to increase electricity production on the Taltson River system, with expansion of the existing facility plus construction of a 435 km long transmission line to the diamond mines. One of the drivers for this project is that hydro power can replace diesel-generated power, which has great benefits in terms of reduced greenhouse gas emissions, reduction in truck traffic on the already stretched winter road, and lowering the potential for spills both in transit and at mine sites. This project has been referred to environmental assessment, and environmental and engineering studies are underway.

#### Transportation:

Mineral and diamond activity is intensifying, and this is driving the need for further infrastructure development. In the NWT, the main resupply route to the diamond mines is a 568 km long winter road, which crosses ice over 85% of its route. Milder winters have meant late starts to the transportation season, and earlier closures, and the road has reached capacity with

increased loads being shipped north. The Joint Venture that operates the winter road is looking at options that include major new infrastructure to increase capacity. The front runner option is construction of a 150 km all-weather segment on the south end of the route, which could extend the shipping season by a month. Meanwhile, for the 2008 shipping season, the southern leg has been twinned to two ice road routes to get fuel and equipment up to the four operating diamond mines and the numerous other projects relying on shipments.

On the Nunavut side, the proposed Bathurst Inlet Port and Road (BIPAR) would run a 210 km long all-weather road from a port facility near the Arctic Circle, south and west to Contwoyto Lake (near Lupin Mine). This would open up the option of marine transport of fuel and supplies, with ice roads connecting the Contwoyto Lake terminus with diamond mines and a proposed lead-zinc mine at High Lake. As proponent Nuna Logistic puts it, "If you build it they will come" – considerable induced development could hinge on this infrastructure.

Both of these proposals will have to undergo environmental assessment, and will involve baseline environmental work as well as identification of impacts and mitigation measures. It will be important to get the cumulative effects assessment done right!

### Land Withdrawal:

On a conservation note, we had very good news in the form of designation of two areas in the NWT as conservations zones. The Ramparts River and wetlands located near Fort Good Hope has been protected from development until 2011, and 33,000 km<sup>2</sup> of land around the East Arm of Great Slave Lake has been withdrawn for establishment of a national park. This follows on the earlier withdrawal of 5400 km<sup>2</sup> of land within the Greater Nahanni ecosystem, which will be added to the existing Nahanni National Park.

### Project Updates

#### In the NWT:

Hearings for the Mackenzie Gas Project wound up in late November, with closing remarks scheduled for Nov. 28-30, 2007 in Inuvik. The next steps will be completion of the Panel's report, with the project then going before Canada's National Energy Board for action in mid- to late 2008.

The Gahcho Kue Diamond project is undergoing environmental assessment at the panel level, and the Developer's Assessment Report is due shortly. I had the opportunity to visit the site in September and am again reminded there is no substitute for getting out to see projects first hand.

Fortune Minerals is moving ahead with plans for development of the NICO cobalt-gold-bismuth property, which lies 160 km northwest of Yellowknife, and has submitted applications with a target of production starting in 2010.

Tamerlane Ventures Inc. is awaiting the conclusion of the environmental assessment for their zinc/base metal project near Pine Point, NWT. Also on the horizon, we have Canadian Zinc

Corp. preparing to submit permit applications for full scale mining at the Prairie Creek mine.

#### In Nunavut:

Mineral development in Nunavut continues apace! Construction of the Doris North gold mine will likely be proceeding now that Miramar Mining Corp. has received most of their permits. Another gold property, which lies north of Baker Lake, Agnico-Eagle Inc.'s Meadowbank project, has applied for permits and will be going to water licence hearings in spring.

Zinifex's High Lake base metal property is currently undergoing an environmental assessment. Exploration and feasibility work continues for uranium targets and Baffinland Iron Mines Corp. continues work on their iron ore property at Mary River (north Baffin Island).

#### Municipal:

Work progresses on the Canada-wide Strategy for the Management of Municipal Wastewater Effluent, with the latest draft now out for consultation. Public consultation commenced in November, and all comments are due by January 31st, 2008. We expect the Strategy to be finalized by late spring or summer, then Environment Canada will develop regulations under the *Fisheries Act* to implement the Strategy.

Under the proposed Strategy, the North is being given a five year period to determine how systems that face challenges of extreme climatic conditions, infrastructure limitations, and logistics, can meet national performance standards. This summer the Northern working group ran a fairly extensive program looking at some of the existing systems and their performance, so we can determine what standards would be reasonable for our infrastructure as well as protective of the pristine northern receiving environments. Once that work has been compiled, we will look at potential pilot studies using treatment enhancement methods, to see if we can move closer to the proposed national standards. Further information on the Strategy is available on the CCME website at: [http://www.ccme.ca/ourwork/water.html?category\\_id=81](http://www.ccme.ca/ourwork/water.html?category_id=81)

### Contact Me

Are you tired of hearing about EA work in the NWT and NU? I would welcome information to include from any Yukon colleagues, or from researchers working in the North. My work is primarily with environmental assessment and municipal wastewater, so you hear about the various development projects here, but I'd be happy to learn about and report on other work going on north of 60. I would also appreciate hearing from northern members with ideas about what we can initiate by way of CSEB activities along with information on activities to include in the newsletter. Please email your thoughts to me at [anne.wilson@ec.gc.ca](mailto:anne.wilson@ec.gc.ca).

## Internal Phosphorus Loading in Ontario Cottage Country or The Devil is in the Sediments

*Revised from an article published in the Federation of Ontario Cottages Association's (FOCA) Lake Stewardship Newsletter  
Gertrud Nürnberg, Ph.D., Freshwater Research, 3421 Hwy 117, Baysville, Ontario P0B 1A0 gkn@fwr.on.ca [www.fwr.on.ca](http://www.fwr.on.ca)*

By now, everyone in Cottage Country (starting about 150 km north of Toronto on the Canadian Shield) has heard about phosphorus (P), the nutrient that makes the water green because it makes algae grow. Eutrophication, or the overabundance of nutrients in waters, is the single most important cause for the deterioration of the water quality in our lakes and rivers, unless they are acid-stressed. "Acid" lakes, which are very clear and have a pH below 6 or so, are not in danger of turning green, because they have other problems, like toxicity caused by heavy metals and acidity.

To keep eutrophication at bay, shoreline residents have been striving to reduce phosphorus inputs into their lakes. They have been instructed to use phosphate-free soaps and detergents, to not wash hair in the shallows or cars at the beach, and to keep the shoreline as natural as possible minimizing the need for fertilization. (Shoreline buffer zones are better than grass at adsorbing phosphorus in the runoff water after rain or snow melt and don't need to be fertilized.) Thus, ideally, the external input of phosphorus to a lake is kept to a minimum.

Of course, it was not always so. The early settlers of the cottage country did not know about eutrophication. Their outhouses and sinks drained, "conveniently," right into the stream. The potato and tomato fields needed a lot of manure on this poor soil, livestock drank right from the creeks (defecating at the same time), and the towns discharged any collected wastes right into the bay of the next lake. Much of these early inputs into the waterways were flushed downstream, but a proportion was retained at slow flowing and shallow locations and remains there now, a time bomb ready to be released.

What is the trigger? The trigger is anoxia, which means complete oxygen depletion. As long as the water directly over the sediments still contains oxygen (at least 1 to 2 ppb), phosphorus stays bound in the sediments. However, when oxygen is used up completely, the chemistry of the sediments changes, phosphorus is no longer bound to the sediments, and large amounts of phosphorus may be released into the overlaying water. This water eventually mixes with surface water, so that algae up in the sunlit water can thrive. The water becomes green. Phosphorus released from the sediments is called "internal phosphorus loading."

Internal P loading is a complicated process. While fertilization of bottom sediments in lakes and rivers is the prerequisite, chemical changes within the sediments and oxygen-free conditions above them all work together to release P in a form that is highly biologically available as phosphate (just like in a fertilizer).

On the Canadian Shield, where most of Ontario's Cottage Country is located, fertilized bottom sediments are still few. In

### Important phosphorus forms

**Phosphorus (P):** Usually means total phosphorus, which is all phosphorus that can be analysed in a water sample. It includes phosphate, particulate forms, and other forms not easily available to be used by algae. Much external loading is comprised of all these forms.

**Phosphate:** A proportion of phosphorus that is directly available to plankton (algae, bacteria) in the water; it is usually below analytical detection limits in lakes on the Canadian Shield, except where internal loading occurs.

other regions, for example, where former seas were situated (e.g., in the Great Lake/St. Lawrence basin), the soils were naturally P enriched even before European settlement. But the trigger, bottom anoxia, occurs naturally in many lakes in Cottage Country. Many of these lakes do not encourage mixing because of their shape, deep and small, or because their tea-like color traps sunlight in the warm surface water so that the bottom water remains cold. In addition, this brown stain enhances bottom water oxygen depletion as it is produced by organic material. When the organic material decomposes, it consumes oxygen. For example, in half of the lakes in the District of Muskoka, anoxia is so frequent in the bottom water it is as if the whole lake surface area was completely anoxic for 10 days per year. In more eutrophic lakes, bottom anoxia occurs more because of algae and other plankton that settle to the bottom and are consumed by bacteria that use up the oxygen in the process.

It is difficult to generalize the importance of internal load in lakes. The interplay between external and internal P loading is depicted as stages (Figure 1). Internal load was first described in highly eutrophic lakes in Europe and the USA (Stage 3), where, despite a major reduction of external load (usually by collecting and treating all waste water as point source reduction), in some lakes the P concentration did not decrease and water quality continued to deteriorate. More recently, it has been described in many other lakes even if it is not as obvious (Stage 2). Its quantification includes methods based on P budgets, P mass balance models, sediment incubation and analysis, and determination of anoxia. In general, it's been the consensus that internal loading may occur in more places than previously thought. Traditionally, it was only described in eutrophic lakes, as it usually takes a long time for sediments to become enriched and oxygen depleted enough to release P. But recent analyses has shown that oligotrophic systems on the Canadian Shield, like small deep lakes or those stained with organic acids, are vulnerable because of the natural occurrence



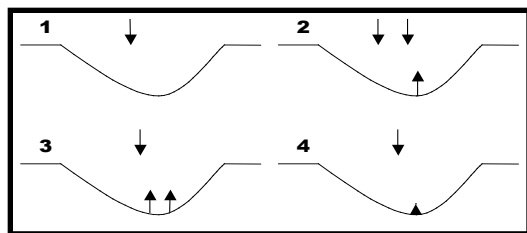


Figure 1. Presumed stages during the eutrophication process in lakes with respect to internal P load from the lake bottom (upwards arrow) in response to external load (downwards arrow). During Stage 1, external load happens, but no internal load. Even if the hypolimnia may be anoxic, there is not enough releasable P in the sediment surfaces to be released. In Stage 2 the external load increases, due to anthropogenic sources from development, and sediment P release will eventually commence, depending on the oxygen state of the sediment surfaces. Even when management efforts reduce the P load from the watershed as in Stage 3 internal load will still occur until the reductant-soluble sediment P has been flushed out (Stage 4).

of oxygen depletion; here, any P additions can potentially be released instantly and fertilize the water, perhaps creating cyanobacterial blooms.

Further Reading: Nürnberg, G.K. 2001. Eutrophication and Trophic State - Why does lake water (quality) differ from lake to lake? *LakeLine* (North American Lake Management Society) 21(1), 29-33.

Nürnberg, G.K., and LaZerte, B.D. 2004. Modeling the effect of development on internal phosphorus load in nutrient-poor lakes. *Water Resources Research*. 40, (1), W01105, DOI:01110.01029/02003WR002410.

## Entrepreneurs to Dump Iron Dust to Grow Earth-Saving Plankton

By: Jim Loney and Michael Christie, Reuters Miami. Reprinted from the *Edmonton Journal*, Sunday, December 8th, 2007

From the deck of the research ship *Weatherbird II*, a California company hopes to prove a controversial theory that putting iron dust in the ocean can produce enough plankton to help save Earth.

The mission of the company behind the ship, Planktos Corp., is to research whether "iron seeding," or "iron—enrichment"—dumping tons of pulverized iron ore into the ocean can catalyze the growth of microscopic algae that will then suck carbon out of the atmosphere.

If the research goes well, Planktos aims to make money by fertilizing the ocean, measuring the carbon its plankton forests sequester and selling carbon credits on emerging world carbon markets.

*Weatherbird* left Florida last month on a mission that has caused consternation among scientists and environmentalists, many of whom do not think the theory has been sufficiently tested to try out on such a large scale.

Oceanographers, who unlike scientific colleagues in fields like pharmaceuticals have not been heavily exposed to business motivations, also appear uneasy about Planktos' aim of making money while fighting climate change.

But the company says it is interested in the potential greater good of iron enrichment—taking tons of carbon dioxide, a critical greenhouse gas blamed for global warming, out of the Earth's atmosphere, in the same way a rainforest on land works for the health of the planet.

"We might actually be able to save the planet from the ravages of fossil fuels," Planktos chief executive Russ George told Reuters.

The theory of iron enrichment was proposed 25 years ago. Iron acts as a vitamin, oceanographers say, enabling plants to take up nutrients.

The theory was greeted as a joke but it has gained traction since, and adherents. The emergence of carbon markets, especially in Europe, in which polluters can offset emissions by buying carbon credits from countries or companies that plant forests, has given the proposal commercial allure.

In addition to Planktos, Silicon Valley-based company Climos intends to pursue iron enrichment.

Planktos plans to seed a patch of ocean 30 to 60 miles in diameter with 50 to 100 metric tonnes of raw iron ore in an area 200 miles west of the Galapagos Islands, one of the world's most unique ecosystems.

*Weatherbird's* mission, delayed for months by the late arrival of high-tech equipment, is steeped in secrecy. In a recent phone interview, George said he could not reveal details because of what he said were threats from "radical environmental groups" to halt the mission.

The Sea Shepherd Conservation Society, which patrols the Galapagos islands to protect them from ecological threats, has pledged to stop Planktos.

George said the area near Ecuador's volcanic islands, which lie 625 miles west of the coast, is a perfect place for a test because iron from the islands feed a vast, natural plankton bloom that can serve as a biological control for the experiment.

Environmentalists fear that the test could go awry and threaten the islands, which served as the inspiration for British naturalist Charles Darwin's theory of evolution.

But George said the natural Galapagos bloom drifts west, and so would the one that Planktos hopes to generate. The iron ore to be used in the test is the same as dust blown naturally by the wind into the ocean, George added.

"Hundreds of millions of tons of dust are landing in the ocean every year. How can anyone suggest that our 50 tonnes of rock dust will provoke some cataclysmic result?"

Oceanographers critical of Planktos say scientists have simply not yet done the work needed to prove that phytoplankton blooms can sequester carbon safely and for the long term.

They also say that while surface water moves westward near the Galapagos, deeper currents go east, toward rich fishing grounds off South America.

"Many scientists think we should try to establish the facts and the downstream consequences of iron enrichment, and there are a few nonscientists who think if it can make money we should do it now," said Kenneth Coale, a researcher at Moss Landing Marine Laboratories in California who has conducted leading work on the subject.

Few of the researchers who consider themselves experts in iron enrichment appear to know who the scientists are that Planktos intends to take on its experiment.

"It seems more an effort to impress shareholders," Coale said. There are also questions about whether decaying blooms might produce other, more powerful, greenhouse gases.

The legal situation on the high seas is unclear. Scientists advising signatory nations of the 1972 London Convention on Dumping recently issued a statement of concern, and the members of the convention are expected to try to draw up regulations for iron enrichment.

The U.S. Environmental Protection Agency shares the concerns but was told by Planktos that it would not use a U.S. flagged vessel, an EPA spokeswoman said.

"At this stage to have companies out there already wanting to press ahead with commercialization is deeply unhelpful," said David Santillo, a scientist at the Greenpeace Research Laboratories in Britain. "I think that from the last 15 years of science we know enough to say, 'Don't do it'."

Despite the controversy, even the skeptics agree that something must be done to counter global warming, and that cutting pollution levels is no longer enough.

"The overarching thing is that there is definitely a panic about climate. If someone could come up with a quick Band-Aid fix to this problem they would be a hero to humanity," said Greenpeace research director Kert Davies.

### **Moving?**

Any change in address should be sent to  
CSEB, P.O. Box 962 Station F,  
Toronto ON M4Y 2N9  
or e-mail: Gary Ash at gash@golder.com

### **Wanted: Regional Newsletter Contributors**

CSEB needs to set up a network of regional newsletter contributors to gather newsworthy information and solicit regional based articles for inclusion in the quarterly CSEB Newsletter/Bulletin. If you are interested, please contact Gary Ash at gash@golder.com.

### **How You Can Donate to the John Lilley Environmental Scholarship Fund**

Earlier this year, the CSEB entered into discussions with the University of Alberta about establishing a scholarship to honour John Lilley, a former national president and long-time active CSEB member. John passed away in July but before he died, the Alberta Chapter had a chance to talk with him about his ideas for the scholarship. We have incorporated those into the terms of reference for the award, which we expect to be available in 2008 for the first time.

In accordance with John's wishes, the scholarship will be available to students enrolled in Environmental and Conservation Sciences at the U of A, before they enter their second year of the program. If no suitable candidates are available from that program, students entering their second year of Biological Sciences will be considered. Demonstrated experience with a not-for-profit environmental organization will be given a high priority, along with superior academic achievement.

Donors to the scholarship fund will receive a tax receipt from the U of A. If you would like to contribute in memory of John, please send your donation to:

Emily Lennstrom  
Senior Development Officer  
Faculty of Science  
G222 Biological Sciences Building  
University of Alberta  
Edmonton, Alberta T6G 2E9

Tel: 780-492-6688

## Canadian Society of Environmental Biologists Minutes of the Board of Directors Meeting

October 4, 2007  
Halifax, NS 6 am EST  
Attendees:

S. Martin, President (via conference call)  
J. Spry, Secretary/Treasurer  
G. Ash, Newsletter Editor, Membership Chair  
A. Wilson, Territories (via conference call)  
P. Ryan, Past President (via conference call)  
P. Stewart, Atlantic  
J. Hnatiuk, SK (via conference call)  
B. Free, AB (via conference call)  
W. Paton, MB  
R. Stedwell, SK (Guest via conference call)

1. Welcome by President. Shawn thanked all the directors for attending.
2. Minutes of 2006 Directors Meeting. Minutes of the Directors meeting held by conference call on Oct. 24, 2006 were presented (previously circulated to directors).

***Motion to accept minutes as presented (J. Hnatiuk, B. Free) Carried***

3. Financial Report. Jackie Spry presented the financial report for the first three quarters of 2006 (previously circulated). Total revenue amounted to \$10,667.78 (Membership fees contributed the largest revenue at \$10,181.24). Expenses amounted to \$10,440.34, with the newsletter accounting for a large portion of this. G. Ash reported that the proceeds of the 2005 conference held in Edmonton will be presented to the board and amounted to \$7918.50.

***Motion to accept financial report (R. Stedwell/J. Hnatiuk) Carried.***

2008 Budget. The budget for fiscal 2008 was presented by the Treasurer (previously circulated). It was suggested the membership be increased to \$10,000 and conference revenue be estimated at \$1500.00. Other changes included web hosting at \$75.00. The budget is expected to be balanced for 2008.

***Motion to accept 2008 budget with changes as above (J.Hnatiuk/G. Ash). Carried.***

4. Membership report. Gary Ash presented the membership report. A copy is included with these minutes. Total membership stands at 211 at the end of September 2007, with more members joining. This is slightly lower than the previous two years, although several lapsed members have rejoined. Members who registered after Oct. 1 will be offered a discount if registering an additional year. P. Ryan asked if any libraries are members in the Atlantic region (Gary thought there were none).

***Motion to accept membership report (W. Paton/A. Wilson) Carried.***

5. Newsletter. Gary Ash reported that four newsletters were put out in 2006. To date, two have been published, with the fall issue in production. The spring issue was a special production, with a guest editor, Dr. T. Northcote. This was well received by the membership but comments were made about the expanse of the issue. A special note of thanks was given. P. Stewart is looking for additional publishers for books to review. Gary reiterated that he needs articles for the newsletters. These can be two or three paragraphs. Photos of working biologists with captions and credits are also needed for the front cover. Anne suggested monitoring issues for the spring newsletter, e.g., Wildlife/northern/monitoring/aquatic/general issues.

***Motion to accept newsletter report (A. Wilson/B. Free)***

***Carried. The Board extends its thanks to Gary for all his hard work.***

### 6. Regional Reports.

Atlantic- Pat Ryan reported that there is considerable competition with other groups for members.

Manitoba – Bill Paton reported that there are only 4 members in Manitoba. There is a possibility of developing a chapter in Brandon where a new council has formed which would include CSEB. There is potential for more student involvement.

SK – Joseph and Robert reported that the AGM was held earlier in October. Membership is dropping and they are working on getting new members. Gary will send membership list from past years. Bob has put a presentation package together which he will share with the national group. The question was raised about the issue of budget cuts within Environment Canada. Joseph will send a web link to Shawn about this and asked if CSEB should send a letter outlining their concern.

The province was thanked for its support to national.

Alberta – Brian reported on the John Lilley environmental scholarship.

Territories – Anne reported that things are quiet, but talking to colleagues in other departments to encourage membership and/or contributions to our newsletter.

***Motion to accept regional reports (J.Hnatiuk/R.Stedwell) Carried***

7. 2008 AGM. This will be revisited during the next board meeting. Manitoba or BC were mentioned as possibilities.

### 8. Nominations.

President: Brian Free was nominated and accepted.

1st VP: Anne Wilson was nominated and accepted.

2nd VP: this position has another year to run.

Secretary/Treasurer: Karen March was nominated. She will be contacted to see if she accepts.

Gary will stay on as newsletter editor, but he will need everyone's help.

Nominations close the end of October. If necessary, a vote will be held by mid-November and elections finalized by mid-December.

Information on the election will be put in the next newsletter and also on the website.

9. John Lilley Environmental Scholarship: The Alberta chapter asked if the national CSEB would contribute to this fund. John was CSEB president for four years and helped to put together several issue papers.

The University of Alberta wants to develop environmental sciences. The fund will be matched by the provincial government. They are hoping to raise \$12,000 for a perpetual fund.

***Motion: to contribute \$2000 to the John Lilley Environmental Scholarship Fund (J. Hnatiuk/P. Ryan). Carried (verbal vote, unanimous)***

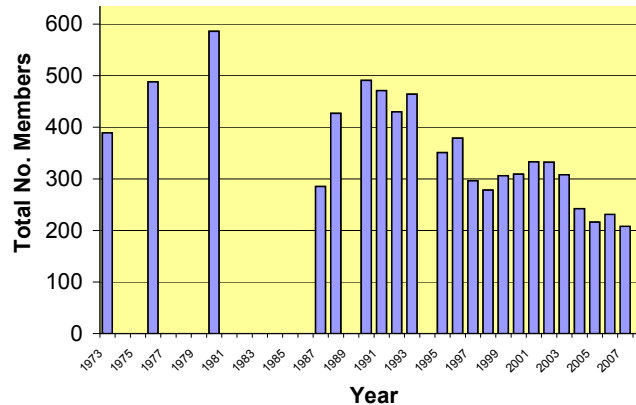
This information will be put on the website.

10. Honorary membership. Gary nominated Tom Northcote for next year.
11. Environment Canada budget cut issue. P. Ryan suggested putting comments in the newsletter. Shawn suggested two or three directors look into the situation and make a presentation to the Commons environmental committee.

**2007 CSEB Membership  
by Region and Membership Category  
to 1 October 2007**

Region	Compl. / Hon.	Associate	Library	Regular	Student	Total
1 Atlantic	2		2	11		15
2 Quebec			1	9	1	11
3 Ontario	2	3	2	44	4	55
4 Manitoba				3	1	4
5 Sask.	1			22		23
6 Alberta	1		4	46	2	53
7 BC	2			34	1	37
8 Territories				6		6
9 USA			1	1		2
O Foreign				1	1	2
<b>Totals</b>	<b>8</b>	<b>3</b>	<b>10</b>	<b>177</b>	<b>10</b>	<b>208</b>

**CSEB Membership By Year  
(1973 to 1 October 2007)**



## Conferences & Courses

### 14th Annual Whirling Disease Symposium

February 4-5, 2008, Grand Hyatt Regency - Denver, Colorado, USA

At this year's meeting we will examine the current status of research, hear about studies on resistant trout and how they are being used, and receive updates on detection of the parasite in different regions.

For more information, see <http://www.tu.org/site/c.kkLRJ7MSKtH/b.3596609/>

### 2008 Annual General Meeting and Conference of the Canadian Land Reclamation Association (CLRA): Continuing Change

February 27-29, 2008, Capri Hotel, Trade & Convention Centre, Red Deer, Alberta

Topics will include the following:

- Case Studies
- Remediation
- Revegetation and Restoration
- New Technology
- Reclamation
- Environmental Policy

For further information, see <http://www.clra.ca/>

### Globe 2008 - 10th Biennial Conference on Business & the Environment

March 12-14, 2008, Vancouver, British Columbia

Thousands of corporate executives, government decision makers and leaders of the environmental industry will converge at GLOBE 2008. Plan to join them for three days of exciting and ground-breaking discussions. SAVE \$300 - Register by February 15, 2008. For further information, see <http://www.globe2008.ca/>

### 23rd International Conference on Solid Waste Technology and Management

March 30 - April 2, 2008, Philadelphia, PA, U.S.A.

For additional details and the conference agenda and registration information, see [www.widener.edu/solid.waste](http://www.widener.edu/solid.waste)

Contact: Dr. Ronald L. Mersky, Conference Chair, Department of Civil Engineering, Widener University, 1 University Place, Chester, PA 19013-5792 U.S.A., Fax: 610 499 4461, email: [solid.waste@widener.edu](mailto:solid.waste@widener.edu) phone: 610 499 4042

### 138th Annual Meeting of the American Fisheries Society: Fisheries in Flux: How Do We Ensure Our Sustainable Future

August 17-21, 2008, Ottawa Congress Centre and Westin Hotel, Ottawa, Ontario

Fisheries and fish communities are not static properties of ecosystems. Stressors such as overexploitation, species invasions, habitat degradation, climate change, and water resource demand are a few of the factors that drive changes. These changes potentially threaten sustainable use. Some notable examples include the collapse of the cod fishery on the east coast, declines in the B.C. salmon fishery and fish community changes in the Great Lakes as a result of the introduction of zebra mussels. Can we find solutions to these threats? What are we doing to ensure a sustainable future and what changes need to be made in our management of aquatic ecosystems? Come to the meeting and explore possible answers to these and many other issues affecting North America's fisheries.

For further information, see <http://www.fisheries.org/afs08/>



## CSEB's 45th Conference Focuses on Habitat

*Submitted by Pat Stewart, CSEB Atlantic Director*

CSEB's Habitat: Challenges and Solutions conference in Halifax in early October drew approximately twenty attendees, to hear presentations ranging from a discussion on using artificial reefs to create lobster habitat, to using remote sensed laser elevation data to interpret watersheds for research on Nova Scotia's bogs and fens. The conference was held in the Westin Nova Scotian Hotel in downtown Halifax, and was timed to occur immediately after the national Aquatic Toxicity Workshop (ATW) in the same venue. While it had been hoped to be a draw for some additional attendees, and a savings for CSEB Directors attending the ATW, neither of these objectives were realized. Nonetheless, the venue was a perfect one, the hotel staff treated us extremely well, and we had the chance to operate a CSEB booth at the ATW during the conference to promote awareness of the Society and its objectives.



*Figure 1. Directors' Meeting, 7:00 AM  
(4:00 AM for Directors in Western Canada on phone link)*



*Figure 2. Conference registration.*



*Figure 3. Guest speaker Glyn Sharpe of DFO (centre) with CSEB Manitoba Director Bill Paton (right).*



*Figure 4. Morning coffee break.*

In invited talks, Glyn Sharpe of Fisheries and Oceans Canada opened the conference with a talk which described progress of research over the years on developing artificial habitat for lobsters.

Means of creating good habitat are needed to provide techniques to mitigate harm to habitat by various coastal projects.

Sharpe's talk was followed by a presentation by Margot Young, a landscape architect and principal with EDM Consultants in Halifax, who described the challenges in designing 'built' projects, while preserving natural environments in the zone of "human/nature interface." Margot described how the major challenges in such situations are often to deal with regulations that are often rigidly applied and don't allow for innovative environmental solutions. Young's company designed a major 'lifestyle mall'—Dartmouth Crossing—recently completed on the outskirts of Halifax, which incorporated water management that can enhance fish habitat at the site, in part by collecting and diverting runoff from the roofs of major mall buildings, such as the new Wal-Mart.

Heather Stewart of the Applied Geomatics Group, college of Geographic Sciences at Lawrencetown, Nova Scotia, described research on using remote sensing and on-the-ground measurements to develop models to predict distribution of plant species at risk in southwest Nova Scotia. Heather's message was that it remains to be seen how useful the remote sensing technology will be for wetland and species at risk assessment, but she nonetheless provided an enlightened account of use of modern techniques for wetland assessment.



Figure 5. Fish habitat discussion and presentation by Rick Devine, DFO.

The final invited speaker was Norval Collins, a fisheries biologist and planner with CEF Consultants, who gave an overview of the Department of Fisheries and Oceans "No-Net-Loss" policy and approaches to habitat compensation. Norval began his professional career dealing with the interactions of dams and reservoirs with fisheries and provided insight into the Policy's evolution, particularly in relation to marine projects. He made the point that the DFO policy often focuses too much on fish habitat at the expense of broader issues like ecosystem productivity. Collins shared some of his observations gained on a tour of major fish habitat modification studies in China, where the emphasis is, according to him, more on making post-development outcomes on fish habitat as biologically productive as possible, with less emphasis on compensation.

Other presentations included a student talk by Julie Sircom from Dalhousie University on the effects of disturbance on stream invertebrate communities; a talk on the results of a study into options to manage sewage from the resort town of Wasagaming in Manitoba's Riding Mountain National Park, presented by CSEB Director Dr. Bill Paton from Brandon; and a report on a study to explain the distribution of marine benthic communities in Nova Scotia's Sydney Harbour based on input of pollutants from the Tar Ponds and other factors such as sediments and oxygen regime, presented by CSEB Atlantic Director Pat Stewart.

A guest speaker from Fisheries and Oceans Canada—Rick Devine from the Bedford Institute of Oceanography offices in Dartmouth—spoke to the group in the afternoon, explaining successes and failures in habitat management and compensation in the Maritimes, as DFO seeks to develop approaches to marine habitat loss and compensation. DFO is well along on an

implementation plan for the policy. Rick answered questions from the audience focusing on a range of key issues. Due to time constraints, he wasn't able to answer all the inquiries, but a discussion was sustained with other DFO employees in the audience providing some input. The afternoon ended with the CSEB Annual General Meeting.

The conference was financially successful and came out 'in the black' thanks to the turnout and a generous donation from Fundy Gypsum, a Nova Scotia mining company, but more importantly attendees were presented with focused and insightful views and information, and also the chance for discussion and questions. The conference was also attended by a half dozen biology and environmental science students who, probably for the first time, were exposed to the CSEB and its role and philosophy, and hopefully will get involved in the Society.

### CSEB Field Trip, Friday, October 5th, 2007

Over a dozen conference attendees made it to the field trip, either in whole or in part, some attending only the morning tour of an innovative fish habitat restoration project at the Dartmouth Crossing Development. Bob Rutherford, an ex-DFO habitat biologist, gave us a tour of the created stream and pond habitat, which occupies part of the pre-existing quarry in which the development was constructed, and which he was instrumental in designing. Bob outlined various options considered in developing the fish habitat, and reasons for the choices. Frenchman's Brook, above the quarry, had been damaged by quarrying activities and couldn't be remediated, but a pond system and artificial trout spawning beds at the quarry edge, which connects through an artificial stream bed to Frenchman's Brook, serves the role of providing upstream spawning habitat. A second stream, Grassy Brook, which extended through the mall development, had been protected by stream buffers and arch culverts, as well as runoff management and sedimentation control, and now supports one of the highest densities of brook trout in the Province. Bob continued the tour to show us the protections afforded the stream amid continuing construction at the mall site.



Figure 6. Field trip stop at Dartmouth Crossing, spawning pools. Tour guide Bob Rutherford in vest at left.



After we were finished at Dartmouth Crossing, our two passenger vans followed George Ferguson of the Nova Scotia Salmon Association, cross-country through the backwoods and farming country of rural Nova Scotia (with a brilliant show of fall colors and a perfect sunny autumn day) to Upper Musquodoboit, where we had lunch in a small family restaurant. The location was near our first stop—the site of a liming tower installed to ‘dose’ the West River of Sheet Harbour with powdered limestone to raise the pH. West River and most other rivers along the Atlantic Coast of Nova Scotia suffer from severe acidity, the result of acid rain and low buffering capacity in the soils, to the extent that spawning success and juvenile survival is negligible. Liming brings up the acidity to around neutrality, from as low as 4-4.5, and allows it to stay above 5.5 for the 20 km or so before the river empties into the Atlantic. The liming project has been in place for 18 months, and almost immediately after commencement, the aquatic invertebrate populations, which were also stressed by the highly acid water, rebounded, and immediately led to increased fish biomass. George outlined the issues and concerns, as well as the mechanics of the operation, to an interested audience. Liming is a costly process, and in this case the entire project including infrastructure would cost \$800K over 10 years, the bulk of the money to be raised privately. The powdered limestone is a major part of the cost, and the economics were favoured by a limestone source in close proximity to the project, which minimizes transportation costs.



Figure 7. Lime dosing facility on West River of Sheet Harbour.

After viewing the liming tower, we drove to several viewing spots along the way to the ocean, as the river swelled from a forest stream to surging falls and rapids at Sheet Harbour. George Ferguson was a consummate host, and answered all our questions and otherwise made us feel at home and comfortable with our appreciation of the river.

The final leg of the trip was along the scenic coastal highway from Sheet Harbour to Halifax. On the way, we stopped at Taylor Head Provincial Park, taking a moment to walk across a boardwalk through coastal sand dunes to an isolated sand beach. One of the students on the trip, Jennifer Lau of St. Mary's University in Halifax, has some test sites further seaward in the park, which is one of Nova Scotia's newest, where she's evaluating genetic strains of coastal margin plant species for their potential to be used in restoring natural vegetation communities in damaged

environments, but we didn't have time to go and see her sites. We paused to reflect and do some beachcombing, in perfect weather and a near pristine setting that all biologists love—a sampling of the best Nova Scotia has to offer. Regretfully we had to leave, but enjoyed an interesting and scenic drive back along the Eastern Shore of Nova Scotia—the Atlantic shore to the east of Halifax (the shore west of Halifax is known as the ‘South Shore’, go figure). There were no peeps of protest and everyone enjoyed the trip and exchange of conversation and ideas that these outings usually promote. Chalk up another one for CSEB.



Figure 8. Fall colours on West River of Sheet Harbour, downstream from dosing facility (Courtesy Jennifer Lau).



Figure 9. Field trip conclusion on the Atlantic Ocean at Taylor Head Provincial Park (Courtesy Jennifer Lau).



**Please Renew  
your Membership**

For more information please contact  
Gary Ash at [gash@golder.com](mailto:gash@golder.com)

## Announcement-Graduate Student Positions

Ph.D. students and a post-doctoral research associate are required for a 3-year project examining the effects of multiple stressors in small wetland ecosystems. The focus of the research will be on the potential effects of the herbicide glyphosate along with eutrophication or predation stress on amphibians and other aquatic organisms in agricultural or forest wetlands. The work will take place on Canadian Forces Base Gagetown in New Brunswick, Canada. For more information see the attached poster concerning this project or [www.carcnet.ca](http://www.carcnet.ca).

### GRADUATE AND POSTDOCTORAL POSITIONS AVAILABLE

As a team of collaborating academic and government scientists, we are seeking 6 Ph. D. students and a post-doctoral research associate to work as a part of a multidisciplinary team conducting manipulative experiments designed to examine the effects of multiple stressors in small wetland ecosystems. The focus of this NSERC funded research program will be on the potential effects of the herbicide glyphosate on amphibians and other aquatic organisms when this chemical stressor co-occurs with eutrophication or predation stress in agricultural or forest wetlands. We envision these experiments as being the first in a series of studies to be conducted at the "Long-term Experimental Wetlands Area (LEWA)," on Canadian Forces Base Gagetown in New Brunswick Canada.

#### 1 Post Doctoral and 1 Ph. D. position at the University of Ottawa

A post-doctoral associate and 1 Ph. D. student will be examining effects on gene expression, sexual development and metamorphosis in amphibians. They will be supervised by Dr. Vance Trudeau (University of Ottawa; see [www.teamendo.ca](http://www.teamendo.ca)) and work out of The University of Ottawa Centre for Advanced Research in Environmental Genomics.

Qualifications: Candidates should have a background in comparative physiology or vertebrate endocrinology, and have demonstrated experience with basic molecular biology methods (PCR, gene cloning, etc). A keen interest in aquatic ecosystems and the effects of pollutants and endocrine disruptors on development would be an asset to the team.

#### 5 Ph. D. positions with the Biology Department and The Canadian Rivers Institute, University of New Brunswick Saint John (UNB Saint John)

1. One Ph. D. student will be examining multi-stressor effects on amphibian reproduction, growth and survival. The student will be supervised by Dr. Dean Thompson (Adjunct Professor UNB Saint John; Canadian Forest Service, Sault Ste. Marie, Ontario) and will work out of the University of New Brunswick Saint John. Qualifications: Students with scholastic training in wetland or aquatic ecology, herpetology or ecotoxicology will be considered. Highly motivated students with strong quantitative skills and the ability to work both independently and within a team environment or who have experience in field research and aspirations for a career in scientific research will be considered as priorities.
2. One Ph. D. student will be examining multiple stress effects on amphibian abundance and species richness. The student will be supervised by Dr. Jeff Houlihan (UNB Saint John). Qualifications: An M. Sc. in ecology, conservation biology, herpetology, or a related discipline is preferred. We would consider a statistics, mathematics, or computer modelling graduate if there is a strong natural history interest and background. Candidates should have good statistical skills (i.e., are comfortable with traditional analyses such as ANOVA and regression as well as randomization and GLM techniques). Experience in amphibian identification (particularly larval amphibians) is an asset along with experience in population genetics, molecular techniques, modelling, toxicology and/or computer programming
3. One Ph. D. student will examine the effects of multiple stressors on food web structure and planktonic and benthic invertebrate communities in these experimental ponds. The student will be supervised by Dr. Karen Kidd (UNB Saint John). Qualifications: An M. Sc. in ecotoxicology or a related discipline. The student should have experience conducting field work on aquatic systems and good statistical skills. Experience in macroinvertebrate identifications is an asset.

4. One Ph. D. student will be examining the effects of multiple stressors on amphibian disease prevalence and developmental abnormalities. This student will be co-supervised by Dr. Jeff Houlihan and Bruce Pauli (Environment Canada, Ottawa). Qualifications: An M. Sc. in ecology, conservation biology, herpetology or a related discipline is preferred. We would consider a statistics, math or computer modelling graduate if there is a strong natural history interest and background. Candidates should have good statistical skills (i.e., are comfortable with traditional analyses such as ANOVA and regression as well as randomization and GLM techniques). Experience in amphibian identification (particularly larval amphibians) is an asset.
5. One Ph. D. student will be examining the effects of multiple stressors on primary production and plant abundance and diversity. The student will be supervised by Dr. Jeff Houlihan. Qualifications: An M. Sc. in ecology, conservation biology, botany or a related discipline is preferred. We would consider a statistics, math or computer modelling graduate if there is a strong natural history interest and background. Candidates should have good statistical skills (i.e., are comfortable with traditional analyses such as ANOVA and regression as well as randomization and GLM techniques). Experience in aquatic plant identification is an asset. It would also be an asset to have experience in population genetics, molecular techniques, modelling, toxicology and/or computer programming.

All 5 of these Ph. D. students will be based at UNB Saint John.

**Additional qualifications:** The importance of candidates being effective team players cannot be overstated. Excellent verbal and written communication skills as well as interpersonal relation skills are considered vital personal attributes. This project will involve many students and senior researchers (as well as, a number of field technicians) working on the same set of 36 ponds for at least the next 3 years and therefore the ability to collaborate effectively will be a critical, perhaps the most critical, attribute determining the success of this project. We are looking for that rare combination - the ability to think and work independently while also being a collegial, collaborative and cooperative team member.

**Terms for Placement:** The post-doctoral associate will be located at the University of Ottawa, Ottawa, Ontario with funding for up to 3 years. All Ph.D. students have guaranteed funding of \$18-20,000 annually for 3 years with a fourth year of funding likely. Students working on field research aspects will fulfill their academic residency requirements at UNB Saint John, Saint John, New Brunswick and will conduct extensive field research at the LEWA site at CFB Gagetown near Fredericton, New Brunswick.

**Duties:** Successful candidates will work as a team to establish 36 experimental ponds on CFB Gagetown. They will be responsible for establishment of testable hypotheses, study design, experimental installation, data collection and analyses, lead-authoring peer-reviewed publications in international journals, as well as a thesis dissertation pertaining to their subproject. In addition, all students will be required to work with other team members to integrate results across subprojects which will enhance their multi-disciplinary learning experience. Successful applicants will have access to state-of-the art laboratory facilities at the Canadian Rivers Institute, UNB Saint John, the Great Lakes Forestry Centre, Sault Ste. Marie, and at the University of Ottawa.

Students who have a keen interest in this unique opportunity to work with our team should send applications (i.e., CV, graduate and undergraduate academic transcripts, cover letter and full contact information for a minimum of three academic/research references) to Jeff Houlihan at [jeffhoul@unbsj.ca](mailto:jeffhoul@unbsj.ca). Please clearly identify by supervisor(s) the position(s) for which you are applying. Applications will be accepted until all positions have been filled. After selection, the candidates will also have to apply for acceptance into the graduate programs of the host universities.

For more information about specific subprojects please contact the project supervisor:

Jeff Houlihan: [jeffhoul@unbsj.ca](mailto:jeffhoul@unbsj.ca)  
 Karen Kidd: [kiddk@unbsj.ca](mailto:kiddk@unbsj.ca)  
 Bruce Pauli: [Bruce.Pauli@ec.gc.ca](mailto:Bruce.Pauli@ec.gc.ca)  
 Dean Thompson: [dtompson@NRCan.gc.ca](mailto:dtompson@NRCan.gc.ca)  
 Vance Trudeau: [vtrudeau@science.uottawa.ca](mailto:vtrudeau@science.uottawa.ca)



# CANADIAN SOCIETY OF ENVIRONMENTAL BIOLOGISTS LA SOCIÉTÉ CANADIENNE DES BIOLOGISTES DE L'ENVIRONNEMENT

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**Student Members:** persons who are enrolled in an accredited college or university in a discipline of the biological sciences, and who are preparing themselves for professional work in teaching, management, or research related to natural resources and to the application of sound ecological principles to management of the environment.

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**Membres Réguliers:** les personnes ayant un degré ou diplôme d'un collège ou une université dans une discipline des sciences biologiques et qui sont ou qui ont déjà été engagé professionnellement en aménagement, enseignement ou recherche tenant à l'environnement ainsi que ressources naturelles.

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