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**THE CANADIAN SOCIETY OF
ENVIRONMENTAL BIOLOGISTS
Bulletin**



In this Issue:

- **Science Tidbits - Oceans**
- **COSEWIC Wildlife Species Assessments- May 2023**
- **BC News - *Does Science Matter Anymore in Canada's Business-minded Fantasy Conservation Policies?***
- **Two Book Reviews**



CSEB Bulletin SCBE

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In this issue

National Executive & Regional Chapter Listings.....	1	Manitoba News	11
CSEB Objectives/Objectifs de la SCBE.....	2	Quebec News	12
National News	3	Bracing for a Caribou Baby Boom.....	12
President's Report.....	3	Atlantic News	13
Science Tidbits - Oceans.....	3	NSIS Editor's Report, AGM May 2023	13
COSEWIC Wildlife Species Assessments.....	4	Territories News	13
Regional News	5	Book Review - Wildlife Management & Conserv- ation: Contemporary Principles & Practices	16
British Columbia News	5	Book Review - Prairie Fire: The 1885 North-West ... Rebellion	16
Does Science Matter Anymore in Canada's Business-minded Fantasy Conservation Policies?	5	Membership/Subscription Application	20
Alberta News	10		
Saskatchewan News	10		

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Front Cover: Anne Wilson and Robert Smith with Gentoo penguins at Mikkelsen Harbour, Antarctica, January, 2023. (Photo Credit: Anne Wilson).

Front Cover insert: Gentoo penguins and icebergs, Cuverville Island, Antarctica. (Photo Credit: Anne Wilson).

Back Cover: Top Photo: Bearberry (*Arctostaphylos uva-ursi*) on the north and east facing slopes of eskers in the Canadian north.

Bottom Left: Smooth cladonia (*Cladonia gracilis* spp. *turbinata*). Bottom Right: Orange chocolate chip lichen (*Solorina crocea*), which is a foliose (leafy) lichen common in moist moss areas near river and eskers north facing slopes. (Photos Credit: Bob Gainer, CSEB Alberta Member).

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CSEB BULLETIN

Vol. 80, Number 2, Summer 2023

The Canadian Society of Environmental Biologists Bulletin is a quarterly publication. The Bulletin 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 Bulletin 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: garyash@shaw.ca.

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LE BULLETIN de la SCBE

Vol. 80 , Numéro 2, Été 2023

Le Bulletin de la SCBE est une publication trimestrielle 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: garyash@shaw.ca

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The views expressed herein are the writers of the articles and are not necessarily endorsed by CSEB, which welcomes a broad range of viewpoints. To submit a piece for consideration, email newslettereditor@cseb-scbe.org.

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 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 Curt Schroeder, CSEB President



I'm about to obtain my drone pilot license — advanced operations and I am looking forward to the training. I have been watching drone technology for some time and am amazed at how this technology is being used

in forestry, agriculture, law enforcement, mining, among other industries. In my institution, Saskatchewan Polytechnic, students in many subject areas are being exposed to this technology, largely because industry is making extensive use of drone technology.

I was involved in ground and aircraft-based wildlife surveys many years ago, but drones, in many cases, are now used, particularly in smaller areas and for certain game animals. Being cheaper to fly and capable of taking high resolution photos or Lidar, it is not surprising that this airborne platform is finding new niches for environmental monitoring and management. Also, there are marine-based drones now deployed for remote sensing in large lakes and oceans.

So far, there is no regional or national body of drone operators that specialize in environmental monitoring and advancing drone technology. If there is anyone who is aware of such a group, please contact me. Or we can start up a group, if there is a need.

Curt Schroeder: schroderc@saskpolytech.ca

SCIENCE TIDBITS

Submitted by John Retallack, CSEB Alberta Member

Oceans

Another 'New' Whale Discovered – Hiding in Plain Sight?

In 2003, researchers examining DNA evidence from eight whaling specimens and one stranded animal determined these whales were from a previously undescribed species. At that time, what is now known as Omura's whale appeared to be restricted to three widely separated areas: southern Sea of Japan, around the Cocos (Keeling) Islands in the Indian Ocean, and the Solomon Islands in the South Pacific. They occupied the same locations as Bryde's whale but were smaller and were assumed to be some variant of Bryde's whales.

Omura's whale (*Balaenoptera omurai*), aka dwarf fin whale, is a baleen whale. Additional genetic evidence appears to have reinforced Omura's whale as a separate species and placed the species as an early offshoot from the rorqual lineage that may even be more closely related to blue whales than its look-alike Bryde's whale cousins.

It wasn't until 2015 that a live Omura's whale was observed off northwest Madagascar by a research team led by Salvatore Cerchio of the New England Aquarium in Boston [Cerchio, S., Andrianantenaina, B., Lindsay, A., Rekdahl, M., Andrianarivelo, N., & Rasoloarijao, T. (2015). *Omura's whales* (Balaenoptera omurai) off northwest Madagascar: ecology, behaviour and conservation needs. *Royal Society Open Science* 2: 150301].

Omura's whale has now been spotted in tropical and warm temperate waters in every ocean basin on Earth except the central and eastern Pacific. In light of recent findings regarding the global presence of Omura's whales, Cerchio continues to update his earlier observations and, due to their tendency for small local populations that occupy near-coastal waters, has cautioned regarding multiple anthropogenic threats to this recently discovered species (Cerchio, S., Yamada, T. K., & Brownell, R. L. (2019). *Global distribution of Omura's whales* (Balaenoptera omurai) and assessment of range-wide threats. *Frontiers in Marine Science*, 6, 67.]

As with many issues of a taxonomical nature, the placement of Omura's whale as a separate species is not without its objectors. Stay tuned for updates to the latest edition of *Mammal Species of the World*.

The Downside of Hoovering the Great Pacific Garbage Patch

Sometimes even very honourable actions have unintended consequences. Such is apparently the case with the effort to collect floating trash in the Pacific Ocean.

Along with various floating trash, a rich variety of surface-dwelling organisms live at the air-sea interface, including *Velella* (by-the-wind-sailor), *Porpita* (blue button), *Physalia* (Portuguese man-o-war), *Actinecta* (floating anemone), *Dosima* (buoy barnacle), *Janthina* (violet snail), *Glaucus* (sea dragons), and a variety of other habitat-dependent invertebrate and vertebrate residents.

The North Pacific Subtropical Gyre has accumulated a variety of debris into something referred to as the Great Pacific Garbage patch. The organisms that depend on the air-sea interface (termed obligate neuston, sometimes also referred to as pleuston) are influenced by the same currents and surface winds as the waste materials.

Groups like The Ocean Cleanup have begun large-scale surface seining to corral and remove debris, including plastics of various sizes. But in doing so, those efforts are also inadvertently collecting highly adapted biological organisms that have exploited the habitat windfall.

In 2021, Rebecca Helm, University of North Carolina, Asheville and Smithsonian National Museum of Natural History published a paper [Helm RR (2021) *The mysterious ecosystem at the ocean's surface. PLoS Biol* 19(4): e3001046] highlighting the unique air-sea environment and the potential threat posed by indiscriminate surface seining to the neustonic communities and

ecoregions. “Many ecologically and economically important fish species live as or rely upon neuston. Species at the surface are not distributed uniformly; the ocean’s surface harbours unique neustonic communities and ecoregions found at only certain latitudes and only in specific ocean basins.”

Funding from NASA helped establish the GO-SEA Project to further assess neuston community dynamics and begin to assess the effect of the giant floating garbage dump and potential methods to limit potential unintended effects.



COSEWIC
Committee on the Status of
Endangered Wildlife in Canada

COSEWIC
Comité sur la situation des
espèces en péril au Canada

Species That Were Assigned a Status by COSEWIC at its Recent Species Assessment Meeting

The Committee on the Status of Endangered Wildlife met in Regina in early May, 2023. At the meeting, COSEWIC assessed 16 wildlife species in various COSEWIC risk categories, including 8 Endangered, 3 Special Concern, and 4 Extirpated (i.e., no longer found in the wild in Canada). In addition to these wildlife species that are in COSEWIC risk categories, COSEWIC assessed one as Data Deficient.

COSEWIC Wildlife Species Assessments (short version), May 2023*

Wildlife species are sorted according to current status and then by taxonomic group. Previous status is shown when applicable.

Status May 2023	Taxonomic group	Common name (population)	Previous status and date of previous assessment	Range of occurrence in Canada
Extirpated	Reptiles	Northwestern Pond Turtle	Extirpated (May-12)	BC
Extirpated	Reptiles	Pacific Gophersnake	Extirpated (May-12)	BC
Extirpated	Reptiles	Timber Rattlesnake	Extirpated (Nov-10)	ON
Extirpated	Amphibians	Eastern Tiger Salamander (Carolinian population)	Extirpated (Nov-12)	ON
Endangered	Mammals	Eastern Red Bat	Not applicable	AB, BC, MB, NB, NL, NT, NS, ON, PE, QC, SK, YT
Endangered	Mammals	Hoary Bat	Not applicable	AB, BC, MB, NB, NL, NT, NS, ON, PE, QC, SK, YT
Endangered	Mammals	Silver-haired Bat	Not applicable	AB, BC, MB, NB, NL, NT, NS, ON, QC, SK, YT
Endangered	Birds	Northern Bobwhite	Endangered (May-13)	ON
Endangered	Birds	Roseate Tern	Endangered (Apr-09)	NB, NS, QC, Atlantic Ocean
Endangered	Birds	White-headed Woodpecker	Endangered (Nov-10)	BC
Endangered	Vascular Plants	California Sword Fern	Not applicable	BC
Endangered	Vascular Plants	Gulf of St. Lawrence Aster	Threatened (May-04)	NB, PE, QC
Special Concern	Birds	Savannah Sparrow <i>princeps</i> subspecies	Special concern (Nov-09)	NS
Special Concern	Amphibians	Great Plains Toad	Special concern (Apr-10)	AB, MB, SK
Special Concern	Arthropods	Riverine Clubtail	Not applicable	MB, ON, QC
Data Deficient	Vascular Plants	Provancher's Fleabane	Special concern (Apr-92)	ON, QC

*The report on Horned Grebe (*Podiceps auritus*), Western population and Magdalen Islands population, was withdrawn again to allow further consideration of the Designatable Unit structure.
05/05/2023

For more information about COSEWIC, check their website at <https://cosewic.ca/index.php/en-ca/>

REGIONAL News

BRITISH COLUMBIA News

Submitted by Loys Maingon, CSEB BC Director

Does Science Matter Anymore in Canada's Business-minded Fantasy Conservation Policies?

"A shallow, but presently very powerful environmental movement, and a deep, but less influential movement compete for our attention." (Arne Naess, 1973)

Arne Naess' early insight that the environmental movement was dominated by shallow-minded self-promoters only too willing to comply with the corporate desires of government to enhance their careers, is a useful guide to understanding the 30-years failure of Canada's conservation and climate change programs, which the Commissioner of the Environment and Sustainable Development, Jerry DeMarco, aptly summarized, and to which the Minister of the Environment, Steven Guilbeault, took personal offense.¹ The depth of commitment one has to the actual protection of nature is a measure of the depth of one's environmental values. Individuals and organizations only too willing to compromise the integrity of ecosystems by making business compromises to maintain and work within the status quo can only expect and accept the shallowness of short-term solutions. The error is to misrepresent shallow environmentalism as a profound environmental shift.

The most important environmental decision taken in British Columbia this decade is likely to be the Roberts Bank Terminal 2 (RBT2) decision announcement in early April 2023, because it reveals the shallowness of the government's environmental rhetoric, even at its most powerful. It came after yet another unsurprising announcement at odds with the government rhetoric and expensive publicity that Canada has not met, and is nowhere near meeting, its climate change and biodiversity objectives and commitments. In many important ways, this political ministerial decision could be the proverbial straw that breaks the camel's back. It is important not just for the calamitous long-term implications for Salish Sea ecology, predicted by the scientific community, most notably by Environment Canada's own scientists who urged Minister Guilbeault to reject the project, but for its social implications. The Impact Assessment Agency's own report, which reviews all considerations (ecological, socio-economic and cultural), strongly recommended that the project be rejected. The decision is also culturally important for what it tells us about the current diminishing status of science in our society.

Roberts Bank is important, not just because of its ecological importance in the Salish sea region, but for the extent to which that ecological significance has particularly been eroded since contact, and particularly so over the past 50 years during which the Vancouver region has seen exponential growth. Notwithstanding the heroic efforts of local biologists, stream-keepers, and naturalists to preserve as much as possible of the

Lower Mainland's natural heritage, given the rapid and intense urbanization of the Lower Mainland, it is difficult not to be aghast at an aerial view of the region. Areas that just 50 years ago were still networks of wetlands, small holdings, and woodlands have disappeared. The fate of regionally endangered species, such as the Nooksack dace (*Rhinichthys cataractae* spp.), speaks volumes.² Species populations that were regionally abundant and stable in the 1960s now face a precarious future in 600 to 900 metres of linear habitat, which is eyed by developers, and fair game for municipal infrastructure projects. It is a cumulative disaster zone, as most of the Salish Sea is becoming with population increases and unrelenting development.

What is left of Roberts Bank before the impacts of RBT2 is a critical estuarial migratory stopover on Pacific Coast flyways for shorebirds, whose numbers have already been in steep decline globally since 1970, and which are already some of the most threatened bird species. The banks provide an irreplaceable and already limited supply of rich microbial biofilm, the loss of which already correlates with well-documented bird declines since 1970. The area is home to 119 species at risk in a transboundary ecosystem that spans BC and Washington. The project will negatively affect 19 critically endangered populations of Chinook salmon, sockeye salmon, southern resident killer whales, basking shark, northern spiny dogfish, Pacific ocean perch, and Baird's beaked whale. Given its location and seasonal importance for organisms on migratory cycles, the demise of species at Roberts Bank will impact not just Roberts Banks, but the entire distribution of species throughout the Salish Sea and the Pacific Coast. This is not just a matter—important as these concerns are—of controlling vessel traffic and noise and the potential for oil pollution. It is a brutal "rivet-removal" question of highly vital productive area loss in a web-of-life mosaic, with a potential for domino collapse effects. At what point will we have removed the last irreplaceable rivet?

That question becomes particularly urgent when we realize that decisions are guided by an *Oceans Protection Act* that makes no reference to climate change, as climate change and ocean changes surge. While governments appear to be mainly concerned with the problem that arctic and antarctic ice melting rates pose for sea-level rises threatening urban infrastructure, fisheries scientists are becoming more concerned with the much greater problem of de-oxygenation across large areas of the ocean since 1960. For British Columbia, this must be a matter of concern since the data show that since 1960 the Pacific Northeast alone, which plays a critical role in our salmon fisheries, has experienced a 15% drop in ocean oxygen levels.³ The global drop in oxygen levels associated with the rise in ocean temperatures since 1960 is illustrated in Figure 1. As Daniel Pauly has pointed out, a drop in oxygen of this magnitude corresponds to a re-organization of ecosystems

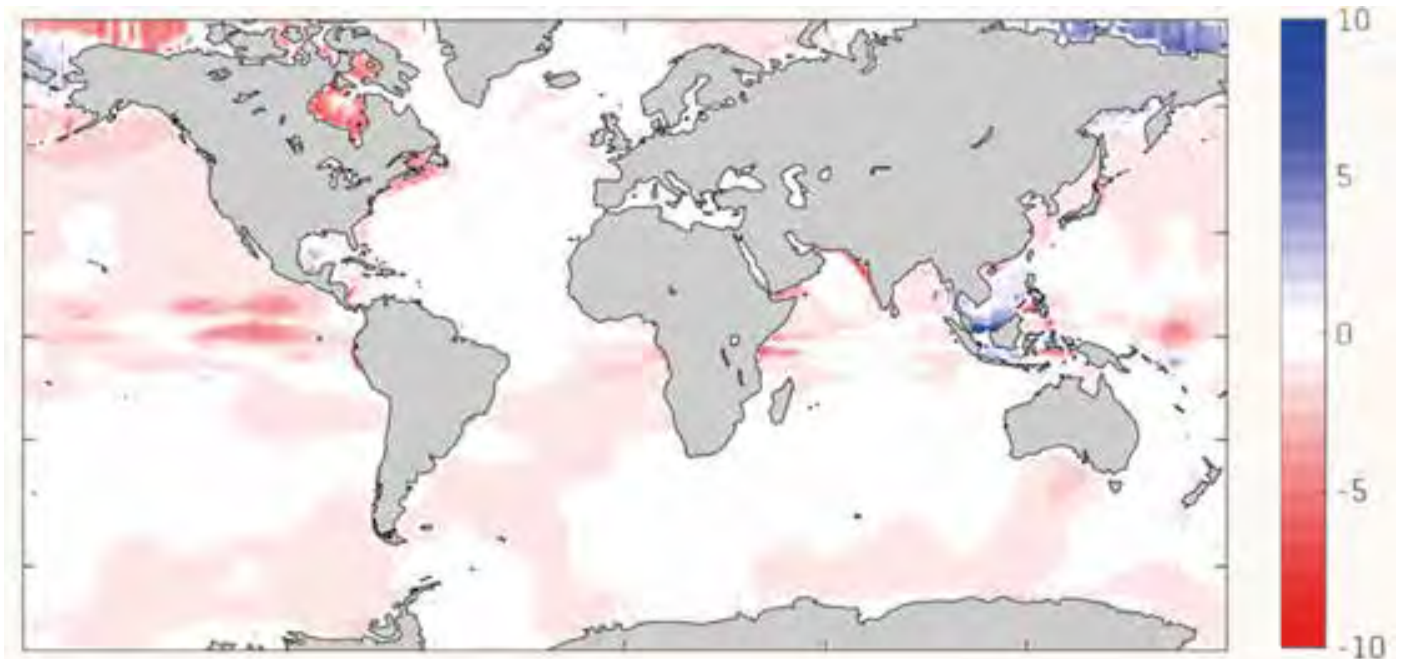


Figure 1: Changes in ocean oxygen levels associated with productivity decline and ecosystem re-organization (Nicola Jones. May 2023. "As Oxygen Levels Dip Fish Face an Uncertain Future." *Yale Environment* 360.)

and a decrease in productivity and fish biomass available for all of mankind. Maintaining the integrity and connectivity of existing biotic systems is more urgent than ever and should be a government priority.

The rise in ocean temperatures is consistent with recent reports that indicate that we are likely to see new and more frequent spikes in global temperatures, with record heat predicted over the next three years.⁴ With a switch to an El Niño cycle, the season has begun with an unprecedented number of early season forest fires, 88 in British Columbia (47 evacuation orders). As forecast in February 2022 in the United Nations report *Spreading Like Wildfire: The Threat of Extraordinary Landscape Fires*⁵, and confirmed by Environment Canada's Nathan Gillet – "studies have examined climate change's effects on wildfires in both Alberta and B.C. and found it upped the risk in both provinces."⁶ Climate change is present and is changing everything, from bird migration patterns and routes, species behaviours, and population dynamics;⁷ and as discussed above, to ocean and mountain biodiversity, where climate change is linked to accelerated forest loss amplified by the BC's Ministry of Forests' poor management and destructive practices. Yet, Canada prioritizes the development of a carbon economy that is the principal driver of climate change, with 12 "carbon bombs," most of which are located in BC and Alberta, that negate the seriousness of its much touted climate plan.⁸

How bad is it? We teach elementary school children that life on this blue planet is made possible by its water. We are an ocean planet. Most people stop there. Outside of the scientific world, there does not seem to be a realization that the ocean is in deep trouble and is changing rapidly. The observed and forecast decline in ocean productivity poses serious challenges for the future of mankind itself. In arcane scientific circles, there is a growing concern that ice sheets are melting at 600 m a day, far faster than previously feared. This is likely to drive rising sea

levels and contribute to increases in extreme weather. While for the last thirty years there has been concern that arctic melting could stall the North-Atlantic conveyor system, there is now concern that a similar and equally devastating phenomenon might be triggered in the Antarctic.⁹

We are entering a new period of climate and biodiversity deregulation consistent with assessments that strongly suggest that we are likely to exceed the Paris 1.5°C target and trigger tipping points, if we have not done so already. Increasingly, the public understands that climate change is no longer a remote event to be faced by future generations, but a present unavoidable phenomenon that requires a reassessment of our economic priorities. Belated talk of "adaptation" belongs in the make-believe world of shallow environmentalism, which pretends that we can now continue business-as-usual, if only we adapt. The rate of ocean changes are likely to outstrip our ability to adapt. We need to change.

BC's climate budget, which was assessed as a "mixed bag," shows that politicians, many of whom are scientifically illiterate, are profoundly out of touch with the unfolding climate and biodiversity emergency. BC's budget is like Canada's *Ocean Protection Act*, or like the physics of nineteenth-century astronomy before the theory of relativity and quantum physics. It pretends that the universe is static, that the conditions of the planet are unchanging and will be the same 10 years from now, if only every consumer drives an electric vehicle and uses a blue box. Everything in science today points to a major re-organization of the conditions and productivity of life on earth. Environmental and biodiversity protection must be the top priority if humanity is to muck through this mess. Only people oblivious to scientific research and its implications can pretend to maintain the economic status quo.

The Minister of Environment is no exception. Minister Guilbeault chose not to heed his own scientists, but follow the whims of corporate Canada, represented by the Port Authority of Vancouver, which is a federal agency responsible for “supporting Canada’s trade objectives.”¹⁰ At a time when ecosystems are being deregulated by the climate emergency and biodiversity is more than ever under threat, the protection of key biodiversity habitats is more urgent than ever. By definition, the business of the Minister of Environment is not—and should never be—“Canada’s trade objectives.” We have the less honourable calling of the Minister of Natural Resources, Jonathan Wilkinson, for that. In the context of this decision, and others, the Minister of Environment appears to be doing the Minister of Natural Resources’ bidding. From the perspective of trade and commerce, environmental objectives are secondary and merely cosmetic, and so is science. The public expectation is that the Minister of Environment will prioritize the environment. The minister’s level of arbitrariness in recent decisions alters public trust in the impartiality of the processes that are supposed to provide impartial institutional guidance.

It begs the question: “Where is the impartiality that acts as the democratic social glue?” Environmental decisions are part of the social contract by which the state commits to protect the public interest in natural heritage and the benefits accrued from it for future generations, based on objective information. In this instance, the minister has rejected and bypassed the findings and recommendations of the environmental impact assessment reports that sat on his desk for three years. The magnitude of this breach of the social contract cannot be minimized, even if it is not immediately apparent to the public, and poorly, if at all discussed in the media, which is, after all, controlled by corporate Canada.

This decision comes in a growing string of government decisions made counter to the advice of the scientific community. The objective ground for social license has always been science. If science is no longer understood to guide public policy, or is seen merely to be used as lip service and window-dressing, then public trust is not just eroded, it is eclipsed. This is not an exaggeration. Those who care to follow public reaction to these announcements will note that government prioritization of the needs of industry over the environment increasingly leads observers to conclude that government decisions are not just incoherent with stated government policy and objectives, but are simply manifestations of a deep-seated duplicitous cynicism.¹¹ This is the stuff that gives rise to and legitimizes the lamentable growing trend in conspiracy theories, and public disinterest in representative government.

It is no coincidence that our democratic institutions came out of the same Enlightenment foundations as science. Both are an expression of reason. If one is diminished, so is the other. Corporate interest is not synonymous with public interest. Public trust is needed to gain social license for any environmental decisions. That trust comes from impartial facts inherent in good science. Impartial science is the social glue.

Socially, this is a growing problem. The impartiality of science appears to be under attack from both the political left and right. A recent paper, “*In Defense of Merit in Science*,” written by 29 authors, two of whom are Nobel laureates, makes this point. Ideology and identity politics have promoted relativist thinking

to a point where it has become common to simply toss out the inconvenient reality of factual rigour in science. “Alternative ways of knowing,” “multiple narratives,” “lived experience,” and other fashionable vacuous phrases of identity politics serve to substitute personal fantasies for the hard shared experience of reality impartially described by science. There are only facts, no “alternative facts.” Truth and reason are not relative commodities exclusively adjusted to ideological preferences.

There is no point for the Canadian taxpayer to pay and maintain research scientists and facilities to inform the onerous processes of provincial and federal environmental impact assessments if the product of that work is to be treated as something of relative value to be dismissed and overridden by a predetermined ideological bias and interest. Yet, that is the position that a minister responsible for the environment effectively takes when he or she tosses out independent scientific evidence painstakingly gathered by Environment Canada’s best scientists, in favour of industry-generated “mitigating conditions.”

What following the interests of industry and lowering environmental requirements means in our rapidly changing world is self-evident in the in the unfolding pollution disaster recently reported in *Nature Communications*.¹² For decades, clean-up requirements across the Arctic have kept costs low by assuming that the permafrost would remain, as its name suggests, permanently frozen. Governments, therefore, have allowed natural resource companies to bury waste in the permafrost on the assumption that contaminants would remain locked in forever. With climate change, this waste creates a vast network of tens of thousands of drilling-fluid disposal sumps that are now releasing contaminants throughout arctic freshwaters and oceans. As noted by Dr. Christopher Burns (Carleton University), “There are very few sites where there is no contamination. They are everywhere.”¹³ It is not just that the cost of remediation will ultimately have to be borne by the taxpayer, the magnitude of the clean-up is best expressed by the unreality of the engineering solutions seriously considered, and underway. At Yellowknife, the historic burial of 237,000 tonnes of arsenic trioxide dust associated with the Giant gold mine, which closed in 2004, representing an environmental liability; removal of the arsenic is not feasible. The “cheap” engineering solution involves building 858 thermosiphons to keep ground temperature below -5°C, a new power plant, and a new water treatment plant. As engineers note, this project has hardly started, but the costs keep rising.¹⁴ How long is this giant Meccano set to last? The contamination will last thousands of years. Will this solution last until the next power outage? This is the real cost of prioritizing business interests. And now that this problem can be found throughout the Arctic, will we engineer “freezing the Arctic.” There is already talk of geo-engineering projects to do just that, and they will all create thousands of jobs and are all “good for business.”¹⁵

The RBT2 decision is especially significant for what it means from an environmental policy point of view, and for what “protected areas” really means to people in power, the politicians and their corporate backers. It suggests to the public that environmental policy can be developed independently of science to favour economic and corporate interests. As with several recent key federal decisions, permitted by ministerial fiat, the decision is tempered with a long string of nominal “legally

binding” mitigating conditions. In the past five years, British Columbians have seen a growing number of major controversial projects such as Site C, TMX (Transmountain Pipeline Project), Coastal Gaslink, and associated projects undergo extensive environmental impact assessments, only to come out wanting. Yet, these controversial projects are always approved with an ever-increasing litany of “legally-binding” conditions that in practice are dubiously complied with and enforced.

Should anyone have illusions about the enforcement and compliance surrounding conditions set, the history of the Polley Mine permit, the subsequent disastrous impacts,¹⁶ and the recent revelations of harm done to rivers by the development of the Coastal Gaslink Project,¹⁷ should be edifying. The reality is that these nominally stringent conditions are just seen as part of the cost of doing business. The irreversible damage associated with them is just part of a general public amnesia, trusting political institutions that peddle the illusion of environmental stewardship. This can only last as long as the camel’s back can bear it, but even that wears thin. The Coastal Gaslink situation has already gotten sufficiently so bad that after issuing over 50 warnings and over \$450,000 in fines, the normally somnolent BC Environmental Assessment Office Compliance and Enforcement Branch has found that violations were so numerous that it had to issue a general stop-work order.¹⁸ That just means that there will be more tinkering, polite knuckle-rapping for public perception, and ultimately conditions will be softened, or bypassed to facilitate project completion. In the end, it is not the environment or science that matters, it is business, and the needs of business must always be appeased. The caustic social implications of this charade are as cumulative as the environmental impacts.

Permit conditions are no substitute for the stringent application of the precautionary principle. To pretend that mitigating measures will minimize actual impact is to pretend that an artificial wetland is an equivalent to a natural wetland, or that a monocultural tree plantation, or “working forest” is “old-growth,” as our Ministry of Forests is wont to claim. The facts do not seem to matter. Once environmental damage is accepted, the practical implementation and enforcement of these conditions is always an afterthought. These conditions are simply ministerial grand-standing intent on mesmerizing the trusting public. For better or for worse, the old adage stands: “You can fool the public some of the time, but not all of the time.” The social contract is broken with the perception of government cynicism.

The success of the imposition of “conditions” relies entirely on the principle of a “vanishing baseline.” It relies on public ignorance and forgetfulness of the state of the environment before the project was conceived, and on the eventual public amnesia to the magnitude of what was lost. The lay public easily accepts that an impoverished field of weeds is a state of wilderness. However, climate change, like wildfires, serves as a constant reminder of realities distinct from the official narrative.

And, so it is for our parks and the entire much ballyhooed Canadian 30 X 30 Strategy, as a scandalous recent admission by Steven Guilbeault confirms.

The Minister of Environment announced his approval of the expansion Robert Bank Terminal 2 April 6, 2023 with 360 “legally-binding” conditions. Last year, at about the same

time, on April 20, 2022, Guilbeault approved Equinor’s equally-controversial offshore “Bay du Nord” oil megaproject in Newfoundland with 165 “legally-binding” conditions. He gave his approval also against the advice and exhortation of the scientific community. What this approval implies in practice for Roberts Bank—and all protected areas in Canada—is now self-evident from what is unfolding in the Bay du Nord Project. This is the practical articulation of Canadian policy vis-à-vis the federal “30X30 Strategy.” What is unfolding raises a simple question: Are “protected areas” under Canadian jurisdiction really protected?

Through the agency of the Canadian-Newfoundland Offshore Petroleum Board (C-NLOPB), the federal and provincial governments granted 47 exploratory drilling licences in January 2023. At least 14 of these licenses are in established “marine protected areas.” These areas were so designated in 2019 to reach Canada’s 2020 Biodiversity targets for the protection of their biodiversity values, because they are critical habitat for communities of rare and endangered species. At the beginning of May 2023, British Petroleum, the same company responsible for the world’s worst oil disaster, the 2010 Deepwater Horizon spill in the Gulf of Mexico, began drilling in an officially designated “marine protected area,” of course, with “stringent legally-binding conditions.”

What does “stringent legally-binding conditions” mean to the ministers responsible? First, they are self-contradictory, and second, they are ineffective. On the one hand, the conditions require that should a blow-out occur in the Bay du Nord, the proponents “must act immediately.” However, because the industry feels that there is only a low risk (only 16%) of a blow-out, the ministers have chosen not to require that an oil-capping system be in place to minimize impacts. There is no oil-capping system available in Canada for the technology used by the proponent. In case of an emergency, Equinor and BP would have to bring one from either Brazil or Norway. Experts estimate that it would take 18 to 36 days to bring the disaster under control—a problem that concerns neither ministers Jonathan Wilkinson nor Steven Guilbeault. The reason given by the ministers for not requiring that a capping system be in place is that, in the eventuality of an accident, it would require 10 to 16 days work to prepare the site “independently from the place from which the capping system is acquired.”¹⁹ So should an accident, considered unlikely by BP, occur, it would take more than a month to staunch the flow of oil in a “marine protected area.” For memory’s sake, the Deepwater Horizon equally unlikely accident occurred April 20th, and the well was not capped until September 19th.

When asked publicly how he can justify drilling in a “marine protected area,” Steven Guilbeault’s glib answer was: “In terms of the development of protected areas and meeting our objectives, we are following the guidelines set out by the International Union for the Conservation of Nature (IUCN).” This is at odds with the facts. As marine scientists involved in MPA assessments, such as Dr. Lyne Morissette, have noted, the answer is disingenuous and deliberately misleading. The IUCN’s Guidelines for Marine Protected Areas, published in 2019, review the state and status of various nationally developed marine protected areas.²⁰ The authors identify six categories of “protection,” only to note that the majority only have very limited, if any protection. That is the “standard” that Guilbeault appeals to. What he is effectively

saying is that Canada is following the international standard for pathetic performance. What the international Guidelines say at page 28, Box 3.1, item 2, contradicts the minister: “Exploration and extraction of mineral resources are incompatible with the purposes of protected areas corresponding to IUCN Protected Area Management Categories I to IV, and should, therefore, be prohibited by law or other effective means.” Even in Categories V and VI, which are protected for landscape and sustainable use, the IUCN requires that an environmental assessment for each project be carried out to determine possible impacts. In the Bay du Nord project, both the federal and provincial governments have waived the standard EIA requirement in order to accelerate the authorization process: “Afin d’accélérer l’autorisation des futurs forages, Ottawa a aboli le processus d’évaluation environnementale qui était jusqu’ici en vigueur.”²¹

What has emerged so far from the Ministry of Environment’s handling of the Bay du Nord project provides a window into what “Protected Area” and “30x30 Strategy” mean in Canada. It defines Ottawa’s actual commitment to the environment when it comes to the Roberts Bank Terminal 2 Project. Neither meet IUCN scientific standards. The facts do not seem to matter if they are at odds with business interests. As the Commissioner of the Environment and Sustainable Development’s report on Canada’s Climate Change performance pointedly noted, it is nowhere in keeping with public representations made by the minister. As the Commissioner also pointed out in separate reports, nor is there any action on endangered species, and nor is the federal government anywhere near planting the two billion trees by 2030 promised by Jonathan Wilkinson.²² This is the shallowest form of environmentalism, devoid of substance. If hard development is allowed in a designated “protected area”, then what is being protected anywhere else outside of the business interests of stockholders? When it comes to the environment, there is no commitment, federal or provincial, to the effective protection of nature if at any future point business finds an interest and opportunity in a protected area. Business is the only priority. The environment and biodiversity are apparently disposable at will.

This approach to science in environmental concerns unfortunately dominates political discourse on both the right and the left. In provincial politics in BC, we have seen NDP governments over the past six years renege on key environmental commitments they made out of office, notably on the Site C Hydro project, fish farms, alternative energy, endangered species legislation, and on old-growth, and promote the pro-business agenda of their predecessors. It therefore came as no surprise that John Horgan quietly and very comfortably stepped onto the board of Canada’s most notorious polluter, the coal giant, Teck Resources.²³ One should fully expect David Eby, Jonathan Wilkinson, and Steven Guilbault to do the same on their retirement, given the depth of their environmentalism and deep devotion to business.

Science has very little real place in this political charade, unless it can be used in service of business. The tragedy is that this logic is becoming a global norm. The scientific community and climate change campaigners have been in an uproar over the last year at the choice of location and presidency for COP28 in Dubai. As Dr. Bill McGuire has succinctly put it; “COPs have always been complete circuses. Now they are complete jokes.”²⁴ The president, the UAE Minister of Industry and Advanced Technology, Dr.

Sultan Al Jaber, who remains CEO of the national oil company, has clearly stated what his mission is “the world needs a business mindset to tackle the climate crisis.”²⁵ The proposal that Al Jaber is making is essentially like developing a destructive project in an environmentally sensitive Canadian location. The oil companies will self-regulate, develop untested mitigating technology and follow many “legally-binding conditions.” It sounds awfully like the business mindset that has dominated the past 50 years. In other words, it will be business as usual, with much window dressing, just as in Canada.

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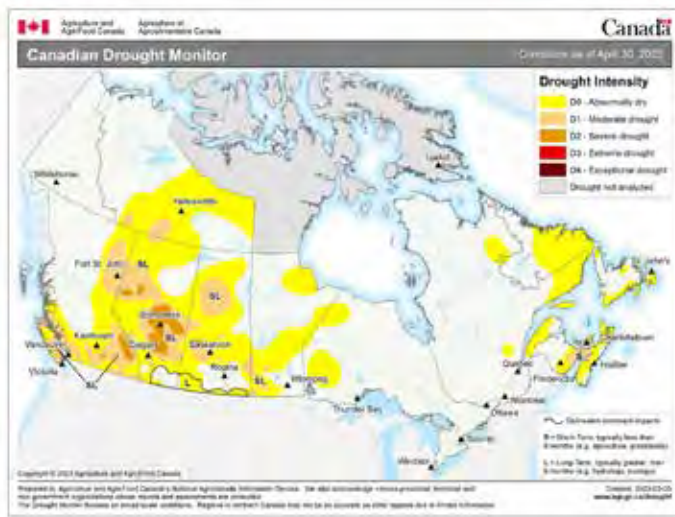
ALBERTA News

Submitted by Brian Free, CSEB Alberta Regional Director

Dry, Dry Spring

Although my driveway experienced a generous amount of snow this winter—Oh my aching back—the spring melt passed quickly and we haven't had much rain at all this spring. This builds on an ongoing drought being experienced across the prairies. According to Agriculture and Agri-Foods Canada, 65% of the Prairie Region was classified as Abnormally Dry or in Moderate to Severe Drought at the end of April, including 78% of the region's agricultural landscape.

Drought makes it challenging for the agriculture sector, but wildfires are the main concern right now. Forest fires and brushfires west and north of Edmonton have led to the evacuations of thousands of families, as local communities are threatened.



As a biologist, this makes me wonder about the impacts of these fires on Alberta's natural regions. How will they affect the availability of habitat for the endangered Woodland Caribou? And what of the drought-sensitive species in the parkland and prairie regions? What has been the trend in Alberta's wetland communities?

I have more questions than answers, so if any Alberta members have some information or opinions about our current situation, please let me know.

Ongoing Angst About the Oil Sands

Imperial Oil has been having problems at its Kearl Lake oil sands mine in northern Alberta, located 70 km north of Fort McMurray. Last February, it was discovered that a pond on the site had been seeping effluent since May, 2022, releasing thousands of cubic metres of wastewater, likely reaching the local river systems. This wastewater contains several toxins, including arsenic.

More recently, in March 2023, the Alberta Energy Regulator issued a notice of non-compliance to the company after sulphates

associated with oil sands tailings were found in an off-site groundwater well at levels that exceed provincial guidelines. The well is near a mine overburden disposal area that is 100 metres from the Muskeg River, a tributary of the Athabasca River. Monitoring data from the Muskeg River show sulphate values spiked by a factor of about 10 during the first three months of 2023.

As well, the Alberta Energy Regulator revealed in May that 27 dead waterfowl were found at a settling basin for Suncor's Mildred Lake operations. These included seven western grebes. In addition, five grebes were found dead at the Millennium Mine site tailings pond at the Suncor Base Plant.

These incidents reflect the ongoing challenge of managing oil sands operations. I think that there will always be these "deviations" from the normal operations. Because of the massive nature of these mining operations, small deviations can be very serious.

Alberta Election

As I prepare this report, the Alberta provincial election campaign is in full swing and a new government will soon be in place. Many promises are being made during the campaign and it will be important for Alberta CSEB members to keep their eye on the environmental policies that follow. Your Alberta Directors and all of your CSEB Executive are but an email away! Our contact information is on page 1 in this Bulletin.

SASKATCHEWAN News

Submitted by Curt Schroeder, CSEB President and Saskatchewan Member

As a ground search and rescue volunteer in southern Saskatchewan, I sometimes wonder whether I will need to be on the look out for grizzly bears on a search. Last week I was on a search for an 11-year-old boy who walked away from his family farm near Assiniboia, Saskatchewan. The Regina Search and Rescue chapter was activated, and as a member, I took part. Some of the hazards that searchers are exposed to include mosquitos, ticks, prairie rattle snakes, Prickly Pear Cactus, and perhaps wolves and wild boar. Increasingly, grizzly bears are appearing in southern Saskatchewan, even though they are listed as extirpated. Once common on the southern prairies (Alberta, Saskatchewan, and Manitoba), colonial settlement largely displaced these bears to more remote regions, especially the Rocky Mountains. With conservation laws and population expansion of grizzly bears from the western Rockies into the plains of northern Montana, grizzly bears appear to making a comeback, with some occasionally wandering across the international boundary.

Alberta has established a draft Prairie Grizzly Operation Strategy to monitor movements and behaviour of a few grizzly bears. So far, Saskatchewan has not done the same, even though the Cypress Hills and Grasslands National Park contains potentially suitable habitat for adult female grizzly bears.

Ground searchers now carry bear spray, depending on the location of the missing person, something that most are not yet used to using.



Map of secure habitat and suitable life ranges in the Prairie ecozone. (<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies/grizzly-bear-prairie-population/chapter-1.html#fig6>)

MANITOBA News

Submitted by Robert Stedwill, CSEB Vice-President

Youth Environmental Advisory Council

I'm pleased to see that the Manitoba government has seen fit that the youth advisory council on the environment should continue, with the new council recently appointed in March. As an older retired person, in this day and age, my views may be little outdated, and the infusion of new and fresh ideas from a younger generation is welcomed.

The 2023 council is comprised of 11 members, ages 16 to 28, from seven communities across the province: Swan River, Morden, St-Pierre-Jolys, Dacotah, Narol, Brandon, and Winnipeg. The new chair, Annie Martel, as a Métis woman, is not only pleased to be representing Métis and indigenous young people, but also continue the "harnessing the spirit of climate action" that has already been embraced by youth around the world.

Previous councils have provided critical input on "youth-focused communications on climate change", as well as the province's water management strategy.

The Youth Advisory Council reports to the expert panel on the environment.

Chronic Wasting Disease (CWD) Update

Manitoba has had proactive programming in place for prevention and surveillance of Chronic Wasting Disease (CWD) in wild cervids since 1997. The program includes CWD surveillance,

prohibitions to prevent potentially CWD-positive animals and material from entering Manitoba, as well as various regulatory requirements to minimize unnatural clusters of animals in high-risk areas (e.g., through feeding or baiting).

The first positive case of CWD was detected on November 1, 2021 near Lake of the Prairies, which straddles the Saskatchewan-Manitoba border.

Since the first detection in 2021, 20 positive cases of CWD have been detected to date. Eighteen detections of mule deer (17 male and one female) and two detections of male white-tailed deer. Cases were identified from mandatory biological sampling submissions of animals as well as animals harvested by department staff as a part of ongoing CWD management efforts. On March 6, Manitoba Natural Resources and Northern Development advised that new CWD cases had already been detected in white-tailed deer this year.

Canada and Manitoba Reach Agreement on Boreal Caribou

The federal government and the province of Manitoba have entered into a three year agreement "to support the conservation and recovery of boreal caribou in the province. Environment and Climate Change Canada has provided nearly \$1 million to support ongoing actions under the draft agreement and is committed to fund additional conservation measures in the coming years."

Conservation measures included in the agreement will support caribou conservation and recovery in the province and advance the recovery framework laid out in Manitoba's 2015 Recovery Strategy for Boreal Woodland Caribou. The Manitoba government

is committed to finalizing and implementing range plans by 2025 and undertaking measures such as caribou population and habitat monitoring. The conservation measures were developed in large part by the work and many collaborations that the Manitoba government has carried out over the years with various Indigenous and industry partnerships.

Underlining the importance of the agreement, woodland caribou are one of the six priority species at risk identified under the Pan-Canadian approach to transforming species at risk conservation in Canada. Additionally, Boreal caribou are listed as a threatened species under both the federal *Species at Risk Act* and Manitoba's *Endangered Species and Ecosystems Act*. Current estimates suggest a population of 1500 to 3500 in the province, but declining.

QUEBEC News

Submitted By Gary Ash, CSEB Bulletin Editor

Bracing for a Caribou Baby Boom

All 12 females of breeding age are pregnant



The Quebec government has placed a caribou herd in an enclosed area in Charlevoix as part of a controversial plan to keep them from dying out.

A caribou herd in Charlevoix, Que., could be heading toward a baby boom this year, providing a rare bit of good news for the province's decimated population.

Caroline Hins, a biologist with the province's Wildlife Department, confirmed all 12 of the herd's breeding-age females are believed to be pregnant, after tests that showed high progesterone levels.

"It's very good news," she said in an interview. She said that if all the pregnancies are carried to term and the calves survive — and there's no guarantee of that — the herd northeast of Quebec City will have doubled in size in a year and a half.

The Quebec government captured the herd, then numbered at 16, and placed it in an enclosure in February 2022 as part of a controversial plan to prevent isolated herds from dying out. Five healthy calves were born last year, out of eight presumed pregnancies.

The government has argued that enclosing caribou represents their best chance of survival, offering protection from predation and ensuring they have access to food, water and veterinary care. But

environmentalists have criticized the government for putting the animals behind fences rather than protecting and restoring their old-growth forest habitat and presenting a long-promised master plan to rebuild the species.

The government has described the fencing approach as temporary, and Hins says the birth of new caribou raises hopes that the herd will one day be able to be released back into the wild. However, she could not give a timeline for when that could happen for at-risk Quebec caribou herd expecting a wave of calves.

She said a lot of work still needs to be done, with habitat protection and restoration at the top of the list. Details of that habitat restoration will come in the province's caribou action plan, which is now expected to be released in June after years of delay. Among other things, the plan needs to prevent logging in some areas, control predators and close down logging roads to restore habitat, Hins said.

In the meantime, there's a risk that the animals will get used to being fed, and that the calves won't develop proper survival instincts. She said the workers who deal with the caribou try to minimize contact with them during feeding, so they don't become too used to humans.

She said keepers will gradually take away the grain the animals are given before an eventual release, so they're better prepared to eat what they find in the wild. She said experts are also looking at ways to "rehabilitate" the animals to predation but would not elaborate on how that could be accomplished.

In the meantime, she said the Charlevoix herd is relatively healthy, with a good mix of animals of different ages. An eventual liberation will also depend on the herd's ability to continue growing, she said.

She said caribou normally give birth in May or June, so there are still a few weeks to go until the new calves arrive.

Hins said it's not yet confirmed whether any caribou are pregnant in the other enclosed herd in Val d'Or in north-western Quebec, which had just six or seven animals at last count.

Six females have also been captured and put in "maternity pens" in Gaspésie, in eastern Quebec. They will be released at the end of the summer once the calves are a few months old and better able to survive, the government said in a news release.

The total population of caribou in Quebec was estimated at between 5,000 and 10,000 in the 2005 to 2016 period. However, recent aerial surveys have suggested most herds have continued to decline due to habitat destruction, industrial activity, and an increase in predators that use logging roads to reach their prey.

Source: Morgan Lowrie, Edmonton Journal, 1 May 2023

Check out the CSEB Video at
<http://youtu.be/J7cOuDbBf9c> or
<https://www.youtube.com/watch?v=J7cOuDbBf9c>

ATLANTIC News

By Peter Wells, CSEB Atlantic Member

Nova Scotian Institute of Science – NSIS Editor’s Report, AGM May 2023

The Proceedings of the Nova Scotian Institute of Science (PNSIS) continues successfully, thanks to the hard work of the Editorial Board and the widening interest across Nova Scotia and the Maritimes in contributing relevant papers to our regional, peer-reviewed science journal.

The latest issue, PNSIS Vol. 52, Part Two, published in October 2022, is on the NSIS website (www.nsis1862.ca). As with all previous issues, it is open access for readers. Printed copies were sent out to NSIS members upon request, as well as to exchange libraries and institutes. The print run of 150 copies is now exhausted.

Contributions for PNSIS Vol. 53, Part One, 2023, are still being sought, with a deadline of June 30th and completion date of late summer. To date, we have three confirmed Commentaries, two Research papers (one in review), two student submissions, and two Book Reviews. We will include the AGM Minutes, the program of talks, and other activities planned for 2023-24, and an Editorial.

During the winter, the Editorial Board was reminded to actively solicit research contributions, commentaries, and book reviews from their colleagues and students. The Institute’s members can also help to spread the word about NSIS and its journal through social media and personal contacts.

On that note, two of us attended the Fishermen and Scientists Research Society (FSRS) Annual Conference (fsrs.conference@gmail.com) on March 21st, in Dartmouth. We set up a display table with BoFEP (Bay of Fundy Ecosystem Partnership www.bofep.org), sharing the space and cost and distributing the latest NSIS brochure, membership form, and some past Proceedings. The conference was well attended; lots of people stopped by and showed interest. It was a great way to network between our societies and to help build NSIS membership!

We will participate in Ocean Day next week on the Halifax waterfront and distribute the NSIS brochure – all part of building NSIS membership and interest in the PNSIS and regional science!

Respectfully submitted,

Peter G. Wells, Editor

David H.S. Richardson, Associate Editor

Note: the regular Atlantic News column will continue in the Fall Bulletin. Many environmental issues persist in the region, especially effects of climate change, linked to the current and unprecedented, serious wildfire situation in NS and NB.

TERRITORIES News

By Anne Wilson, CSEB Territories Director

The NWT and Yukon are dealing with both fire and flood, with an early start to the fire season happening in some places as others deal with ice jams and flooding. While the townsite of Forty Mile, YT (two hours down river from Dawson City) and Fort McPherson, NT are inundated with floodwaters, an uncontrolled wildfire threatens the Town of Hay River and nearby Kátł’odeeche First Nation. Residents have been evacuated and risk is extreme at the time of this article preparation. Higher-than-usual temperatures and high winds in the NWT are making fire-fighting a challenge. This May has been the second-warmest on record so far, and may be the warmest on record as temperatures are not expected to drop. Precipitation forecasts lean towards slightly lower rainfall than normal, but the caveat is noted that these are “less skillful” than temperature forecasts, with diminishing ability of the system to make reliable and accurate predictions in much of the NWT.

News Bits:

Inuit Field Training Program

The Inuit Field Training Program (IFTP) was launched in 2018 and was co-developed by scientists from Environment and Climate Change Canada and the community of Coral Harbour. The IFTP introduces Inuit youth to the skills and techniques required for working in northern research camps. The program is led by a balanced team of scientists and Inuit mentors and operates out of a remote field research station on Southampton Island, Nunavut, in the Qaqsauqtuuq Migratory Bird Sanctuary. The program acts as a stepping-stone by providing Inuit youth with a first “hands-on” experience in scientific research, coupled with career counselling and mentorship from respected Inuit community members. In 2023, the program is expanding to operate at two camps in partnership with three communities, with support from NRCan’s Polar Continental Shelf Program and the Nunavut Wildlife Management Board.

Biodiversity

At the 15th Conference of the Parties to the United Nations Convention on Biological Diversity (COP15), Canada, along with 195 other countries, adopted the historic Kunming-Montréal Global Biodiversity Framework. The Framework aims to safeguard the world’s nature, halt and reverse biodiversity loss by 2030, and put nature on a path to recovery by 2050. On May 15th Steven Guilbeault, Minister of Environment and Climate Change, launched consultations with Canadians on the 2030 Biodiversity Strategy for Canada. Canadians are being asked to provide their thoughts on biodiversity priorities and are encouraged to take part in engagement efforts that will take place over the coming months. An online survey is available until July 14, 2023 at: <https://eccc.sondage-survey.ca/f/s.aspx?s=f98d5b5c-52b6-4a61-b99e-8829be54bd60&lang=EN> and the Discussion Paper is available at: <https://www.canada.ca/en/services/environment/wildlife-plants-species/biodiversity/2030-biodiversity-strategy-canada.html>

Sixth Assessment Report - Climate Change 2023 Synthesis Report

The Intergovernmental Panel on Climate Change produces synthesis reports every 5-7 years, and in March released the sixth one. The Synthesis Report is based on the content of the three Working Groups Assessment Reports: *WGI – The Physical Science Basis*, *WGII – Impacts, Adaptation and Vulnerability*, *WGIII – Mitigation of Climate Change*, and the three Special Reports: *Global Warming of 1.5°C*, *Climate Change and Land*, *The Ocean and Cryosphere in a Changing Climate*. Its take-home message is uncompromising and grim, as noted in several excerpts from the summary report:

“A.1 Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming, with global surface temperature reaching 1.1°C above 1850-1900 in 2011-2020. Global greenhouse gas emissions have continued to increase, with unequal historical and ongoing contributions arising from unsustainable energy use, land use and land-use change, lifestyles and patterns of consumption and production across regions, between and within countries, and among individuals (high confidence).”

“A.2 Widespread and rapid changes in the atmosphere, ocean, cryosphere, and biosphere have occurred. Human-caused climate change is already affecting many weather and

climate extremes in every region across the globe. This has led to widespread adverse impacts and related losses and damages to nature and people (high confidence). Vulnerable communities who have historically contributed the least to current climate change are disproportionately affected (high confidence).”

“A.3 Adaptation planning and implementation has progressed across all sectors and regions, with documented benefits and varying effectiveness. Despite progress, adaptation gaps exist, and will continue to grow at current rates of implementation. Hard and soft limits to adaptation have been reached in some ecosystems and regions. Maladaptation is happening in some sectors and regions. Current global financial flows for adaptation are insufficient for, and constrain implementation of, adaptation options, especially in developing countries (high confidence).”

“A.4 Policies and laws addressing mitigation have consistently expanded since AR5. Global GHG emissions in 2030 implied by nationally determined contributions (NDCs) announced by October 2021 make it likely that warming will exceed 1.5°C during the 21st century and make it harder to limit warming below 2°C. There are gaps between projected emissions from implemented policies and those from NDCs and finance flows fall short of the levels needed to meet climate goals across all sectors and regions (high confidence).”



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Further sections go on to outline future risks and impacts (climate hazards) and discuss avoidability, reversibility, and outcomes. The report notes that options for adaptation that are feasible today will become constrained and less effective, as the more global warming increases. Net-zero CO₂ emissions are required to limit human-caused global warming, which would involve rapid and drastic emissions reductions this decade. There is urgency to taking action:

“C.1 Climate change is a threat to human well-being and planetary health (very high confidence). There is a rapidly closing window of opportunity to secure a livable and sustainable future for all (very high confidence). Climate resilient development integrates adaptation and mitigation to advance sustainable development for all, and is enabled by increased international cooperation including improved access to adequate financial resources, particularly for vulnerable regions, sectors and groups, and inclusive governance and coordinated policies (high confidence). The choices and actions implemented in this decade will have impacts now and for thousands of years (high confidence).”

The summary and longer reports are well-written and informative, if not good news. The full volume is not posted yet, but coming soon. These can be found at <https://www.ipcc.ch/report/ar6/syr/>.

Canada Water Agency

The new Canada Water Agency will be headquartered in Winnipeg and is expected to be responsible for water science, water quality assessment, and water management. Legislation to create the agency will be introduced later in 2023.

Notes on NWT and NU Development and Activities:

Development activity and projects in the North continue, and include the following:

- Agnico Eagle’s Meliadine Gold Mine Extension project is still under assessment by the Nunavut Impact Review Board, with public hearings scheduled for September 12-20, 2023. Disposal of tailings into mined-out pits has been the subject of considerable discussion, along with potential effects of the proposed wind farm on wildlife, notably caribou.
- Baffinland has applied for permission to mine and ship up to 6 million tons of iron in 2023 and 2024, after the Nunavut Impact Review Board (NIRB) and federal Minister denied the proposed expansion to 12 million tons. The company is pursuing financing to construct a 100 km railway so that ore can be shipped from Steensby Inlet, which was permitted as part of the original project approvals.
- The Diavik Diamond Mine has applied for an amendment to their water licence to manage decommissioning of water management ponds. Developing a “walk-away” configuration has been somewhat difficult. Public hearings are scheduled for May 30-June 1, 2023. The Final Closure and Reclamation Plan for the entire mine site is also under review (separately).
- The Ekati Diamond Mine is undergoing their water licence renewal, which includes trial of underwater remote mining at the Lynx Pit. Public hearings will be held June 12-16, 2023.

- Mines and municipalities in the NWT and Nunavut submit Annual Reports to the Nunavut Water Board, usually due March 31st (<https://www.nwb-oen.ca/content/public-registry> and <https://mvlwb.com/registry>). These provide a summary of the year’s activities conducted under the water licences and include updated management plans for review. The regulatory review of these reports provides an excellent opportunity for stakeholders to understand operations and often brings the benefit of hindsight when looking back at the initial environmental assessment and permitting processes!

Closing

If you are connected to activities in the Yukon, Northwest Territories, or Nunavut, 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 on 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 at agilewilson@shaw.ca. There is also an opening for another Territories Director – please contact Curt Schroeder or myself if you would like to take on this role!

Forest Fire Ecological Impacts Call for Interest

With the large number of extensive forest fires over the last few years, it would be interesting to publish some research on the effects of forest fires (both negative and positive) on biological communities.

If you are doing any research in this area, or know any colleagues doing research on this topic, please consider submitting an article for publication in the CSEB Bulletin. Deadline for the Fall 2023 edition is August 15, 2023.

If interested, please contact Gary Ash, CSEB Bulletin Editor at garyash@shaw.ca.

Book of interest: *Fire Weather: A True Story from a Hotter World*. John Valiant. Knopt Publ., 2023. 432 p. [it covers the Fort McMurray fire and its impacts in detail; there is a book review in a recent Science issue.

CSEB VOLUNTEERS NEEDED

Website Assistant:

CSEB requires a volunteer to assist our Webmaster Brian Free with managing the CSEB Website. You should be familiar with using WordPress for website management, and able to gather relevant material for posting on the site. It would also be useful to have experience with MailChimp for sending out webinar and other notices, but training can be provided. For more information, please contact Brian Free at bfree@cseb-scbe.org.

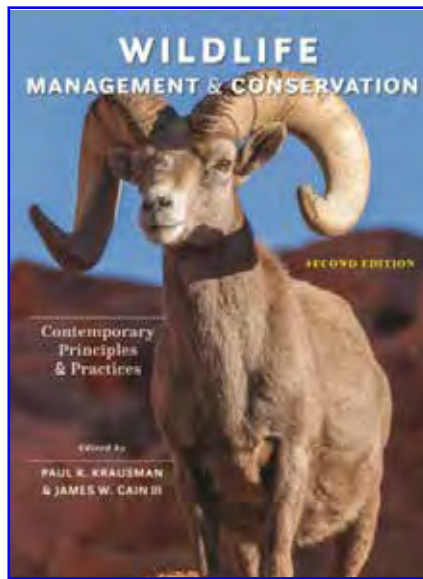
For more information, contact President Curt Schroeder at schroederc@saskpolytech.ca.

BOOK Review

Submitted by Peter Wells, CSEB Atlantic Member

Wildlife Management & Conservation: Contemporary Principles & Practices

by Eds. Paul R. Krausman and James W. Cain. 2022. 2nd Edition. John Hopkins University Press, Baltimore, MD. 453p.



In our contemporary world, with a huge population, an increasing demand for natural resources, and ongoing climate change, the need to monitor, manage, and conserve our remaining wildlife species and populations is extremely urgent. This is a global problem, acute in most countries on all continents. Especially since European colonization, it is a problem and challenge in North America, in all three countries. So many

species have disappeared or become threatened or endangered, due to hunting, urbanization and habitat loss, disease, introduced species, and domestic pets.

Management and conservation is the focus of this undergraduate textbook, aimed at the next generation of biologists and hopefully, career wildlife managers. The book was kindly introduced to me by a colleague, Dr. Elizabeth De Santo, Franklin and Marshall College, in Lancaster, PA, who teaches a course "Wildlife Conservation". Having a range of outdoor and academic interests, I could not resist purchasing a copy and following her course.

The book covers many topics, largely from a US vantage point. It is well worth noting if for no other reason than to recognize the breadth of this field in the early 21st century. In 20 chapters penned by authorities in each topic, the book covers the field comprehensively. It is perhaps too detailed and "heavy" for the early biology student but the book is serious reading for the graduate student and the practitioner. Topics range from the history of wildlife conservation (a really well written overview) to wildlife health and diseases, and from predator-prey relationships to climate change and wildlife. I was impressed by the rigour of each chapter's authors to highlight the facts and principles in his or her area of expertise.

Especially noteworthy in most of the chapters are the vignettes of key persons who have contributed to or stimulated the field. Some I recognized—Theodore Roosevelt, the Canadian Carl Walters, Paul Erhlich, Rachel Carson, Knut-Schidt-Nielsen, Henry

Stommel; others I did not recognize as they are all distinguished Americans in specific areas of wildlife management. I was looking for some more Canadian names such as Monte Hummel of the WWF, Doug Pimlott, the famed wolf biologist at UofT in the 1960-1970s, or Jon Lein, the whale specialist from Memorial University, St. John's, NL. That said, the various personal stories of key wildlife specialists were excellent and brought more interest to what would otherwise for the student could be quite dry, academically-written chapters.

This brief "review" is simply meant to bring your attention to this book. If you are working in wildlife conservation and management, this volume has much to offer as a reference source and is highly recommended. It deserves a fuller review and commentary by a CSEB member who specializes in wildlife conservation. Perhaps a member knows of a similar book with more of a Canadian focus, as that aspect of this book was limited. Be sure to track down a copy and be stimulated by the information and the renewed message of urgency for looking after our wildlife and wildlife habitat in all corners of Canada.

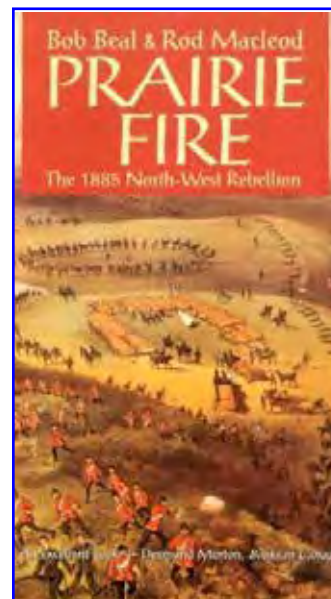
BOOK Review

Submitted by Bob Gainer, CSEB Alberta Member

Prairie Fire: The 1885 North-West Rebellion

by Bob Beal and Rod Macleod. 1995. McClelland and Stewart, Toronto. 1995.

Available from [Amazon.ca](https://www.amazon.ca): \$13.99 Kindle Ed.; \$19.67 Paperback.



Another fine book by two Canadian scholars and a Canadian publisher. This is a historical analysis of the North-West Rebellions (especially the second one) that focuses on more than just its superstar, Louis Riel, looking at many of the other players and events involved. Riel was involved but not as much as is thought. During the first Rebellion in 1870, he was important but not as important as we are led to believe because of the previous 50 years that led up to its happening. In the second Rebellion in 1885, he was even more of a minor, incidental player but he was the focus of all the blame. The fall guy.

Most writers have concentrated their analysis of Riel on explanations as to why Sir John A. MacDonal was so abusive to the rights of the people of the North-West. This is true for the book reviews I have done on him, especially by Ms. Siggins' book that I reviewed last fall for the CSEB. I was sucked right in. She did the most exhaustive and comprehensive review of any

mention of Riel in writing for a gigantic compilation of everything Riel, especially his poetry and good looks, which she adored. Beal and Macleod investigate everyone else involved that they thought had an impact as well as Riel. Really, the person who was most central was Sir John A Macdonald. The analysis that I feel that I am lacking is specifically of Macdonald's involvement in the Rebellions. Maybe I will find it and write that Book Review (I hear a loud groan coming from "She who must be obeyed").

At the time of these Rebellions Sir John A. was desperately trying to fend off American annexation of British land in North America (Canada). After the war of Independence from Britain in the late 1700s, there was the exodus of United Empire Loyalists to Ontario primarily, and there were Fenian raids in the Toronto area. The Americans had bought the gigantic French claim to most of the USA in the Louisiana Purchase, about the same time they had annexed much of Minnesota and the Dakotas from the British by right of occupation, they obtained Texas and most of the American Southwest from the Spanish by force, they annexed Washington, Idaho and Oregon by right of occupation, and it looked like British Columbia and the southern prairies (with their well-established American wolfers and whiskey peddlers) were next.

The British had occupied the Red River Colony for over a hundred years because of the profitable fur trade. In fact, the Colony was a critical location for the two most successful competitors, The North West Company and the Hudson Bay Company. Mostly, this area provided mixed blood manpower for the canoes, York boats, portages, bull trains, and Red River carting plus it provided pemmican, the fuel for it all to work. It was so successful that in the early 1800s, the fur companies fought bloody battles over its control. So bloody in fact that in 1821, the British Government forced the North West Company into a reverse takeover by the Hudson Bay Company. Now the Hudson Bay felt it should have complete control over the fur trade. Except for one minor little detail. It was far quicker and cheaper to bull train or Red River cart to Minnesota and its river boats and railheads than to York boat back and forth to the Hudson Bay. The American traders were stealing all the business. At first the Government passed laws to protect the Bay, but these were quashed when a hot-headed leader by the name of Louis Riel (senior) stopped it by show of force with Métis buffalo hunter support in 1849. So successful was this Riel, that the Hudson Bay decided to give up its charter for the fur trade in Rupert's Land in 1869, after the formation of Canada.

The population of Red River Colony at this time was approximately 10,000. This included about 90% mixed bloods that lived primarily at White Horse Plains 30 km to the west of the settlement on the Red River, but also at Grand Camp 50 km south on the American side of the border near Saint Joseph's. A few also lived north of the central Settlement towards Saint Andrew (most of the English-speaking mixed bloods). Of the remaining 10% of the Red River Colony, about 5% were Native and they mostly lived to the north of the Saint Andrew area. The other 5% were without Native origin and lived in the center of the settlement where the Red, Assiniboine, and Seine Rivers converged. The 5% non-Native component had a significant chauvinistic Quebec origin French speaking ghetto (bigots) along the Seine River and the recently built catholic cathedral led by an assertive Bishop Provencher. Here the Riels were prominent citizens, especially Louis senior. On the other side of the Red

River along the Assiniboine River was the Hudson Bay fort, many of their employees, the rest of the region's commercial interests and three long established Protestant churches (lots more bigotry). North of the commercial area was the Selkirk Colony established in 1817, which were extremely bigoted Scots. Everyone was a bigot except when it came to Native wives.

The ultimate bigots started appearing in the 1860s — the Orangeman from Ontario. Although very few in numbers, they were much better educated (any education was of consequence) and had come as land speculators and entrepreneurs (whiskey peddlers, American trade, etc.). They had control of the only printing press and newspaper and did all the agitating (they were the most passionate bigots). The 90% outside of this core settlement were the result of about five generations of non-Native men and Native women in this area. Some of the English speaking mixed Natives settled in the Selkirk area and some of the French speaking mixed Natives settled near the central French ghetto, but the majority of the English and French speaking mixed Natives lived either in the White Plains or Grand Camp areas as Freeman (Freemen of the Land still exist to this day in a different context). They worked, they didn't agitate except when it came to supporting the Riels and being on the receiving end of most of the Orangeman bigotry.

To sum it up, the Orangemen won the first Rebellion of 1870 and the spoils went to them. There were warrants for the arrest of several of the leaders on the losing side most of whom escaped to the USA including Louis Riel junior. Riel had tried his best to control the bigotry in the interests of the overall community, but Sir John A. supported the Orangemen. Most of the residents felt unwanted by the invading militia and drifted away leaving a vacuum for the militia to own what they could (spoils of war), for an upcoming invasion of Ontario settlers (a now very significant Orange component) and increased trade with the USA. Many of the Freeman and their families went west and north along the South Saskatchewan River, most went to Grand Camp in the USA, and continued buffalo hunting for a few years. The mixed bloods that went south to Grand Camp and the USA were with whom Riel eventually joined 7-8 years later after getting out of the asylum. The mixed bloods that went north along the South Saskatchewan River were with whom Riel joined 14 years after the first Rebellion. Gigantic changes were happening geopolitically.

Abraham Lincoln, often considered the greatest American, was fighting the Civil War in 1860 to force the South to rejoin the North. He also wanted to join the East with the West and bribed the Railroad Companies. In 25 years, there were three railroads in the USA and one in Canada (Sir John A. was forced to follow suit) across the Continent. First Lincoln had to hang about 300 Sioux in Minnesota (really stirred the brutality and vengeance pot there, probably learned from his Civil War). Next Lincoln sent in the Army to lie and subdue the Natives, eliminate the buffalo, and lie to settlers. Worked like a charm. Sir John A. had no choice but to play catch up, only his pockets weren't near as deep. The Railroad was more than he could afford and when it turned out that eliminating the buffalo meant that he had to feed all the plains Indians that starved as a result of it, he had to lie and make every excuse in the world not to do so. Lying and making excuses didn't work with the railroad bosses. The Railroad and the

North West Mounted Police (NWMP) did get rid of the American wolfers and whiskey peddlers in the southern prairies, and it kept British Columbia in the country, but the Plains Indians were paying the price for it (the tribes north of the plains still had their traditional sources of food). There were confrontations all over the Northwest with Natives breaking into Indian agents warehouses and confiscating what they had. People on both sides got killed.

About five years before the second Rebellion, Riel had been agitating the Chiefs of the Plains Tribes to join with him and kick the Canadians out of the Northwest, especially Sitting Bull, Crowfoot, Poundmaker, and Big Bear. Together they numbered about 10,000 Natives and Métis to the less than 1,000 whites in the Northwest outside of Manitoba. The Chiefs still had buffalo and believed they were just having a bad year or two. Basically, they chose to believe the Government lies that the NWMP were telling them. Completely frustrated and demoralized, Riel gave up being a revolutionary, got married, became a father, became American, and supported his family as a fur trader and then a teacher in Montana for about five years.

Then Sir John A.'s ignoring of the Métis and white settlers' concerns was so bad that his presence was requested by the Métis, but not by the Chiefs of the Plains Tribes.

The Métis leaders in the Northwest remembered that when everybody else was being ignored, Sir John A. didn't ignore Riel. What they didn't envision was that as soon as Riel showed up, all of a sudden Sir John A. sent all the food, clothing, and blankets that were more than adequate on his new railroad for the Natives. For the settlers and Métis, he sent his Army on his new railroad straight to Batoche and the Métis settlement where Riel was, without any consultation. Riel wasn't a player in the Native uprising, they didn't need him to tell them that they hated Sir John A.'s Indian agents. They raided Agents' stores and took what they could by force. Several Agents were killed, and their warehouses were ransacked. Taking matters into their own hands didn't require writing the proper demands to Ottawa. It would have been a lot cheaper and several people would not have been killed if Sir John A. had just sent the food in the first place to the Natives.

Riel wasn't brought in by the Natives though, he was brought in by the settlers and Métis to try and sort out the details of some of the surveying of their lands. He had barely written and sent the petition from the Provisional Government's (The Exovedate of the new breakaway Country) to Ottawa when the army showed up and the Métis were forced to defend their homes. The Métis were not actually involved in the coincidental Native uprising and hadn't a clue what Riel had written.

Even though Riel's involvement was actually inconsequential, his hanging wasn't. The Authors argue that the verdict was the correct one for the times. He openly admitted that he was the leader of a rebellion against Canada — a traitor. The big controversy was his sanity. To talk to him about ordinary everyday matters, he was extremely well spoken and intelligent. The problem was his vision of Louis "David" Riel, Prophet, Infallible Pontiff, and Priest King for the newly created Kingdom embracing all the reverse bigotry and hatred he had developed from how he had been mistreated personally. He saw Natives as having the highest rights and Europeans, and their religions, had lesser rights. None of the

other members of the Provisional Council could have known what his vision was in the Petition he had sent off in their name.

If Riel had been put back in an asylum and not hanged everybody would have found out what a flawed agent the Provisional Government had employed, and he wouldn't have been martyred. The authors likened Riel's magical effect on his supporters as Messianic, like the effect Hitler had on his followers who didn't really know what he was about. Riel was to be the supreme leader of a new country's government and religion with Natives having the most rights and European settlers filling in menial positions wherever he felt their particular ethnicity was suited. He sure had not bought into Lincoln's vision of Manifest Destiny. Although they thought Riel had a fair trial, the authors do not think that the convictions of the Natives and their hangings were fair. They thought they were instead based on Ottawa's bigotry of their race.

Unfortunately, Sir John A. wanted to make it loud and clear that he had no duty of care to this area of the country and despite the jury's and everybody else's advice, h Riel. Basically, Sir John A. and Riel were both about equally intolerant and bigoted. Sir John A.'s duty of care was to Britain, Ottawa, the Montrea-Toronto base, the Churches (especially the Catholic Church), and the Oblates (who told the Quebecers to vote for the Conservative party), and the Hudson Bay Company. He was true to them and not to the Northwest or its people. The rights of these few needed to be sacrificed for the greater good, saving Canada from the Americans justified the brutality of the taming of the Northwest. What Sir John A. accomplished in about 20 short years was heroic. He is the greatest Prime Minister ever. Lincoln only lived another two more years after starting the vision and didn't have to do the hard work of working out the details of "the opening up (taming) of the west".

Sir John A. was true to his Quebec clergy, the previous basis for Quebec's overwhelming support for his Conservative Party, but Riel became a French Canadian martyr to the people of Quebec and despite their Clergy's instructions, they have voted Liberal ever since. The creation of Canada was probably the greatest achievement in our history when you look back at the extremely short period of time (about 20 years) for such a cataclysmic change to have been orchestrated on such an enormous area.

It is too bad Sir John A. couldn't have negotiated with Riel and the people in the Northwest in good faith rather than against them. Unfortunately Riel was mentally deranged and not true to anyone but himself; otherwise, there might have been more consensus and less confrontation. Despite the at-least-as-ruthless dream of Lincoln's, especially regarding the Sioux, his end result was a more cohesive country than Sir John A's.

CSEB BULLETIN CONTRIBUTIONS NEEDED

Contributions of articles or news items are needed for the Fall 2023 edition of the CSEB Bulletin. Deadline for submission is 15 August 2023. Please send your submission to Gary Ash, CSEB Bulletin Editor, at garyash@shaw.ca.



Prepared for: Canadian Society of Environmental Biologists

March 2023

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CEW will take place at the Shaw Centre in Ottawa, ON in October 2023. For more information, please contact the 2023 Organizing Committee Co-chairs:

- Leana Van Der Vliet, Environment and Climate Change Canada
- Stacey Robinson, Environment and Climate Change Canada
- Rebecca Dalton, Environment and Climate Change Canada

Or check the CEW website at <http://ecotoxcan.ca/>

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For more information, contact President Curt Schroeder at schroederc@saskpolytech.ca.

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