

Vol. 71, Number 3 • Fall 2014



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

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- CSEB 53<sup>rd</sup> Annual Meeting & Workshop
- CSEB Field Trip Report
- John Lilly Undergrad Scholarship Winners Since 2008



# CSEB Newsletter Bulletin SCBE

VOLUME 71, ISSUE 3, 2014

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

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**Date of Issue- November 2014**

Printed in Canada ISSN: 0318-5133

**Front Cover:** View of what once was Beaverhill Lake east of Edmonton, but now is a dried up grassland. Photo by Gary R. Ash.

**Back Cover:** TOP: Plains bison at Elk Island National Park, 4 October 2014. BOTTOM RIGHT: Dr. Grey Goss, U of A, giving keynote address to CSEB Workshop in Edmonton, 3 October 2014. BOTTOM LEFT: CSEB workshop participants, 3 October 2014.

**Photo Credit:** Gary Ash, Golder Associates Ltd.

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(\*Term of Directorship)



**CSEB NEWSLETTER 2014**

Vol. 71, Number 3 Fall 2014

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](mailto:gash@golder.com)

**Editor:** Gary Ash

**Layout/Printing:** Lasertext Digital Print & Copy Centre, Edmonton, Alberta on recycled paper.

**All original text in the Newsletter / Bulletin may be reprinted without permission with a citation to the Canadian Society of Environmental Biologists.**

**LE BULLETIN de la SCBE 2014**

Vol. 71, Numéro 3 Automne 2014

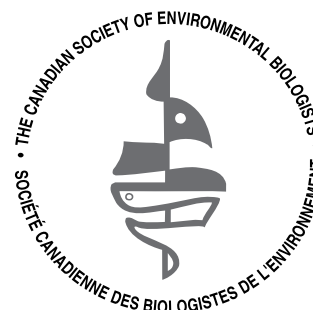
Le Bulletin de la SCBE est une publication trimestriel de la Société Canadienne des Biologistes de l'Environnement. Le Bulletin informe les membres des activités de la Société sur événements courant ainsi que les progrès qui font en sciences de l'environnement. Par un échange d'idées au niveau national, 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](mailto:gash@golder.com)

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**Impression:** LaserText Digital Print & Copy Centre, Edmonton, AB sur le papier recyclé.

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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 News

### PRESIDENT'S Report

By Robert Stedwill, CSEB President

October 27th and the first snow is falling here in Regina. For me this is indicative of the fact that this will be my last report as the CSEB's president, as we will be electing new officers in December to carry on with the work of the organization.

As I look at the last four years, I feel we have had success in meeting the objectives of the organization, and with some new initiatives taken, the organization will become that much stronger, and hopefully, the membership will grow. Three areas where I believe we have been particularly successful are as follows:

1. Development of a video to convey our message to educational institutions wherein young professional biologists will soon emerge, as well as those that have recently embarked on their biological careers.
2. We have shared our concern and collective wisdom with respect to the federal government's, and some provincial environmental agencies', dismantling of legislation and regulations concerning environmental protection of Canada's natural resources, and the abandonment of the research being done at the Experimental Lakes Area in northwestern Ontario, and

the dismantling of the PFRA's research centre and tree nursery at Indian Head, Saskatchewan.

3. We are currently developing a new website to attract new individuals to the organization, to inform biologists and the general public of what the CSEB is, and to be more interactive with respect to sharing ideas and concerns related to our shared environment.

In addition to the three points above, we have also held two workshops, one in Brandon and the other in Edmonton. The theme of the first was **Recognizing the Value of our Canadian Parks – Ecozones: Conservation, Biodiversity and Research**, and the second one held recently on **Biological Monitoring – Are We Making Progress?** It is at workshops such as these that we have an opportunity to disseminate information amongst colleagues and others. The latter workshop certainly addresses one of the issues currently facing the scientific community in Canada, in that on the world stage we may in fact be falling behind in terms of basic science, as opposed to applied science.

As an organization, the CSEB needs to continue its efforts of sharing information, educating governments of the needs to do this, and ensuring that legislation and regulations are in place to protect Canada's natural resources for Canadians. Finally, we need to ensure that emerging biologists are aware of the Canadian Society of Environmental Biologists, so that the goals and objectives can be met in the future.

## REGIONAL News

### BRITISH COLUMBIA News

By Loys Maingon (RPBio.), BC Director

#### BC's Environmental Management and the Question of "Rebound"

This summer with no major rain since October 23 2013, water levels on one of Vancouver Island's major watersheds dropped to record lows. After a prolonged summer drought and nearly 12 months of water deficits, fall has come to Vancouver Island with an early arrival of extreme rains and floods. Summer water quality problems associated with water shortages and increased bacterial counts in low reservoirs caused environmental health agencies to issue water advisories. With the recent rains, drought conditions

have given way to massive water surges and increased water turbidity causing more water advisories. *"Plus ça change, plus c'est la même chose."*

Environmental events around BC mirror provincial environmental crises that caught national attention this summer. While the Mount Polley mine dam failure spilled tailings downstream, and drew national attention to mining practices, the Myra Falls mine, in Strathcona Park, experienced a similar – if smaller less-well advertised-failure. It is a matter of scale and context, and management by crisis. While the Mount Polley accident has implications for Alaska, and led our American neighbours to call into question BC's mining practices and the legitimacy of industry standards, a similar accident within provincial park borders was deemed so normal that it hardly caught the press' attention.

This is consistent with a general reality-defying trend in BC's environmental management, which was the object of a report released this month (October 2014) by the Pembina Institute for the Pacific Institute for Climate Solutions.<sup>1</sup> This report is yet another reality check. The authors simply show that, contrary to government and ministry proclamations, liquid natural gas will not decrease the output of greenhouse gases, only strong climate-change policies will limit the output of emissions. Thus, LNG, which was heralded two years ago as an economic driver and a climate change technological solution, proves once again to be a short-lived mirage that the economy and the environment are quickly making obsolete.

At all levels, global, national, provincial, and local, these water quality, energy, and resource problems emanate from a failure to deal with reality and the distance between economic expectation, technological limits, and environmental constraints. Setting aside the technical details and models used in the Pembina Institute report, the basis of the problem posed by the report is that real environmental solutions are rarely simply technological; they are social. As Ted Nordhaus and Michael Schellenberg recently argued :

*"The growing evidence that low-cost efficiency often leads to faster energy growth was recently considered by both the Intergovernmental Panel on Climate Change and the International Energy Agency. They concluded that energy savings associated with new, more energy efficient technologies were likely to result in significant "rebounds," or increases, in energy consumption. This means that very significant percentages of energy savings will be lost to increased energy consumption."*<sup>2</sup>

Once again, science and technological innovations only bring short-term solutions to environmental problems. If social and economic policies are not also constrained, the social demands and expectations that created the problem grow exponentially beyond the limits of technological solutions. Without effective social policy to control the "rebound" effect, energy consumption and environmental impacts associated with them have historically continued to expand, and will continue to do so until we move to a steady-state economy. If so, we have to re-think "environmental management" as we have known it since 1945 in a "classic economy."

David Attenborough recently gave a speech to the Royal Society for Protection of Birds' Conference on Nature. Attenborough pointed out, as does an increasingly concerned scientific community, that climate change impacts on nature are outstripping both predictions and governmental capacity to react. Standard policies and practices are no longer up to the broad challenges that climate change presents. We have to move beyond the logic and policies that have guided government-supported conservation policy since 1945:

*"Where in 1945 it was thought that the way to solve the problem was to create wildlife parks and nature reserves, that is no longer an option. They are not enough now. The whole countryside should be available for wildlife. The suburban garden, roadside verges ... all must be used".<sup>3</sup>*

There are three important messages in this statement: 1) the surface area of land-mass set aside to date for ecological conservation is insufficient to meet the changes that we are beginning to witness; 2) that future generations are inheriting our failure to act and are likely to experience the impacts of climate change; and 3) any significant adaptation to these changes will depend almost entirely on the volunteer participation of the public.

For the last 30 years, the prevalent logic has relied on near-sighted economic thinking, which treats "nature" or "natural capital" as an accessory or "residual" factor in the economy. Although a minority of economists recognize that all wealth ultimately derives from the conversion of "natural resources", most do not. The prevalent logic forgets the importance of "natural capital" and continues to view "nature" as an endless resource.

The limits of this logic were made clear a month ago when the Cowichan River levels plummeted to new lows and a health warning was issued. Notwithstanding the national embarrassment associated with the fact that the Cowichan is a listed "Heritage River" and is an "index river" for the US/Canada Salmon Treaty, its demise this summer led to a collapse of tourism and the closing of the Catalyst mill, which is the region's main employer. The general economy of the Cowichan was brought to its knees leading to calls for emergency relief. The official solution was a strictly technological one. Catalyst engineers, together with DFO and Ministry of Environment staff, proposed that the weir at Cowichan Lake should be raised and water pumped directly out of the lake to the mill. Notwithstanding concerns of lakeside residents whose homes would be flooded, this "technical solution" only works if all natural variables remain the same.

In keeping with classical economic considerations, the assumptions were that water shortages only affected the mill's operations, and that the natural capital remains constant and endless.

Times are changing with climate. In our current reality, the variables that have been assumed to be constant by mainstream economists are shifting radically, if imperceptibly to the public eye. Even if the mill were guaranteed a steady water supply, the mill still needs a steady timber supply, which is itself controlled by tree growth rates. The timber supply is assumed to be guaranteed. However, tree biomass, like mills, needs a constant water supply through the growth period. Under current conditions, the timber supply can

no longer be assumed to be guaranteed. Forestry research shows that tree growth is declining faster than the regional water input and soil moisture. The entire West Coast is also experiencing increased tree mortality.<sup>4</sup> As recent research shows, Canada is experiencing a generalized tree-growth decline from the 45th to the 51st parallel due to a prolonged and unusually intense water deficit (See Figure 1):

Climate change does not affect single variables, but suites of ecological variables. Even if we were only interested in single faunal groups such as birds, understanding birds cannot be divorced from a minimal understanding of their habitat and recognition of its fate. Their condition is only one further footnote in the developing reality. The recent Audubon (2014) *Birds and Climate Change* report, which notes that about half the birds in the United States (314 species) are “on the brink” and likely to disappear due to habitat shifts, makes this case painfully clear.

In 1992, Rio set a target of 12% of the landmass that needed to be set aside for conservation purposes. The more recent target of 14% is likely to be further expanded in the light of accelerating climate impacts, after the forthcoming conference of parties in 2015 in Paris. Whether or not BC and Canada have met that target is now a moot point. Events have already largely outstripped the failed targets of Rio and Kyoto, and every conference of parties since. In many ways, this message is similar to the one that Dr. Richard Hebda has been articulating for over two decades with regards to the likely negative climate change impacts on vegetation and ecosystems of southern British Columbia: “Every tree counts.”<sup>5</sup>

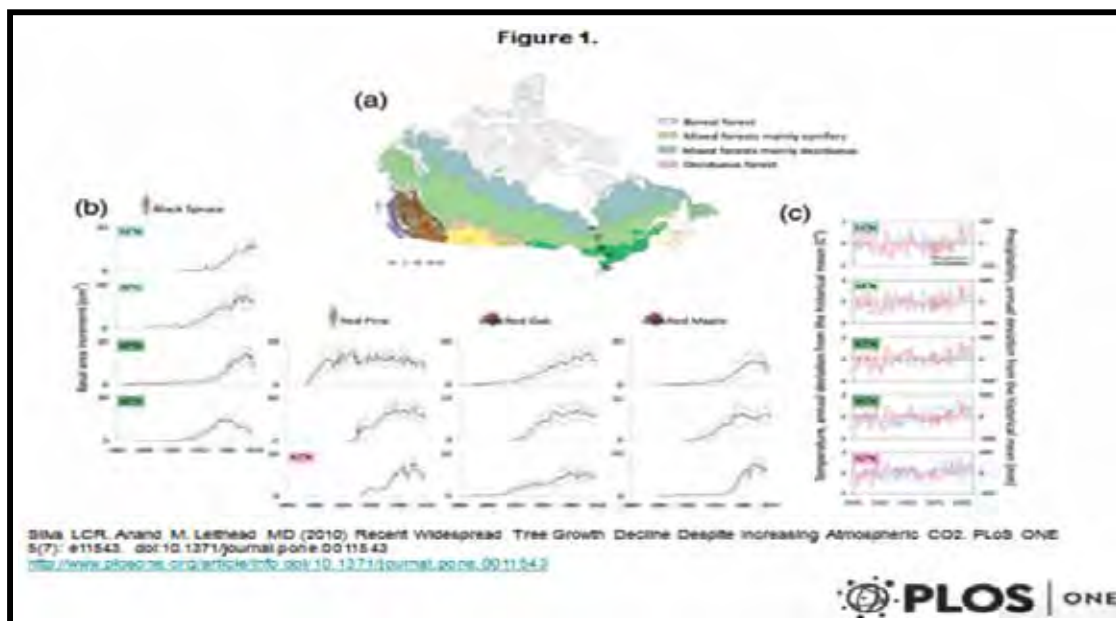
One of the messages that has come out of 25 years of negotiation is that the solution is unlikely to come from government. As Scott Barret of Columbia’s Earth Institute points out:

*“Unfortunately in the climate area, strategy is the last thing that anyone is ever thinking of as far as I can see, because they keep coming up with ideas like pledges, which imply that you can, by some kind of central planning, ordain a collective outcome and the world doesn’t work that way.”<sup>6</sup>*

Addressing the problem of energy consumption, not just in terms of the type of energy used, but in terms of the impacts derived from energy use is fundamental to both the economy and the state of the environment. In this respect, there currently seems to be no strategy or policy development to move beyond management by crisis from rebound to rebound. There remains to see how the public and politicians react to the next IPCC report, and whether we are ready to address the implications by the next IPCC conference in Paris 2015.

## References

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- <sup>5</sup> Sarah J. Wilson and Richard Hebda (2009). *Mitigating and Adapting to Climate Change Through the Conservation of Nature* [http://www.treesintrust.com/external/LTA\\_ClimateChange.pdf](http://www.treesintrust.com/external/LTA_ClimateChange.pdf)
- <sup>6</sup> UN Climate Summit: A ‘game-changer’ for global warming <http://www.cbc.ca/m/touch/news/story/1.2775281>





## ALBERTA News

By Brian Free, CSEB Past President

With the new Premier, Jim Prentice, comes a new Minister of Environment and Sustainable Resource Development, the Hon. Kyle Fawcett from Calgary. Fawcett has a BA in Political Science and Economics and previously served as the Minister of Jobs, Skills, Training and Labour. The Department of Environment and Sustainable Resource Development, the result of a merger between the former Alberta Environment & Water and the Alberta Sustainable Resource Development, has now had Alberta Parks added to the Department. This brings the management of the environment and all non-energy natural resources under one Minister.

At our 2014 CSEB workshop, we held a field trip to Elk Island National Park, just east of Edmonton. It is home to plains and wood bison, elk, deer..... and wolves. The Elk Island pack has grown in the past few years to an estimated 12 to 15 animals. Sounds like a well-balanced ecosystem.....

However, adjacent to the national park is the Cooking Lake-Blackfoot Grazing, Wildlife Provincial Recreation Area. This is a multi-use park that features trails for mountain biking, hiking, cross-country skiing, and dog sledding, as well as livestock grazing, trapping and seasonal hunting. Cattle have been grazing in the area for decades.

The local grazing association claims that 29 cattle, often calves, have been killed or gone missing this year from the pastures in this Recreation Area. The Elk Island National Park wolves are thought to be the culprits. Although ranchers have access to a "Wildlife Predator Compensation Program", the Alberta government decided to approve the culling of six wolves inside the provincial recreation area by the grazing association. Will this have the desired effect of reducing predation on the grazing cattle? Predator culls are always a controversial management tool. Stay tuned!

And what has the Federal Government been up to lately? An application to build a 66-room luxury hotel on the shores of Maligne Lake in Jasper National Park has been rejected by Parks Canada. However, environmentalists are dismayed



that a smaller commercial operation, featuring up to 15 "tent cabins", did get the green light.

The 2010 Management Plan for Jasper National Park explicitly prohibits new land being released for overnight commercial accommodations outside of the Jasper town site. What to do? Parks Canada says it intends to change the plan to allow the commercial tent cabin proposal to go ahead at Maligne Lake.

The Canadian Parks and Wilderness Society and Jasper Environmental Association have applied to the Federal Court to quash the approval.

## SASKATCHEWAN News

By Robert Stedwill, CSEB President

### Fall – 2014

It has been a short summer, but a long fall here in Saskatchewan. Traditionally, summers have been long and the fall short. However, our summer really didn't start until July and here it is late October and still no snow on the ground as I write. The climate has changed.

In fear of sounding repetitive, it is true that "Saskatchewan is busy". When one travels the province, construction projects are seen everywhere. Due in part to a good economy, a great influx of people calling Saskatchewan home, and a demand for Saskatchewan's natural resources, namely oil and potash, Saskatchewan's Ministry of Environment has had to change as well. Although I may have in part commented on this before, the following summarizes the Saskatchewan government's approach to environmental protection; all based on results based regulation.

When checking the website of the Ministry of the Environment, it indicates that "[C]hanging the nature of how the ministry does business involves several major initiatives including new and amended legislation, compiling regulations into a streamlined code, transforming our IT systems, introducing a Client Service Office to help people navigate their way through the ministry's business, and improving how compliance and enforcement is conducted."

As a previous manager of projects requiring screening under the Environmental Assessment Act, the inclusion of a "Client Service Office" is a welcome change, especially for those organizations new to the province and unfamiliar to its laws and regulations. In the "old days", some of us had to learn the hard way.

The fundamentals of Results Based Regulations (RBR) are as follows:

legislation, environmental code, online services, compliance and enforcement, and qualified persons. Legislation, online services and compliance and enforcement are straight forward; however, the “environmental code” and “qualified persons” need further explanation.

“The ‘environmental code’ provides directions and guidelines for projects. It consolidates environmental requirements in one streamlined regulatory tool that more clearly defines the expectations and legal obligations for proponents.

There are 20 chapters addressing specific activities and adopted standards. The chapters are either process-based or results-based; they define a process to be followed or detail a set of objectives to be met. In the latter case, the proponent proposes how the environmental objectives will be met as certified by a qualified person.

The code is designed to provide clarity for activities regulated by Saskatchewan’s three main environmental Acts: the *Environmental Management and Protection Act*, 2010; the *Forest Resources Management Amendment Act*, 2010; and the *Management and Reduction of Greenhouse Gases Act*.”

The reference to “qualified persons” means people qualified to carry out work on behalf of a proponent “based on the following principles:

- Use professional designations where statutory regulations exist and the competencies are relevant;
- Include those with competencies based on education and experience;
- Acknowledge that a certified QP’s role may be as a supervisor (certifying that appropriate steps have been taken and that advice relied upon is sound);
- Do not infringe on the exclusive scope of self-regulated professions;
- Encourage but not require liability insurance; and
- Comply with existing trade agreements.

Qualified persons require specific qualifications depending on the type of activity and certification or report required.

The code chapters define who the qualified person is for each specific activity. Generally speaking, QPs are associated with a profession and/or professional body of practice. In some circumstances, additional criteria are applied, such as education and work experience. In addition, for those who do not meet the criteria, an individual can request to be designated by the Minister to become a “qualified person.”

### Why the need for Change

“As our population and economy continue to grow, so too does the demand for our resources and the pressures

on our air, land, and water. A healthy environment and a healthy economy are not mutually exclusive. In the past, a ‘command and control’ model worked reasonably well. The expertise resided within the government and government could tell proponents exactly what was needed to achieve compliance with the province’s environmental rules.

The old system required significant ministry resources and specialized expertise. Environmental knowledge and technical skills have expanded profoundly surpassing government’s capacity to be the expert on solutions.

Rapidly advancing technology, the demand for more specialized expertise and the accelerated pace of development have challenged the ministry’s ability to be as effective. Our focus has changed to an important question for which every activity that has an impact on our environment requires an answer—what is the desired outcome the regulated proponent needs to achieve?

Saskatchewan’s new way of protecting the regulated environment is to define the desired outcome by law and empower the operator to determine how that standard will be achieved or surpassed.

Surprisingly, the code makes no reference to greenhouse gas emissions, or any regulation to curtail their emissions, which ironically, are the highest in the country on a per capita basis. This would have been an ideal time to proclaim Bill No. 95, an Act Respecting the Management and Reduction of Greenhouse Gases and Adaption to Climate Change, which was introduced in the Saskatchewan legislature on May 11, 2009.





## Native Prairie Speaker Series

### The Saskatchewan Conservation Data Centre – Rankings, Research & Rare Plants

**Sarah Vinge-Mazer, Saskatchewan Conservation Data Centre**



Everyone welcome!



**Wednesday, November 19, 2014, 7:00pm**  
**Royal Saskatchewan Museum Theatre**  
**Regina, SK**

The presentation will be available following the presentation at  
<http://www.youtube.com/user/skpcap>

In-kind support for the Speaker Series provided by Saskatchewan Conservation Data Centre and Royal Saskatchewan Museum. This project was undertaken with the financial support of the Government of Canada through the federal Department of the Environment. Ce projet a été réalisé avec l'appui financier du gouvernement du Canada agissant par l'entremise du ministère fédéral de l'Environnement.



## Other News

### KEY FEATURES OF RESULTS-BASED REGULATION

**A CODE:** A clear, concise statement of the policies, objectives and best practices that govern the management and protection of the environment in Saskatchewan.

**EMPHASIS ON OUTCOMES:** Developers/licensees/citizens are accountable for meeting compulsory parts of the code and finding the most appropriate methods and processes to achieve the outcomes.

**COMPLIANCE KNOWLEDGE BASE:** Enhanced educational efforts will improve everyone's understanding of how and why to comply with province's new Environmental Code.

**ONLINE BUSINESS SERVICES:** Doing business online will save time and resources and result in faster service.

## MANITOBA News

By Bill Paton, Manitoba Regional Director

### Assiniboine River Basin Initiative

In an earlier issue I reported on the workshop in Virden, Manitoba where stakeholders endorsed the concept of creating an Assiniboine River Basin Governance structure (ARBI Portal). The stakeholders included municipalities and counties, conservation districts, water activists, and science based organizations as well as government departments from Manitoba, North Dakota, and Saskatchewan. The interest in working together to address water related issues across the Qu'Appelle, Souris, and Assiniboine River basins was the motivation.

The Prairie Improvement Network (PIN) is playing a lead role bringing stakeholders together and providing seed funding to assist in hosting a conference on November 12-14, 2014 in Regina. A Governance model will be presented to those in attendance as well as a membership structure that will drive the organization forward. PIN will continue to play a key role with the Initiative Planning Committee by facilitating the development of a sustainable organizational structure that will complement existing water management frameworks.

The ARBI portal is an online tool which provides a "one stop shop" of information about water stewards, stakeholder organizations, geography, and water ways, etc. The portal can also be used as a research tool to learn more about activities, projects and new technologies and methods being planned or employed. <http://prairienetwork.ca/assiniboine-river-basin/ca>.

Below is an abstract of a paper presented by Dr. Bill Paton, CSEB Regional Director at an international conference in Dundee, Scotland, in September 2014, which we think might be of interest to CSEB members.

### *Hudson Bay, Manitoba, Canada, the Forgotten Coastline*

William H.N. Paton, Biology Department, Brandon University, Brandon, Manitoba, Canada. [Patonw@Brandonu.ca](mailto:Patonw@Brandonu.ca).

**Extended Abstract.** Hudson Bay, a yet pristine unique northern coastline, provides habitat for whales, seals, polar bears, and many migratory birds. The Hudson Bay system is the world's largest northern inland sea. The watershed that supplies freshwater to this marine ecosystem is extensive, extending to the Rocky Mountains in the far west, receiving waters from the Prairie Provinces, the USA, the province of Ontario, and Nunavut.

The highly eutrophic states of the two major lakes that receive these waters in Manitoba have raised serious concerns about those two large freshwater ecosystems. These lakes eventually drain into Hudson Bay. Major policy and enforcement commitments from governments to address the disastrous state of Lake Winnipeg have been the source of much politics and minimal real science-based legislation or regulations. These lakes eventually discharge into Hudson Bay, where it has been suggested that nitrogen is the major limiting factor in its potential eutrophication. Nitrogen contributions from the basin together with atmospheric nitrogen deposition could result in disastrous ecosystem decline. However, debate continues with respect to the importance of nitrogen removal from sewage and industrial effluents in the major Manitoba cities. Extremely large cyanobacterial blooms visible on satellite imagery are already contributing large quantities of nitrogen to the these lakes through nitrogen fixation on an annual basis. Efforts to minimize phosphate inputs into the river systems supplying the lakes lack enforcement and capital to improve the infrastructure necessary to reduce this nutrient. Climate change by way of extremely large precipitation events over short periods of time have overwhelmed existing sewer and wastewater treatment systems resulting in raw sewage discharges into the rivers and increased nutrient loads off the land.

The arctic ecosystem is already being influenced by climate change and extensive hydro dams, which have altered historical freshwater flows into both James Bay and Hudson Bay. The Cree and Inuit peoples are dependent on this marine ecosystem for traditional subsistence foodstuffs, which creates a human and social impact in this anticipated decline of this ecosystem if governments fail to seriously address nutrient pollution in the rivers and lakes that feed Hudson Bay.

## Manitoba Government Announces New Park, Eco-Reserve

*Reprinted from Government of Manitoba Government Website*

**October 15, 2014:** The Manitoba government has established Chitek Lake Provincial Park as the province's 88th park and has permanently protected the Walter Cook Caves Park Reserve as an ecological reserve, Conservation and Water Stewardship Minister Gord Mackintosh announced today.

"Manitoba is home to a number of rare and ecologically sensitive areas that must be protected," said Minister Mackintosh. "Manitoba's only herd of free-ranging wood bison roam through the area that includes Chitek Lake Provincial Park, while the Walter Cook Caves contain a variety of unique rock formations and are home to little brown bats. It is also the only known place where elk, moose, white-tailed deer, woodland caribou and wood bison share the same habitat."

Chitek Lake Provincial Park will also become the first land in the province to be classified and preserved as indigenous traditional use, the minister said, adding this new classification gives recognition to lands of natural or cultural significance to indigenous people and that these parks are significant traditional-use areas. While the park has the new classification, it will be open to licensed hunting, fishing and trapping.

The park is now the province's 12th largest park, covering about 1,000 square kilometres and is located about 350 km northwest of Winnipeg, along the shore of Lake Winnipegosis.

"I am very honoured and thrilled that our wishes have been met and there has been so much commitment in working together for our future," said Chief Cameron Catcheway, Skownan First Nation. "We must protect our traditional land from mineral exploration, mining, logging and the list goes on and on. I am thrilled and honoured to be part of history and that we can keep the land green and respected so the buffalo can roam freely without any habitat being jeopardized."

"I commend the Province of Manitoba for their commitment to working with the Misipawistik Cree Nation (MCN) on the designation and management of the Walter Cook Caves Ecological Reserve," said Councillor Heidi Cook, MCN. "My hope is that through the protection of this special area my grandfather's legacy is honoured with our peoples' commitment to love, respect and care for the land as he did."

A new community advisory group has been established to co-operatively manage the Walter Cook Caves Park Reserve as an ecological reserve, protecting its unique features including several geologic formations due to weathered limestone and brown bat habitats in the areas caves, the minister said, adding the group is the first of its kind in Manitoba. The ecological reserve is located within Misipawistik Cree Nation's trapline.

"This is a great day for all as these boreal forest areas serve the globe by storing carbon, which helps to slow the effects of climate change," said Ron Thiessen, executive director, Canadian Parks and Wilderness Society Manitoba. "We are delighted these protected areas were established in partnership with local First Nations and in a manner that rightfully honours their ancestral connection to these special lands and waters."

The designations support TomorrowNow – Manitoba's Green Plan, an eight-year plan that supports environmental protection while ensuring a prosperous and environmentally conscious economy.

For more information on TomorrowNow, visit [www.gov.mb.ca/conservation/tomorrownowgreenplan/](http://www.gov.mb.ca/conservation/tomorrownowgreenplan/).

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## North America's First Freshwater Fishery Eco-Certification Celebrated at Waterhen Fishery

*Reprinted from Government of Manitoba Government*

**WATERHEN (October 17, 2014)** —Eco-certification of the Waterhen Lake fishery will ensure fishers have continued access to global markets, maintain prices, and can take advantage of markets that want eco-certified products, Conservation and Water Stewardship Minister Gord Mackintosh announced here today while attending a community celebration in recognition of the fishery's achievement.

"Waterhen Lake fishers did their homework and we expect they will benefit from this world-class designation," Minister Mackintosh said. "This will have a real, lasting impact on the community's economy and set the tone for other freshwater fisheries in the province and across the country to follow their lead."

The Waterhen Lake commercial fishery is very important to the local economy and produces an annual average harvest of more than \$100,000, the minister said, adding that along with trapping, livestock production and local services, commercial fishing is a primary economic activity offering potential for growth and prosperity.

"Eco-certification means we can demonstrate there is a sustainable abundance of walleye and northern pike in our lake," said Lorne Huhtala, president, Lake Waterhen Fishermen's Association. "We are proud to be the first lake certified in North America and to lead the way for others with the responsible management of this important natural resource."

The minister noted through the persistence and dedication of the Waterhen Lake Fishermen's Association, the fishery was

able to meet the criteria of the Marine Stewardship Council (MSC). Earlier this year, the Waterhen Lake walleye and northern pike gillnet commercial fishery became the first freshwater fishery in the Western Hemisphere to attain MSC certification as a sustainable, well-managed fishery. Waterhen Lake walleye, also known as pickerel, and northern pike from this fishery are now eligible to carry the blue MSC ecolabel. The Waterhen Lake efforts now serve as an example for the eco-certification of other freshwater fisheries in Manitoba and across the country, Minister Mackintosh said.

Manitoba has close to 2,000 licensed commercial fishers producing an annual harvest of over \$20 million on lakes Winnipeg, Manitoba, and Winnipegosis and other lakes primarily in northern Manitoba.

“Commercial fishers from different parts of the province have expressed an interest in exploring sustainable fishing certification and Manitoba will support those efforts,” Minister Mackintosh said. “Eco-certification is considered a high priority for the Manitoba government and was identified in the Tomorrow Now – Manitoba’s Green Plan through the commitment to work to achieve eco-certification status for the province’s fisheries.”

## ATLANTIC News

Submitted by Pat Stewart, Atlantic Regional Director

CSEB’s Atlantic Regional executive members have been active in discussions relating to the Society’s website redesign, online promotional video, and the recent Edmonton workshop. We’re currently looking for ideas from members here for local workshops, speakers, and venues for CSEB activities.

Keeping CSEB in the forefront involves a lot of work and all of our executive members are working at capacity. The only way we can keep the group going is for members to take a lead, volunteer, and hold and participate in local gatherings, workshops, and the like, and to encourage other environmental biologists to join and dedicate themselves to the cause. CSEB is a chance to make a positive change to society and at the same time enrich yourself from the knowledge and expertise our members offer. If you want to help out, contact the executive through Atlantic Director Patrick Stewart at [enviroco@ns.sympatico.ca](mailto:enviroco@ns.sympatico.ca).

### Nova Scotia Adopts New Approach to Regulating Work in Watercourses

The Province of Nova Scotia has instituted a new approach to permitting activities which affect work in and crossings of surface waters. Activities that do not alter the bed or bank

of a watercourse will not require any submission to Nova Scotia Environment, the department which is responsible for managing activities in surface waters. Under the new system, which came into effect on October 1, 2014, proponents of certain projects, typically bridge and culvert installation projects, fish habitat work, docks and boat ramps and other types will be allowed to carry out projects without a formal approval but with only a notification by the proponent that the project is taking place.

Rather than being a *carte blanche*, certain restrictions apply, primarily for stream crossings including culverts and bridges, where qualified persons must complete the design. A proportion of projects for which notifications are received will be audited to verify compliance. The Province has supplied standard provisions for the watercourse activities at <http://novascotia.ca/nse/watercourse-alteration/docs/Watercourse-Alterations-Standard.pdf>.

### Nova Scotia Responds to Citizens’ Concerns over Fracking

A bill preventing widespread use of hydraulic fracturing—the drilling and use of high pressure injections to alter rock formations to release hydrocarbons—is being hotly debated in the Nova Scotia legislature. Arising from the August report of a public inquiry led by Cape Breton University President Dr. David Wheeler, the bill is intended to largely stop use of this method of exploring for natural gas in several geological basins in the Province.

The legislation comes on the heels of a consultative process which evaluated the pros and cons of fracking and, largely based on displays of citizens’ input, more or less completely rejected the idea. Not necessarily a NIMBY reaction, there are features of Nova Scotia geology which differ from those in areas such as central and western North America and Western Canada where the process is widely used, that may make fracking a poor bet for this area. Other important concerns were the threat to the rural way of life and infrastructure, and also the short life of the resource.

None of the three exploratory drilling programs which used fracking—the latest which ended three years ago—yielded significant gas finds, and most of the fluids used were not recovered, suggesting that the geology wouldn’t be likely to retain exploitable quantities of natural gas anyway.

In addition, the Province is still trying to deal with leftover fracking fluids stored in holding ponds at one of the sites, where they’ve become a headache for authorities, because of public concern over safe disposal. Some recently leaked into a nearby stream and proposals have been made to treat the effluent before dumping it into a tributary of the Bay of Fundy—which was also viewed with skepticism. In the latest twist, a local cement company has found a way to use the fluids to cool its cement kilns, and Provincial officials have



jumped on the idea. The several million litres involved will shortly be trucked to the site.

Many members of the public had a dim view of the Commission but its conclusions were lauded. It's still not clear, however, whether the Province will be so forthright in rejecting the idea of future hydrocarbon exploitation and the revenues and jobs it creates. The law before the legislature now will give the government 'wiggle room' to allow some form of hydraulic fracturing in projects in the future. However, not fracking seems not to be such a bad idea, and in the long run, it would probably be more sustainable not the frac.

## TERRITORIES News

Submitted by Anne Wilson, CSEB 2nd Vice-President

At the end of August, I travelled to the Kivalliq region of Nunavut, in connection with two mining projects. It was already fall, with the tundra colors a micro-palette of reds and oranges. We were fortunate enough to see caribou, a muskoxen, tundra swans, sandhill cranes, several species of geese, and numerous birds, as well as rabbits and siksiks.

Part of the trip was to look at the aquatic monitoring that is done, and it was wonderful to rub shoulders with "real" biologists who spend their time primarily in the field. Trips like this really bring home what it is us "desk" biologists are striving to protect with the environmental assessment and regulatory processes.

In the Nunavut news, Inuit harvesters are happy that the European Union has agreed to the unhindered import and sale of sealskins. This will allow harvesting and secondary activities to add use and economic value to seal products.

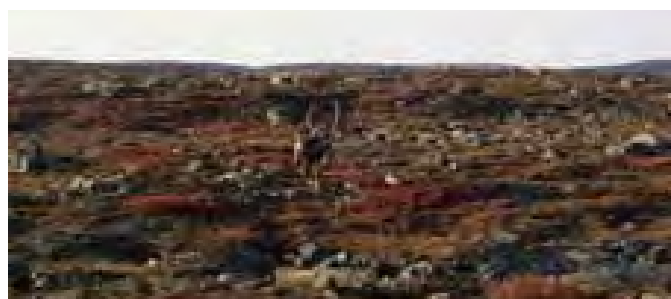
In local Nunavut news, Iqaluit's dump fire was extinguished in September, after burning for 4 months. The landfill will be

monitored with daily temperature readings until spring, and separation of combustibles done for incoming wastes. Putting out the fire was done at a cost of over \$2.2 million.

It was an indescribable relief for the NWT forest fire season to come to an end in September; this was the worst fire season in memory, and saw some 33,000 square kilometres burned. Much of this was in the North Slave region, and will affect caribou migration and use of traditional hunting areas. My Nunavut travels ended with 4 days in Yellowknife at the beginning of September, and even though I was outdoors for most of the time, the steady rain was very welcome. In Yellowknife, there were areas where residual skiffs of ashes were evident, much like you would see snow after a passing flurry.

On a humorous note, while I greatly enjoyed seeing wildlife during my travels, I had to sympathize with the Deh Cho residents when I saw the CBC story about bison becoming a pest in the communities. Deer would be bad enough, but imagine a 2000 pound animal rooting up your trees and garden, or taking over the local playground – and not easily scared away!

Development across the North continues, with a range of projects on the drawing board or underway. These include mining, energy, oil and gas exploration and extraction, road developments across some of the least amenable terrain you could imagine, and contaminated site remediation activities.





### Mining and other development news

Several environmental assessments are underway, three in connection with existing projects, and several in progress.

- Snap Lake Diamond Mine's (DeBeers Canada Inc.) environmental assessment (EA) has completed, with the Board taking a hard line on how much salinity (total dissolved solids) can be discharged into receiving waters. This means further work on treatment, and we are awaiting further on site-specific water quality objectives with some new toxicity data. The next step will be going to a water licence amendment, and it will be difficult to bring the EA requirements into on the-ground implementation.
- Prairie Creek Mine (Canadian Zinc Corp.): The road EA continues, and the company is working to assemble financing needed to take the project into production.
- Ekati Diamond Mine (Dominion Diamond Ekati Corp): The Jay Pipe is located under Lac du Sauvage, and could be accessed by constructing a ring dike around the kimberlite pipe. The impact statement is expected in late October.
- The Mackenzie Valley Highway project has been reduced in scope, due to funding realities, and now consists of 333 km of all-season gravel road connecting Wrigley and Norman Wells. The original proposal was almost 500 km longer to the north, so the impact assessment scope will need to be revised.
- The Yellowknife Gold Project (Tyhee) is still on the books, but not active.
- The Giant Mine Remediation project is awaiting Ministerial approval for finalization of the environmental assessment report, before it can proceed to the regulatory processes.
- The Meliadine Gold project near Rankin Inlet recently received a positive environmental assessment decision from the Nunavut Impact Review Board, which gave its approval with 127 recommended terms and conditions.
- Sabina's Back River gold project is undergoing environmental assessment, with technical meetings scheduled for mid-November.

- Areva has submitted their Final Environmental Impact Statement to the Nunavut Impact Review Board for their Kiggavik Uranium Mine project. Public hearings area expected to be held in the first quarter of 2015.

In the regulatory forum, several mining projects are moving towards development or have applied for amendments to their water licences.

- In June Fortune Minerals received their Land Use Permit and Water Licence approvals to construct the NICO project (cobalt/gold/copper/bismuth). The company is putting financing in place to move the project to construction.
- Canadian Zinc Corp.'s Prairie Creek Project was issued a water licence in September and the company is seeking financing to proceed.
- Following public hearings in May on the new DeBeers Canada Inc.'s Gahcho Kué Diamond Project water licence application, the Mackenzie Valley Land and Water Board has issued the Type A water licence.
- The next step for Avalon Rare Metals will be public hearings for their Type A water licence. These have been rescheduled at the request of the company, and may be held in early 2015. Siting of the hydrometallurgical plant has been proposed to be in Saskatchewan.
- North American Tungsten's Cantung Mine has applied to dry stack their tailings and re-mine some of the old tailings areas that may have stability issues. This involves a new tailings disposal area in the Flat River valley.
- Baffinland has started production at their Mary River iron ore mine, with the first ore mined in September, and being stockpiled for shipment next open water season.
- The Meadowbank Gold mine's Type A Water licence is up for renewal in May 2015; Agnico Eagle has submitted an application which is under review, with public hearings expected in Q1 of 2015.

Full details for current environmental assessments are available on the Board's web site at <http://www.reviewboard.ca/registry> and regulatory files at <http://www.mvlwb.ca/Boards/mv/SitePages/registry.aspx>.

### Closing:

Here's wishing each of you a wonderful fall. If we can believe Environment Canada's forecasts, we are in for above-normal temperatures across most of Canada, so let's enjoy time outside in nature as much as we can!

If you are doing work north of 60 that you would like to highlight in the newsletter, or running some seminars or other training opportunities, please let us know. The CSEB provides a valuable networking and communication forum, and a voice for biologists if there are any issues to be raised. There is also the option of instigating other CSEB activities – both of the fun and/or of the educational variety - with colleagues in the North. Please email your thoughts to [anne.wilson@ec.gc.ca](mailto:anne.wilson@ec.gc.ca).

## CSEB Regional Directors Needed

Paula Smith, CSEB Territories (Nunavut) Director has resigned due to personal reasons. I would like to thank Paula for her support over the last 3 ½ years (her term would have expired at the end of 2014), and her great contributions to our Newsletter/Bulletin.

CSEB has Regional Director vacancies as follows:

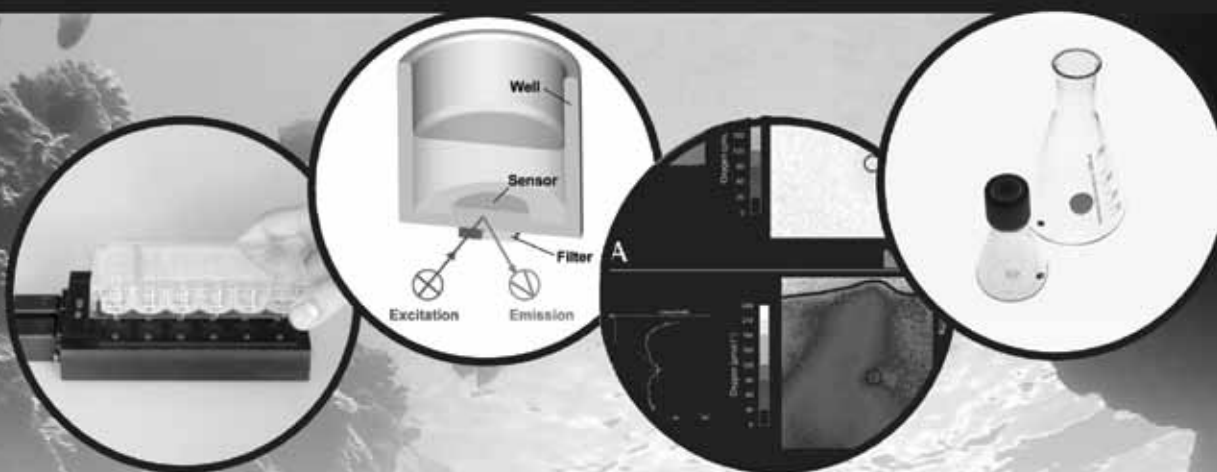
- Territories
- Atlantic
- Ontario
- Manitoba
- Saskatchewan

If you are interested in taking on one of these positions, please contact Robert Stedwill at [rjstedwill@live.ca](mailto:rjstedwill@live.ca). It is not an onerous task, and will greatly help strengthen the organization.

## How You Can Help the CSEB

- **Contribute to the quarterly newsletter and/or website.** Give us an article on something you are interested in
- **Write a short paragraph about what you have been doing, articles or reports you have written**
- **Provide us with points of views on issues.** Your Executive is always interested in learning what issues concern you
- **Write a book review for the newsletter**
- **Become a Chapter Chair, or offer to join the Board of Directors**
- **Promote CSEB - put up a poster, distribute membership forms - download from our website**
- **Set up a Chapter - contact any Director for help**
- **Organize a CSEB event - contact any Director for help**
- **Attend the annual conference and maybe present a paper on your work.**

## Non-invasive Oxygen Measurements



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**Canadian Society of Environmental Biologists  
53rd Annual Meeting & Workshop**

**Biological Monitoring -  
Are We Making Progress?**

**Workshop held October 3, 2014**



**King's University College  
9125 – 50<sup>th</sup> Street, Edmonton,  
Alberta**

**Workshop Program**

**Opening of the Conference (Room L116)**

8:00 – 8:30	<i>Registration</i>
8:30 – 8:40	Welcome from the National Society Brian Free, Past National President, CSEB
8:40 – 8:50	Dr. John Wood, Dean of the Faculty of Natural Sciences, King's University
<b>Plenary Session: Biological Monitoring – Setting the Scene (Room L116)</b>	
9:00 – 9:50	<b>Monitoring in Alberta- lots of data..but what can it tell you?</b> Dr. Greg Goss, Dept. of Biological Sciences, University of Alberta
9:50 – 10:20	Coffee and Networking Break – <b>(Atrium)</b>
<b>Monitoring: The Bigger Picture (Room L114)</b>	
10:20 – 10:50	Ted Nason, Alberta Environmental Monitoring, Evaluation and Reporting Agency - A New Era for Environmental Monitoring, Evaluation and Reporting in Alberta
10:50 – 11:20	Marie-Claude Roy and Peter Solymos, Alberta Biodiversity Monitoring Institute - ABMI: Enhancing our Vision of Alberta's Biodiversity
11:20 – 11:40	Scott Slocombe and Shailyn K Druks, Wilfred Laurier University -!Needs and Gaps for Effective Consideration of Wildlife in Cumulative Effects Assessment in southwest Yukon
11:40 – 12:00	Ron Zurawell, Alberta Environmental Monitoring, Evaluation and Reporting Agency – Alberta's Lake Monitoring Network: Biological Monitoring and Invasive Species Assessment

**Lunch: 12:00 – 1:30 PM**

**Friday, October 3, 2014 (continued)**

<b>Lunch Speaker: Dr. Lu Carbyn, Canada Wildlife Service (retired) Beaverhill Lake from Rowan to Romanchuk (Atrium)</b>	
<b>Research – Innovation in Monitoring (Room L116)</b>	
1:30 – 1:50	Stephen Legaree, Environmental Coordinator, Alberta Transportation Wetland Creation Program – Highway 63
1:50 – 2:10	Sheelah Griffith, Golder Associates - An Approach to Monitoring the Ecological Impacts of In-situ Oil and Gas Operations on Wetlands in Northeastern Alberta
2:10 – 2:30	Cam Stevens, Golder Associates - A Preliminary Review of Hydroacoustic Surveys for Fisheries in ‘Small’ Northern Lakes
2:30 – 2:50	Maya Evenden, Dept. of Biological Sciences, University of Alberta – Factors Influencing Flight Capacity of the Mountain Pine Beetle (Coleoptera: Curculionidae: Scolytinae)
2:50 – 3:15	<i>Coffee and Networking Break</i>
<b>Biological Monitoring Programs – Into Action (Room L116 )</b>	
3:15 – 3:35	Dorte Koster – Hutchinson Environmental Services Ltd. – Assessing the City of Red Deer’s Impact on River Water Quality
3:35 – 3:55	Christine Robichaud, Golder Associates - Monitoring Terrestrial Mammals Around Above-ground Pipelines Associated with In-situ Oil and Gas Development in East- central Alberta
3:55 – 4:15	Pat Fargey, Alberta Environment & Sustainable Resource Development - Extreme Circumstances Call for Extreme Measures. The Alberta Greater Sage- Grouse Recovery Program.
4:15 – 4:40	<b>Workshop Wrap-up – Canvas CSEB Issues Announcement of AGM &amp; Closing Remarks</b> Anne Wilson & Gary Ash, Co-Chairs
5:00 - 6:30PM	<b>CSEB Supper and Social – Off-Site</b>

**Saturday, October 4 – Field Trip**

9:00 AM – 3:30 PM – Elk Island National Park - East of Edmonton

Guide: Lu Carbyn

# CSEB 53rd Annual Meeting

**Kings University College  
October 3, 2014**

## **Biological Monitoring – Are We Making Progress?**

CSEB held the 53rd Annual Meeting and Workshop on 3 October 2014 on “Biological Monitoring – Are We Making Progress” at Kings University College in Edmonton. It was a very successful and informative workshop, and was attended by about 45 delegates and students.

The organizing committee for the workshop included Anne Wilson and Gary Ash (co-chairs), along with Brian Free and Joseph Hnatiuk.



*Anne Wilson, workshop Co-Chair*



*Brian Free, CSEB Past President*

Anne Wilson opened the workshop, welcoming the delegates and speakers. We also heard from Dr. John Wood, for a welcome from Kings University College. Brian Free, CSEB Past President gave a brief history of the CSEB and the Alberta Chapter.



*Dr. Greg Goss*

Dr. Gregg Goss was our keynote speaker, and provided some thought-provoking insights and questions about whether we are collecting the right data and engaging the right stakeholders and decision makers. The luncheon speaker was Dr. Lu Carbyn, retired from the Canadian Wildlife Service, who gave an enlightening talk about the drying up of a large, important lake, Beaverhill Lake, which was a major staging area for migrating waterfowl and shorebirds.

Following are the abstracts of the presentations along with photos of many of the presenters.

### **ABSTRACTS**

#### **1. Monitoring in Alberta- lots of data...but what can it tell you?**

Dr. Greg Goss, Department of Biological Sciences, University of Alberta

Alberta, through tremendous investments by gov't, industry and other independent groups, has a number of monitoring activities within the province and a plethora of data currently being generated with a landslide of data being deposited in public databases in the near future. However, the real question lies on whether this data can or will be used (and trusted) to provide adequate information to all stakeholders to ensure responsible and sustainable development of Alberta's resources. Our pattern of steadily increasing money spent on monitoring is creating a wealth of data, but to what purpose. A rationale, a priori approach with well-designed studies to actually determine effects, with clearly defined parameters and thresholds and most importantly, engagement of the important stakeholders, decision makers and actionable items is needed.

#### **2. A New Era for Environmental Monitoring, Evaluation and Reporting in Alberta**

Dr. Ted Nason, Alberta Environmental Monitoring, Evaluation and Reporting Agency

Krista Tremblett, Alberta Environmental Monitoring, Evaluation and Reporting Agency

Alberta has been experiencing rapid growth in both its human population and resource-based economy. Environmental





*Dr. Ted Nason*

pressures accompany this growth and governments, industries and communities have been challenged to respond with a range of tools and approaches to understand and manage cumulative environmental effects. The Alberta government has been pursuing an integrated resource management system that includes policy, regulatory and environmental monitoring elements. The Alberta Environmental Monitoring, Evaluation and Reporting Agency (AEMERA) was created at arms-length from government to develop and coordinate delivery of the necessary monitoring functions. New legislation, the Protecting Alberta's Environment Act, was proclaimed on April 28, 2014 to mark the official launch of AEMERA. AEMERA's critical functions area spelled out in the Act:

- (a) ...obtain credible and relevant scientific data and other information regarding the condition of the environment in Alberta,
- (b) ...ensure the data and other information are available and reported to the public in an open and transparent manner...
- (c) Plan, coordinate and conduct environmental monitoring,
- (d) Collect, store, manage, analyze and evaluate environmental monitoring data,
- (e) Report on status and trends related to the condition of the environment...
- (f) Develop standards respecting environmental monitoring...

In its first 6 months of operation AEMERA has been developing and refining systems to address these functions while simultaneously delivering operational elements including Alberta's commitment to the Joint Canada-Alberta Implementation Plan for Oil Sands Monitoring (JOSM). JOSM is in its third year of operation and will soon undergo an external scientific peer review.

### 3. ABMI: Enhancing our Vision of Alberta's Biodiversity

Peter Solymos, Marie-Claude Roy (MC), and Jim Schieck, Alberta Biodiversity Monitoring Institute

ABMI measures the state of Alberta's biodiversity and human footprint to support natural resource and land-use decision making in the province. We combine our data (terrestrial and aquatic) collected in the field with remote sensing techniques to measure the trends of human footprint, species, habitat, and landscape diversity across the province of Alberta. In the field we assess the habitat structure, human footprint and the relative abundance

of vascular plants, birds, mammals, mosses, lichens, mites and aquatic invertebrates. Using remote sensing techniques, we have developed maps of vegetation and human footprint that are used to complement our assessment in the field and to project and extrapolate species abundance to the whole province based on statistical models. ABMI offers numerous products and services, including maps, raw data collected in the field, statistical model outputs. Combining our data collected in the field to the ones remotely derived, we have for example determined and predicted the cumulative effects of environment variables, human footprint and connectivity on more than a thousand species with the objective to monitor their intactness over time. Our innovative monitoring approaches serve many purposes ranging from the management of rare species to the conservation and restoration of habitats. We will give examples of these products for a variety of landscapes throughout Alberta. The data collected and hosted by ABMI and the information that is produced from the data are credible, relevant and value-neutral and used to support resource planning and management throughout Alberta.



*Marie-Claude Roy*

### 4. Needs and Gaps for Effective Consideration of Wildlife in Cumulative Effects Assessment in Southwest Yukon

Dr. Scott Slocombe and Shailyn K Drukis, Wilfred Laurier University

Southwest Yukon, the Kluane region, is famed for its wildlife resources, including large and small carnivores, and ungulates. The region is largely forested wilderness, although a substantial



*Dr. Scott Slocombe*

part of the region is high altitude rock, snow, and ice. Even so, there are current and pending threats to the region's wildlife, ranging from highway and pipeline construction to hunting, agriculture, land development, and hiking and flightseeing. Land and resource management, including wildlife, takes place through a complex set of mainly co-management institutions resulting from comprehensive land claims and devolution of powers to the Yukon government. Drawing on recent work on cumulative effects assessment for the Kluane National Park management plan, and research on needs and gaps for identifying cumulative effects of development on wildlife in the Yukon, we identify a range of challenges and responses with broad applicability considering wildlife in cumulative effects assessment. Options for improvement include building awareness of cumulative effects, improving data availability, building capacity, ensuring long-term monitoring programs, citizen-based initiatives, more coordinated institutions and more effective linkages.

### 5. Alberta's Lake Monitoring Network: Biological Monitoring and Invasive Species Assessment

Dr. Ron Zurawell, Alberta Environmental Monitoring, Evaluation and Reporting Agency

The Government of Alberta initiated lake monitoring programs in 1980 to gather water quality information. Lake monitoring in the province has evolved over the past 3 decades and now comprises a coordinated network of provincial-, regional- and volunteer-based programs. While water chemistry and physical attributes have been the primary focus of water quality monitoring, a concerted effort is being made to address the need to understand biological conditions of Alberta's lakes. Phytoplankton and zooplankton collection and assessment are the mainstays of the biological monitoring of lakes and reservoirs. However, recent provincial initiatives to protect Alberta's surface waters from aquatic invasive species has led to a new, coordinated approach for monitoring Dreissenid (zebra & quagga) mussels and other non-native species of concern (e.g. Eurasian water milfoil, spiny water flea) in lakes and reservoirs. This presentation provides an overview of biological assessment in Alberta's lake monitoring network.



*Dr. Ron Zurawell*

### 6. Alberta Transportation Wetland Creation Program — Highway 63

Stephen Legaree, Alberta Transportation

Alberta Transportation (AT) has committed to twin Highway 63 from Atmore to Fort McMurray, with planned completion of the entire project scheduled for 2016. Construction of Highway 63 is predominantly within the boreal forest in Alberta characteristically has abundant wetlands. Wetland impacts, while efforts were made to minimize, are inevitable. AESRD and AT have worked closely together to develop a plan allowing for the construction of wetlands to offset the required impacts to naturally occurring wetlands.

During the course of construction, it is common practice to develop borrow sources for road fill and base material. These borrows, once construction is complete, can be re-developed as wetlands to meet the requirements of the Alberta Water Act.

A comprehensive monitoring program is underway with those created wetlands already established on completed sections of the highway. This ongoing program, which began in 2012, is designed to ensure that these facilities develop into functioning, self-sustaining wetlands. The secondary objective of this monitoring plan is the further understanding and development of wetland science in Alberta. The following key parameters are being assessed and measured: water quality, vegetation, wildlife use, fish, hydrological function, aquatic invertebrates and soils.

In order to confirm success, this project will compare measured parameters at the created wetlands against local reference wetlands and borrows established in the 1960 for the original highway. Establishment will be considered "successful" when the values for a specific parameter fall within an acceptable range of target values for that parameter, or trend of improvement for a particular parameter is evident. Factors that will indicate successful conversion of a borrow pit to a functioning wetland will include: increased biodiversity, establishment of native aquatic vegetation, enhanced wildlife utilization, bank stabilization, establishment of a littoral zone, an increase in the benthic community and healthy water quality.



*Stephen Legaree*

## 7. An Approach to Monitoring the Ecological Impacts of In-situ Oil and Gas Operations on Wetlands in Northeastern Alberta

Sheelah Griffith, MSc, PBio, Vegetation Specialist, Golder Associates

Kelsey Brock, MSc, Vegetation and Rare Plant Specialist, Golder Associates

Kaeli Stark, MSc, RPBio, Vegetation and Rare Plant Specialist, Golder Associates

Jonathan Thompson, PhD, Senior Wildlife Biologist, Golder Associates.

As part of the Terms and Conditions of the Alberta Environmental Protection and Enhancement Act (EPEA) approval for the construction, operation, and reclamation of in-situ oil and gas operations, companies are now required to implement a wetland monitoring program. Because these operations mainly occur in the boreal region of the province, their principal impacts are on peatlands including fens and bogs. The wetland monitoring programs implemented by Golder Associates have been established in fens because of their sensitivity to changes in near-surface water flow and their abundance within project lease areas. The ultimate purpose of wetland monitoring at these sites is to describe and document potential effects from these projects on surrounding wetlands, particularly fens, so that appropriate mitigation strategies can be developed and implemented.

The objectives of the wetland monitoring programs are twofold: (i) to determine whether project infrastructure and surface or groundwater withdrawals are affecting wetland plant community structure as indicated by changes in near-surface water levels; and (ii) to determine whether mitigation measures implemented to protect wetlands are effective as indicated by maintenance of wetland plant species composition, abundance, and vigour. Golder Associates has been involved in the development and implementation of several wetland monitoring programs in northeastern Alberta over the last decade. The wetland monitoring programs are based on a Before-After-Control-Impact (BACI) design in which a series of experimental plots are established in areas that may be impacted by disturbance (e.g., roads, well pads, and plant facilities) (i.e., Focal Monitoring Area). Additionally, reference plots are established in

areas not predicted to be influenced by human disturbance in the foreseeable future (i.e., Reference Monitoring Area). Results from baseline surveys carried out prior to project construction indicate that variation in precipitation between years can influence wetland plant community species composition. Wetland monitoring on established sites has shown that infrastructure may be having an effect on wetland plant community structure and function in some locations. Golder has recommended implementation of mitigation measures to reduce the effects and is monitoring these mitigation practices.

## 8. A Preliminary Review of Hydroacoustic Surveys for Fisheries in 'Small' Northern Lakes

Dr. Cam Stevens and Gary Ash, Golder Associates

Mobile hydroacoustic surveys provide a non-lethal alternative to gill netting for reliable descriptions of fish population sizes and distributions. Hydroacoustics can quickly and directly evaluate fisheries production at the ecosystem level using transducers mounted on a small boat. Transducers can be oriented vertically and horizontally to scan the water column in a series of transects. However current standards for collection settings, post-processing and analyses may not always apply to small northern lakes. We reviewed the applicability of standards developed for deeper, more productive systems (e.g., Great Lakes, ocean) where hydroacoustics are well established. The default does not always apply. Collection settings should aim for higher resolution data where range is limited in shallow water and where there may be fewer targets. In turn, this opens options for improving target detection during analyses and ultimately, providing a more accurate representation of a low-density population. Although preliminary, some study design elements also need to be carefully considered based on data collected by Golder baseline programs. For example, Algen's (1983) degree of coverage equation may not be robust for planning transects with an acceptable level of uncertainty. Sensitivity tests are on-going as new datasets are available.



Sheelah Griffiths



Dr. Cam Stevens



### 9. Factors Influencing Flight Capacity of the Mountain Pine Beetle (Coleoptera: Curculionidae: Scolytinae)

Dr. Maya Evenden, Department Biological Sciences, University of Alberta, Caroline Whitehouse, Alberta Environment Sustainable Resource Development, Peace River, AB and

Jared Sykes, Department Biological Sciences, University of Alberta



*Dr. Maya Evenden*

The mountain pine beetle, *Dendroctonus ponderosae* Hopkins (Coleoptera: Curculionidae: Scolytinae) is the most damaging pest of mature pine (Pinaceae) in western North America. Although mountain pine beetles have an obligate dispersal phase during which adults must locate a new host for brood production, dispersal is a poorly understood aspect of its ecology. This flight mill study was designed to test the effects of beetle size, sex and age on flight capacity. Energy use during flight was assessed through measurements of weight before and after flight and fat content of flown versus control beetles. The mean flight distance achieved by mountain pine beetles varied between 2.12 and 5.95 km over the 23 h bioassay but the longest total flight of an individual beetle was > 24 km. Beetle pre-flight weight influenced flight initiation, flight distance and duration. Bigger beetles are more likely to fly and once in flight fly longer and farther than smaller beetles. There was no direct effect of beetle sex on flight capacity. Flight capacity of beetles declined with age post emergence. Although individual flight capacity was variable, flight velocity was relatively constant between 1.55 and 1.93 km/h. Lipids are used to power flight in mountain pine beetles, as lipid content was lower in beetles flown on the flight mills compared to beetles that did not fly. Flight distance was negatively correlated with beetle post-flight lipid content. The baseline flight capacity data revealed in this study have implications for understanding the population dynamics of this eruptive forest pest.

### 10. Assessing the City of Red Deer's Impact on River Water Quality

Dr. Dörte Köster, Senior Aquatic Scientist and Christine Geiger, Hutchinson Environmental Sciences Ltd.

Barry Raynard, ISL Engineering and Land Services

The "Red Deer River and Tributaries Water Quality Assessment." was initiated by the City of Red Deer in 2012 and has continued through 2014. The study includes a) detailed monitoring programs to determine the relative contributions and total impact of discharge from the Municipal Waste Water Treatment plant (WWTP) and stormwater runoff within the City on water quality and biota in the river, b) determination of water quality objectives for the Red Deer River downstream of the City and c) interpretation to help the City determine the most cost effective means of meeting water quality objectives. While the WWTP impact assessment is required by the approval license, the stormwater study was initiated under the City's Environmental Master Plan to guide potential enhancements to manage the City's total impact on water quality. The study is being undertaken for the City by ISL Engineering and Land Services and Hutchinson Environmental Sciences Ltd. and the presentation will include the approach taken to design a study that meets the requirements of water management at the federal, provincial, watershed and local levels.



*Dr. Dörte Köster*

### 11. Monitoring Terrestrial Mammals Around Above-ground Pipelines Associated with In-situ Oil and Gas Development in East-central Alberta

Christine Robichaud, Golder Associates Ltd., Corey De La Mare, Golder Associates Ltd. and Paul Kip, Canadian Natural Resources Ltd.

The use of above-ground pipelines (AGPs) in thermal in-situ oil sands projects raises concerns about potential impacts to wildlife movement on the landscape. Specifically, AGPs can create barriers to movement for large-bodied mammals. To mitigate these potential impacts, operators must provide adequate crossing opportunities for wildlife to increase the permeability of their AGP networks. One mitigation strategy is to elevate sections of AGPs so that



Christine Robichaud

large mammals can cross underneath. We established a monitoring program at an oil sands development near Cold Lake, AB to document wildlife movement around AGPs and to identify the height at which most individuals will cross beneath them. Thirty remote cameras were deployed year-round between 2010 and 2013 at AGP heights ranging from  $<1.0$  m to  $>2.5$  m. Winter track count surveys were conducted along AGPs twice annually over the same time period. All mammalian species detected crossed under the AGPs. The odds of black bear and coyote crossing the AGPs increased as the height increased from  $\leq 1.0$  m to  $>1.0$  m– $\leq 1.4$  m and from  $>1.0$  m– $\leq 1.4$  m to  $>1.4$  m– $\leq 1.8$  m, but crossing odds did not change at heights  $>1.8$  m. The odds of Canada lynx and deer species crossing the AGPs increased from heights of  $\leq 1.0$  m to  $>1.0$  m– $\leq 1.4$  m, but the odds did not change with subsequent changes in AGP height. The odds of moose crossing the AGPs increased as the height increased from  $\leq 1.4$  m to  $>1.4$ – $\leq 1.8$  m; however, crossing odds did not change when the AGPs height increased to  $>1.8$  m. These findings suggest that the newly released (2014) provincial directive on AGP crossing requirements is conservative given their definition of crossings as segments with a minimum clearance of 1.8 m.

## 12. Extreme Circumstances Call for Extreme Measures. The Alberta Greater Sage-Grouse Recovery Program

Pat Fargey, Alberta Environment and Sustainable Resources Management



Pat Fargey

The Alberta Greater Sage-Grouse population has experienced a long period of decline from highs of 1,000 to 1,500 in the early 1980s to less than 50 by 2014. Mindful of the conservation urgency, the Government of Alberta, in conjunction with its partners, has been implementing an ambitious program of conservation action. The short-term objective is to maintain and increase the small population of sage-grouse using translocations of sage-grouse from Montana combined with targeted removal of predators in order to improve nesting success and brood survival to fledging. This is being done in conjunction with longer-term projects involving habitat improvement, restoration and removal of old abandoned structures that have been providing predators artificial nesting and roosting habitat, and enhanced provincial land use regulation. The expectation is that once the habitat improvements and restoration activities have been completed and the conservation status of the Alberta sage-grouse population improves, that translocations and the targeted predator control can be phased out. In addition, as a precautionary experimental measure, the Calgary Zoo has, at the request of the Government of Canada and Alberta, started a sage-grouse captive breeding project. However, this project is still experimental and is not expected to contribute any birds to the wild population for several years. The rationale for these conservation actions and some of the associated issues are discussed.



Dr. Lu Carbyn, Luncheon Speaker



Gary Ash, Conference Co-Chair



## CSEB Workshop Field Trip

**October 4, 2014**

Prepared by Gary Ash

The day following the CSEB Workshop, eight participants including our guide Dr. Lu Carbyn enjoyed a beautiful fall day to go on a field trip. Our first destination, after loading up on coffee at the local Starbucks, was what once was Beaverhill Lake, but now is Beaverhill meadows.

Beaverhill Lake in the 1980s was 139 km<sup>2</sup> and had a maximum depth of about 2.3 m. It was recognized as an internationally significant water body for shorebirds and waterfowl, in particular, as a staging area for migratory birds flying to and from the Arctic. In 1981, the Canadian Nature Federation designated the lake as a National Nature Viewpoint in recognition of its importance to birds and birdwatchers, and in 1982, the lake became part of the Wetlands for Tomorrow Program. This is a joint program between Ducks Unlimited (Canada) and Fish and Wildlife Division for the management and enhancement of waterfowl populations and habitats. In June 1987, the lake was designated a Ramsar site, which was an international convention agreement signed in 1971 that identifies and protects wetlands of importance to migratory birds.

Unfortunately, as Dr. Carbyn pointed out, the lake completely dried up in 2006 (see cover photo). What is to blame? Surely the drought that hit central Alberta in the early part of the decade was substantially to blame. Many also blame Ducks Unlimited, which installed several weirs since 1973 on the main inflow – Amisk Creek, to divert water to restore 800 ha in 17 upstream wetlands. Other causes could be water agreements with local farmers to divert water to flood their hay meadows in the spring. There are also pressures on the local aquifer from industrial and residential users. The bottom line is that the lake is dry, and still has not come back, even with the end of the drought conditions.

Lu Carbyn, both in his lunchtime presentation at the CSEB workshop and on the field trip, suggested the province



*Dr. Lu Carbyn discussing the plight of what was once Beaverhill Lake*

should construct a pipeline to pump water from the North Saskatchewan River to refill Beaverhill Lake and possibly increase water levels in other smaller lakes in between. This is something CSEB could follow-up on, to provide support for restoration of Beaverhill Lake.

Our next destination was Elk Island National Park, which is located about an hour drive east of Edmonton. Elk Park was first established in 1906 as a federal game preserve to protect the declining elk populations of the Beaver Hills. Some of the last Plains Bison in the world were reintroduced to Elk Park in 1907. In 1913, Elk Park joined the Parks Canada family. Since that time Elk Island National Park has been Canada's source of disease free bison for re-introduction and conservation initiatives throughout its former range. Elk Island National Park is currently home for both free roaming herds of both plains bison and wood bison, along with elk, moose, and deer along with hundreds of bird species.



*Plains bison at Elk Island National Park*



*Wood bison at Elk Island National Park*

We got to observe both herds of wood bison and plains bison, and kindly posed for some fairly close up photos.

Both Dr. Lu Carbyn and long-time CSEB member Dr. Bob Gainer told countless stories about the various wildlife studies and management policies implemented in the park over the years.



*Dr. Lu Carbyn and Dr. Bob Gainer at Elk Island National Park*



Finally to top off the day, we had an enjoyable afternoon lunch at the camp facilities on the shores of Astotin Lake within the park.



*Astotin Lake in Elk Island National Park*

After starting a camp fire with ready materials supplied by Anne Wilson, we enjoyed cooking and consuming multiple hot dogs and marshmallows in the afternoon sun. Thanks Anne for organizing the lunch materials.



*Brian Free and Anne Wilson roasting wieners, with other field trip participants in the background.*

After thoroughly dousing our campfire to make sure it was out, we boarded back into the vehicles to make our way back to Edmonton. It was a very enjoyable and informative day spent with other CSEB members.

Our great appreciation goes out to Lu Carbyn for graciously volunteering (well maybe with a bit of arm twisting) to give the luncheon presentation at the workshop and also be our very knowledgeable guide for the field trip.

## NOTICE OF CSEB ANNUAL GENERAL MEETING

To be held on  
December 8th, 2014

By Teleconference Call  
7:00 to 9:00 PM EST  
(4:00-6:00 PST)

*Please check CSEB website  
for call in details*

## John Lilley Undergraduate Scholarship in Environmental Science

In 2008, the John Lilley Environmental Scholarship was established in memory of our past President and long-time supporter and friend, John Lilley. The \$500 scholarship is at the University of Alberta and is awarded to a student with superior academic achievement entering the second year of study for a Bachelor of Science in Environmental and Conservation Sciences in the Faculty of Agricultural, Life and Environmental Sciences. Selection is based on demonstrated involvement with a not-for-profit environmental organization and academic standing.

The recipients since 2008 have been as follows:

Year of Award	Name of Student
2008	Chen, Qiting
2009	Veillard, Marie Frances
2010	Zhang, Daiwei
2011	Jacklin, Meghan Lynn
2012	Cherlet, Erin Alexandra
2013	O'Neill, Megan Nicole

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