

Examining Science Suppression as Part of the Canadian Democratic Deficit

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Abstract

The tenure of Prime Minister Harper has wrought devastation on environmental protection in Canada over the past eight years. In that time, a great number of scientists across the country have been speaking out against the policy changes that have affected environmental protection. Many are conducting research that suggests the natural world is being negatively impacted by industry in Canada. Government scientists, however, have been silent on the topic. As reports of science suppression amongst federal government scientists become increasingly common, it appears that the muzzling of researchers and the cuts to science funding are impeding the flow of information to the public in Canada. Voters are left in the dark and do not know the results obtained from research paid for with taxpayer money. Media requests for interviews with researchers are denied, and scientists that present their *already published* findings through non-academic channels are reprimanded and threatened with dismissal. Unfortunately, many people see the lack of scientific autonomy as something that affects government scientists alone. The connection of how this issue relates to democracy and the day-to-day lives of people in Canada is not clear. This project seeks to remedy this disconnect through news media articles and a multimedia presentation for first year university students. The outputs of the project aim to influence readers to consider science suppression as a critical issue when casting their ballot at the election polls in October.

Foreword

This major research project is submitted in partial fulfillment of the requirements for the Master in Environmental Studies degree from York University. It is the final submission as part of my Plan of Study, which examines how Canadian environmental policy is influenced by industry, as well as by people dissenting from the petro-hegemonic status quo. By suppressing science through the muzzling of scientists and cuts to scientific research funding, the government is stifling dissenting voices and limiting the information that can be shared with the general public. This project will examine the extent to which science is restricted in Canada and how this affects the nation's democratic health. It will illustrate in a manner accessible to the general public how the lack of scientific influence over recent Canadian environmental policy decisions is contributing to a democratic deficit.

I chose to present my work as a research project due to the nature of the subject matter. Science suppression in Canada is a problem faced by academics. This is an issue that is well known and documented within Canadian academic circles. This is an issue that has already been published in peer reviewed journals, with numerous researchers attesting to this muzzling phenomenon. As such, writing a traditional research paper seemed reiterative. It is for this reason that I am presenting my research in a project format.

News media articles on science suppression are common. These stories have been appearing sporadically for several years, always with chilling case studies that reveal the extent to which government researchers are muzzled. Recently, cases of science suppression have been reported with increasing frequency. There have been rallies, petitions, and public talks on this issue but it is often seen as a problem plaguing scientists alone. The primary objective of this project is to challenge this assumption. I want to encourage people to see the connections between science suppression and a failing democracy. I want to help them realize that the loss of scientific autonomy in Canada affects their lives directly. To accomplish this objective, this research project is split into two parts: a series of five news media articles and a classroom lecture. These two different mediums will allow the information to be reach not only a wide subset of people in Canada, but also reach young and first time voters who may not otherwise be exposed to the issue of science suppression. Given the critical nature of this election, I chose these project outputs to help inform people that science suppression is an issue they should consider while going to the polls in October.

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And finally, to government scientists that have shared their story – thank you for making public this critical issue. While science suppression is a frightening phenomenon to society as a whole, working in toxic environments and experiencing intimidation and a lack of job security is a difficult feat. I sincerely hope that your efforts are not in vain and that the winds of change will arrive in Canada by October.

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Introduction

“Information is the lifeblood of a democracy. Without adequate access to key information about government policies and programs, citizens and parliamentarians cannot make informed decisions and incompetent or corrupt governments can be hidden under a cloak of secrecy.”

- Stephen Harper, writing in the *Montreal Gazette* as leader of the Official Opposition in 2005 (Goar, 2011)

Prior to being elected as Prime Minister of Canada in 2006, Stephen Harper described information as the lifeblood of democracy. He explained that the incompetencies and corruption of a government will remain hidden from the public if information does not flow freely. When considering the Harper government’s decisions after coming to power as Prime Minister, however, these words are hypocritical.

As Prime Minister of Canada, especially as a majority leader, Harper has implemented policy changes and made decisions that have considerably changed the social fabric of this nation. The Harper government has developed strict immigration policies that created classes of citizenship (BCCLA, 2015), implemented “tough on crime” laws that feature mandatory minimums for drug possession (PPSC, 2014), refused an inquiry into the crisis of missing and murdered indigenous women (Parliament of Canada, 2015), implemented changes to the election process that disenfranchise potential voters and make voting difficult (Nicol, 2015; The Council of Canadians, 2015), and refused to enact a bill that held Canadian mining corporations accountable for any violent crimes they commit in the Global South (Open Parliament, 2010). This list is just a sampling of the depth of the Harper government’s reach, facilitated by its own manipulation of law-making frameworks. Large omnibus bills have amended hundreds of policies under one Act, sometimes with short debate periods in the House of Commons. It is clear that under the current government, life in Canada has changed dramatically.

The Current Climate of Environmental Protection

The tenure of Prime Minister Harper has wrought great devastation on environmental legislation in Canada over the past eight years. The *Jobs, Growth, and Long-term Prosperity Act*, is a particularly egregious example of how the Harper government degraded environmental protection in Canada. For example, the implementation of this Act expanded the Canadian government’s powers over extraction projects, cut the number of waterways that were guaranteed protection by law, and mandated an exemption for pipelines and power lines from the *Navigable Waters Protection Act* (Gibson, 2012). These changes, along with many others, all came from just one omnibus budget bill. Indeed, throughout the Harper government’s rule, environmental protection has been severely damaged.

In executing his vision for “Responsible Resource Development” as a means of bolstering the Canadian economy, economic gains factor into many aspects of the Harper government’s rule (Canada’s Economic Action Plan, n.d.a). After winning a majority government in 2011, Harper proclaimed in his victory speech that job development and economic growth were the first tasks he planned to undertake. While a stable economy is a pressing concern of many people in Canada, it appears as though the Harper government is looking to promote resource development at any cost. This has led to oil extraction becoming increasingly influential in political decisions, leading to a loss of fair governance, responsible statecraft, and transparency (Waller, 2012).

The concept of a petrostate, coined by Terry Karl, refers to nations in which decisions and institutions are largely shaped by oil wealth, often with overly centralized political powers that plunge the country into crisis (Karl, 1999). In petrostates, policy-making is influenced by the oil economy and there are “strong networks of complicity between public and private sector actors” (Karl, 1999). These factors create a positive feedback system in which the decision-making framework is subsequently altered to encourage further oil wealth production and promote institutional changes that keep the oil economy strong (Karl, 1999). From this, it appears that oil production and economic growth took precedence over environmental protection. This is evident in Harper’s description of the Kyoto Accord. Instead of embracing the economic potential of renewable energy that would have been possible through this international treaty, Harper felt that “Kyoto is essentially a socialist scheme to suck money out of wealth-producing nations [and]... cripple the oil and gas industry” (Toronto Star, 2007).

Instead of finding ways to promote sustainable development centered on green energy, the federal government has been focusing on Responsible Resource Development- a “plan to create jobs, growth and long-term prosperity by streamlining the review process for major resource projects while strengthening environmental protection and enhancing consultations with Aboriginal peoples” (Canada’s Economic Action Plan, n.d.b). This strategy allows for continued oil extraction, thereby increasing Canadian participation in the global oil economy. As explained by the former Natural Resource Minister Joe Oliver:

“The Harper Government’s plan for Responsible Resource Development will create good, skilled, well-paying jobs in cities and communities across Canada, while maintaining the highest possible standards for protecting the environment... It will help prevent the long delays in reviewing major economic projects that kill potential jobs and stall economic growth by putting valuable investment at risk.” (Natural Resources Canada, 2012)

These words indicate that the Canadian economy is moving in a direction focused primarily on resource extraction. Oliver explains that fast tracking development projects will be beneficial for the economy and subtly hints that lengthy environmental assessments “kill potential jobs and stall economic growth by putting valuable investment at risk.”

One of the more contentious policy changes that occurred under the Responsible Resource Development plan was to implement the new Canadian Environmental Assessment Act, 2012 (CEAA 2012) under the same Jobs, Growth, and Long-term Prosperity Act (Canadian Environmental Assessment Agency, 2014). This omnibus budget bill comprised of over 400 pages of policy changes that amended and repealed over 70 existing laws, dramatically weakening environmental protection policies (Parliament of Canada, 2012 and Gibson, 2012). The changes to the environmental assessment (EA) process under CEAA 2012 greatly reduced environmental regulation, the scope and effectiveness of federal EAs, and the amount of projects that would be assessed (Gibson, 2012). Further, CEAA 2012 limits public participation in the EA process by only allowing those “directly affected by the carrying out of the designated project or ... [with] relevant information or expertise” to present before the review panel (Parliament of Canada, 2012, s.2(2)).



Figure 1. Scientists gather at Parliament Hill in July 2012 to protest Bill C-38 and cuts to science funding.

This stipulation is not further defined, thereby restricting who is allowed to speak during EAs and limiting the number of testimonies that can go on the record. By allowing inadequate EAs to proceed and providing oil and gas corporations with the approval necessary to begin extraction, the Harper government has ignored certain voices of the people in Canada.

Science Suppression in Canada

While many individuals are speaking out against the perils of oil and gas industries, the scientific evidence itself is being disregarded by the Canadian government. Data obtained by government scientists are not presented to the people in Canada in an accessible manner. These scientists are unable to give interviews to the media or even personally and directly inform the public about their research. In fact, over the past several years, alarming stories have surfaced about federal scientists who were banned from communicating with the media about their *already published* work:

- Scott Dalimore, a geoscientist at Natural Resources Canada, was prohibited from discussing a study that had already been published in *Nature* about a 13,000-year-old flood (Professional Institute of the Public Service of Canada, 2013).
- Mark Tushingham, a scientist with Environment Canada, was banned from attending an event discussing a fiction novel he wrote about a made up water war between Canada and the United States (CBC Arts, 2006).
- Kristi Miller, a researcher at the Department of Fisheries and Oceans, was not allowed to publicly discuss her work on decreasing salmon populations with the media, even though her findings had previously been featured in *Science* (CBC News, 2011).
- David Tarasick, an Environment Canada environmental scientist, was not allowed to publically speak about the research he conducted on the ozone layer, despite having already published his data in *Nature* (Professional Institute of the Public Service of Canada, 2013).

Government scientists that are able to have interviews with the media are monitored closely and must vet their answers with media relations bureaucrats. For example, during the 2012 International Polar Year Conference in Montreal, federal scientists “were shadowed by media relations officers” (CBC News, 2012). Reports allege that “ahead of the conference, the Canadian participants were reportedly sent a memo ordering them to have a government liaison present during conversations with reporters” (CBC News, 2012). In another case, two government scientists who found contaminants in the snow located by the Alberta tar sands were provided with scripted answers for their interviews (De Souza, 2012). In this study, two of the sampling locations were adjacent to the Syncrude and Suncor operations (Government of Canada (as published by Mike De Souza), 2011). The government, in anticipation of a question about the source of the contaminants found in the snow, prepared the scientists to say: “Our next science steps include narrowing down contaminant sources to things like blowing dust and vehicle exhaust, and testing for toxicity” (Government of Canada (as published by Mike De Souza), 2011). Further, these government scientists were told that if pressed on issues regarding human health, they were to provide the media with context, and explain that “a particular group of substances called poly aromatic hydrocarbons was found in the snow samples, but these substances are also found in BBQ’ed steak” (Government of Canada (as published by Mike De Souza), 2011). By mandating that scientists provide misleading and evasive responses to media queries, the government is preventing the public from understanding the importance of the research being conducted.

The ban on media communication and loss of freedom of speech has been highly controversial and frustrating for researchers. Dr. David Schindler, a leading aquatic biologist, explains:

“It is clear that muzzling under the Harper government is the most oppressive in the history of federal government science. Incredibly, some of the most eminent scientists in Canada have been forbidden to speak publicly on scientific matters where they are recognized as world experts.” (Anderson, 2010)

Further, when scientific evidence surfaces to policy making circles, it is largely ignored by the federal government:

The Canadian House of Commons Standing Committee on Environment and Sustainable Development held 18 months of hearings in 2009 and 2010 on water issues in the oil sands. More than 60 witnesses testified but the committee never issued a public report. According to news stories in July 2010, the committee destroyed the draft copies after failing to reach a consensus. (Schindler, 2010)

In addition to preventing scientists from speaking candidly about their results, science suppression in Canada also manifests in cuts to research funding. The Experimental Lakes Area (ELA), for example, is a world renowned freshwater ecosystem in which scientific studies are conducted on a large scale (Bocking, 2012). When the federal government cut its ties with the ELA in 2013, the research projects being conducted at this site were placed in jeopardy. Dr. Schindler described how the ELA was a crucial asset to determining the environmental effects of the tar sands (Bocking, 2012). In the end, the governments of Ontario and Manitoba stepped in and contributed research funding for the lakes to ensure that the International Institute for Sustainable Development could take over operations. (CBC News, 2013).

Another example of funding cuts to science is evident through an examination of the consolidation of Department of Fisheries and Oceans (DFO) libraries. By closing 7 of the 11 regional libraries, the government disposed of thousands of books and materials with valuable scientific information, some of which dated back over one hundred years (Nikiforuk, 2013). While some of the material was digitally archived, government researchers were not provided with an inventory of what was kept and what was discarded (Nikiforuk, 2013; Contenta, 2014). Requests for information and interlibrary loans are now exceptionally burdensome and uncertain. While some books were taken by the public, scientists, and environmental consultants, a



Figure 2. This photo of a dumpster filled with books and research material seen at a DFO library was taken by a federal union official.

portion of the scientific information was just discarded. Some scientists say other books “were burned or went to landfills” (Nikiforuk, 2013). In fact, one day during the summer of 2013, “federal scientists using the Fisheries and Oceans library on Quebec’s Gaspé Peninsula saw a dumpster on the grounds filled with hundreds of research books and periodicals to be destroyed” (Contenta, 2014).

Kelly Whelan-Enns, the head of media and policy research for Manitoba Wildlands, spent two days at one of the libraries trying to salvage maps and wildlife data from almost 100 years ago (Nikiforuk, 2013). She recounts that while there, she witnessed private companies coming for the information. “I saw a private consulting firm working for Manitoba Hydro back up a truck and fill it with Manitoba data and materials that the public had paid for. I was profoundly saddened and appalled,” she said. “It’s obvious that this government cares little for public discourse” (Nikiforuk, 2013). As public discourse cannot occur without public knowledge, actions such as these have the effect of stopping democracy before it starts.

More accounts of science muzzling and funding cuts are detailed in the articles written as part of this project. It is important to note that while this is an issue that has been exacerbated by the Harper government, science suppression in Canada has been occurring for many years. The collapse of the Atlantic cod fishery in 1992 is one prominent instance of muzzling that occurred prior to Harper’s tenure as Prime Minister (as outlined in one of the five articles below).

Democracy in the Harper Government

The muzzling of Canadian government scientists has been called an attack on freedom of speech by many environmentalists and researchers. As Harper explained in 2005, information is the lifeblood of democracy. The lack of public knowledge regarding government research, therefore, is undemocratic. Information is not flowing from researchers to the Canadian public, and taxpayers are unable to learn how their tax dollars are contributing to scientific data.

As voter turnout continues to be low, Canada is often cited as being a country with poor democratic health. Indeed, only 61.1% of eligible voters cast a ballot during the last federal election in 2011 (Elections Canada, 2013). A survey of eligible voters in Canada found that negative public attitudes towards politicians and political institutions are the primary causes of low voter turnout (Elections Canada, 2014). It was also found that low turnout can be attributed to the perceived meaninglessness of elections, as well as a general apathy and lack of interest towards results (Elections Canada, 2014).

While low voter turnout is indeed indicative of poor democratic health, there are other factors that contribute to the democratic deficit in Canada. Indeed, a 2015 study by Samara Canada, a non-partisan charitable organization advocating for a stronger democracy in Canada, found that “Canadians have so little trust in our elected MPs and are so turned off by politics that the legitimacy of our entire democratic system is at risk” (Hepburn, 2015). The study gave Canada a “C” grade, explaining that “Canadians are not participating in politics as much as they could, they don’t believe it affects them, and they don’t see their leaders as influential or efficacious” (Samara Canada, 2015, pg. 3). It was also found that only 42% of participants in the study reported that they place some trust in political parties (Samara Canada, 2015, pg. 4). Dr. Pippa Norris, a political scientist at Harvard University, makes similar observations: “the most plausible potential explanations for the democratic deficit suggest that this phenomenon arises from some combination of growing public expectations, negative news, and/or failing government performance” (Norris, 2011, pg. 5). With low voter turnout and little trust for government, it is clear that there is a problem with democracy in Canada. Samara did note, however, that “over half of Canadians petition, donate to charity and volunteer, revealing a desire to connect to

causes rooted in and affected by politics” (Samara Canada, 2015, pg. 5). It appears as though there is a disconnect between the issues upon which politics focus and politics itself. The people in Canada are unable to see the relevance of certain issues to both themselves and to the government.

According to Democracy Watch, a democracy is a society in which all adults are able to effectively participate in the decision making process of organizations that make decisions and take actions that affect them (Democracy Watch, 2011). They also maintain that democratic societies must hold decision-makers fully accountable if their choices “violate fundamental human rights, or are dishonest, unethical, unfair, secretive, inefficient, unrepresentative, unresponsive or irresponsible” (Democracy Watch, 2011).

Based on this definition, the suppression of Canadian science is undemocratic although technically legal. Requests for information on government science research are not granted, resulting in voters arriving at polling stations uninformed and unaware. The accountability aspect of this definition of democracy is also contravened in regard to science suppression in Canada. The federal government is not only not being held accountable, it is continuing to muzzle scientists and cut funding to research programs across the country. Books are being burned, libraries are being shut down, and numerous attempts by the opposing political parties to implement a government Science Officer have been blocked.

Science suppression in Canada is not a secret. Numerous articles on the issue have appeared in news media, and members of the public have organized rallies and public talks. In the past few months, there have been two extensive reports on the issues. In May 2015, Maude Barlow, Canadian author and champion of water rights, wrote a report issued by the Council of Canadians called “Broken Covenant: How Stephen Harper set out to silence dissent and curtail democratic participation in Canada” (Barlow, 2015). In June 2015, Voices-Voix, a non-partisan coalition of 200 organizations and 5,000 individuals, also issued a report about the muzzling of dissenting voices called “Dismantling Democracy: Stifling debate and dissent in Canada” (Voices-Voix, 2015). Unfortunately, the release of these reports was not widely publicized.

The lack of knowledge as to how the loss of scientific autonomy in Canada is affecting democracy is the primary motivation behind this project. As described by Samara, many Canadians do not believe that political issues affect them. My goal is to use news media articles and a lecture for university students to show the people in Canada how this issue is affecting their lives. From health research cuts to contamination of water sources, science suppression is a problem that affects everyone.

An important caveat to consider is that this project examines democracy based on contemporary, mainstream conceptions of public participation and equal opportunity. This idea of democracy as applied to a capitalist, settler-colonial state like Canada, however, is a fallacy; the theft of occupied lands from Indigenous nations and ongoing colonialism of these peoples in Canada wholly undermines notions of democracy in this nation-state. While the scope of my project focuses on liberal democracy and federal government, it is important to remember that eliminating science suppression does not equate to fairness and equity in our current government when it has been built on a foundation of colonialism. Despite this, I believe that if others knew the extent to which democracy has been assaulted under the Harper government, they would be inclined to consider this issue as they go to vote in October. I feel that new leadership, while still operating within an oppressive political system, would be better overall for the people in Canada. It is for this reason that I am working to inform the public about science suppression and how this is a problem that affects them on an individual level.

Methodology

This research project uses literature reviews, discourse analyses, and a multimedia presentation to convey the effects that science suppression has on democracy and to encourage people in Canada to consider this issue as they vote during the upcoming election. The major components of this project are split into three sections: the introduction, the series of five articles, and the classroom presentation.

Introduction

For the introduction of this document, I conducted literature reviews and performed discourse analyses of policy documents and news media articles. This will allow readers to better understand the current climate of the Canadian government and recognize that the issue of science suppression, while not new under the Harper government, affects democratic health. The literature review also enabled me to define components of a healthy democracy and make connections between science and democracy.

Series of Five Articles

For the five news media articles, the primary method used to collect information was literature reviews. To challenge myself for this MRP, I decided to write articles that would be palatable to a politically conservative audience. I targeted readers that lay either centre or centre-right along the political spectrum. This was no easy task- it was difficult to convey the overwhelming assault on democracy occurring under the Harper government while maintaining the articles's non-partisan appearance. The very issue of science suppression itself is politically charged and the testimonies from most government scientists focus specifically on the trends from the past several years under current Conservative leadership.

To compensate for my personal biases, I did extensive literature reviews of articles from conservative news media outlets including *Sun News Network*, the *Financial Post*, the *National Post*, and *The Rebel Media*. This was to better understand the writing style necessary to persuade my intended audience of science suppression and its perilous effects on democracy.

After researching centre and conservative writing styles, I aggregated case studies and stories through literature reviews and wove them together to illustrate trends to readers. Each article had an intended theme, which was kept in mind as I conducted my research.

Classroom Lecture on Science Suppression

To convey the severity of science suppression and its effects on democracy to first year university students, I created a multimedia presentation using PowerPoint. This presentation features audio and video clips, as well as text excerpts of government scientists' testimonies on their experiences being muzzled. There are also screen shots of tweets using various hashtags related to science muzzling (*#unmuzzlescience*, *#cdnsci*, *#cdnpol*, *#canpoli*). To illustrate the relevance of this issue to science students, I underscored the changes to the Canadian Institutes of Health and Research spending strategy that favour scientists with seniority over their younger peers. I also touched on the number of research centres whose funding was entirely or partially cut to illustrate how this issue will affect job prospects for scientists in the future.

While it is important for youth in Canada to recognize that science suppression is a problem that affects them personally, I used this lecture to inspire the students to exact change through the electoral system in Canada. Once again taking a non-partisan approach, the presentation outlines the importance of a government Science Officer and encourages potential new voters to consider science suppression as an election issue. This presentation seeks to create a behaviour change by encouraging students to consider science suppression as an issue critical to the democratic health of Canada; it challenges youth to use democracy to save democracy.

Series of Five News Media Articles: Article 1

Science Suppression and the Atlantic Cod Collapse: A Warning from the Past?

With the next federal election date set for October 19, political parties have hit the ground running at the start of this eleven-week election campaign. While the plummeting Canadian dollar¹ and the projected \$1.5 billion deficit² will doubtless weigh heavy on parties' economic platforms, there is one surprisingly critical issue that ought to influence candidates' discussions of job creation and economic growth – the suppression of Canadian science.

The alleged conflict between science and the Harper government has been receiving considerable media attention over the past few years, and might possibly reach its boiling point over the course of this campaign. Many federal researchers have come forward with claims that the Conservative government disregards scientific evidence when making policy. These researchers maintain that the government instead favours policy decisions that create jobs and promote a strong Canadian economy. Economist Andrew Leach explains that this viewpoint is simply an issue of lab coat entitlement. "To speak out publicly against government policy is, by the current definition, fundamentally at odds with the role of a public servant in our democracy" Leach asserts.³ "Public servants are expected to provide impartial advice to the policy development process and loyal implementation of government policies once decisions are taken."⁴ While science is not the only piece of evidence that needs to be considered in policy decisions, there is concern that hard scientific evidence isn't being given much consideration at all. While politicians have been chastised for skimming lengthy reports and documents before, there is evidence to suggest that the government is preventing tax-payer funded papers written by its own scientists from being seen or shared at all.

Government scientists claim that there is a muzzling effect in place that prevents them from sharing their findings and presenting their research more broadly. This phenomenon has been well documented over the past several years, with numerous researchers describing the federal government's restrictions to their freedom of speech. Earlier this year, Dr. Steve Campana quit his position as a scientist at the Department of Fisheries and Oceans (DFO).⁵ He described his work environment as toxic and expressed frustration over the numerous roadblocks in place that prevent scientists from conducting research.⁶ In agreement with Leach's point, Dr. Campana firmly believes that the role of government scientists is not to be an advocate- it is to present the data to the policy makers and to translate the findings from obscure jargon to something more digestible for the public.⁷ Dr. Campana, who now works in Iceland, offered up a dire warning: Canada is going to be in trouble in a couple of years. The lack of scientific infrastructure cannot be rebuilt, and regardless of who is in power, it will take formidable effort to reform Canadian science.⁸

Campana described his work environment as toxic and expressed frustration over the numerous roadblocks in place that prevent scientists from conducting research.

The warnings heralded by Dr. Campana and many of his peers are eerily familiar. Leading up to the Atlantic cod collapse of 1992, federal scientists that warned of overfishing were silenced and their research ignored.^{9,10} Researchers at DFO consistently questioned the government's assertions of abundant fish stock. By 1986, scientists had already concluded that there had been an overestimation

of the size of cod stock fish populations for almost a decade.¹¹ The waters held less fish than was expected and was also being fished more than realized, creating a dangerous combination of circumstances ultimately resulting in catastrophe.¹² There was a constant deluge of data suggesting a serious problem with the cod stock estimations, but the evidence was ignored.

Looking back over 20 years later, the ending of the story is not a surprise. Overfishing swiftly decimated fish stocks, and the Atlantic cod fishery collapsed. Forty thousand people were out of jobs and entire communities along the east coast suffered from the loss of this critical industry.¹³ Billions of dollars were forfeited in exports.¹⁴ As explained by Earle McCurdy, president of the Fish, Food, and Allied Workers Union, the cod collapse was the “most wrenching societal upheaval since the Great Depression... Communities are in crisis. The people of the fishery are in turmoil.”¹⁵



Figure 3. Dr. Ransom Myers, marine biologist, was an outspoken critic of the government's suppression of science leading up to (and after) the Atlantic cod collapse.

and researchers that spoke to the public about overfishing were reprimanded.^{18,19} One researcher was required to sign a letter claiming that the statements he made in an interview about overfishing were wrong.^{20,21} There were lawsuits meant to intimidate scientists, harassing calls to laboratory supervisors, and threats to withhold funding.^{22,23} These claims of bullying and harassment are all on the record, and were presented by Dr. Ransom Myers to the Standing Committee on Fisheries and Oceans at the House of Commons on December 9, 1997.²⁴ In an ironic twist, one of the DFO experts brought forward to counter Dr. Myers' claims was Dr. Campana.²⁵

Almost 20 years later, Dr. Campana has changed his tune. It is difficult to ignore the parallels between Dr. Myers' testimony and the stories of government scientists today. The suppression of Canadian science is not a contemporary problem that can be attributed to one Prime Minister or political party. It is, nonetheless, a critical issue that is happening today. As seen in the Atlantic cod collapse, science suppression is a phenomenon that can easily contribute to failed economies and significant job loss. While nonpartisan, this is a serious political issue that much be considered when people across Canada go to the polls this October. Our abundant resources must be managed effectively, transparently, and with science-based policy for the good of the Canadian economy in the future as well as in the present. After all, the failing dollar, slow GDP growth, and projected deficit do not need company.

The tragedy of the collapse lies in its preventability. The suppression of and disregard for research that suggested overfishing exacerbated this disaster directly and contributed to this economic catastrophe. Even after the fishery collapsed, the science muzzling did not stop. While it became increasingly apparent to the general public that this disaster could have been avoided, the government maintained assertions that cold water temperatures and seal predation killed off the Atlantic cod, not overfishing.^{16,17} Science that proved otherwise was censored and suppressed

Series of Five News Media Articles: Article 2

Trimming the Fat or Severing Ties? Examining Cuts to Science Funding in Canada

On April 2, 2013, an information notice was posted on the Office of the Information Commissioner of Canada's website announcing the Information Commissioner's investigation of a complaint made by the Environmental Law Clinic of the University of Victoria and Democracy Watch.²⁶ The complaint alleged that the *Access to Information Act* was contravened through "government policies and policy instruments that restrict or prohibit government scientists from speaking with or sharing research with the media and the Canadian public."²⁷

The issue of science muzzling has been a hot topic in recent years. Numerous examples of government scientists being denied the opportunity to discuss their research with the public have surfaced. Former government researchers have come forward with stories of harassment, intimidation, and excessive bureaucratic red tape.

Ranking 12th in overall OECD spending, Canada's R&D investments dropped from \$22.7-billion USD in 2004 to \$21.8-billion USD in 2012. Russia, India, Taiwan, and Brazil are all ahead of Canada, when just a decade ago, Canada outspent all of them.

While the communication policies described by government scientists are reminiscent of the censorship seen in dystopian fiction novels, there is an even darker side to science suppression in Canada. Drastic cuts to scientific funding are preventing certain types of research from ever occurring in the first place. Over 150 federal programs and internationally renowned research centres have been closed or had their funding cut by the federal government.²⁸ The Government of Canada maintains, however, that it continues to invest in science research across the country. Greg Rickford, the Canadian Minister of Natural Resources, asserts that "Canada is ranked number one in the G-7 for our support for research and development in our colleges, universities and

other institutes."²⁹ A report released by the Organization for Economic Co-operation and Development about science and technology policies suggest a different trend. "Canada has tumbled out of the top 10 research and development (R&D) spenders since the Great Recession" the report outlines.³⁰ Ranking 12th in overall spending, Canada's R&D investments dropped from \$22.7-billion USD in 2004 to \$21.8-billion USD in 2012.³¹ Russia, India, Taiwan, and Brazil are all ahead of Canada, when just a decade ago, Canada outspent all of them.³²

Recent cuts to health funding have also been an issue of concern amongst government scientists in Canada. In December 2014, new changes to the spending strategy of the Canadian Institutes of Health and Research (CIHR) made many researchers uneasy about their future in Canada.³³ The CIHR changes have eliminated several grant opportunities open to researchers, implemented a system that benefits senior researchers over new ones, and cut face-to-face interviews during the peer review part of the competition.³⁴ Researchers opposed to the new rules have said that it is difficult to evaluate proposed projects without face-to-face meetings, and that the changes to the evaluation system make it difficult for younger scientists to obtain funding: "Losing a complete generation of promising scientists to an administrative revamping of the operating grant programs would be a disaster, certainly for these individual scientists, but also for the competitiveness of Canada in research and discovery."³⁵

The increasing barriers to attaining research funds through administrative changes and funding cuts is undermining Canadian science. This suppression of science may cause top government researchers to seek work in different countries where job security is higher. Dr. Brian Shoichet, who described the CIHR changes as disconcerting, has already returned to his former research institute in San Francisco after coming to Canada from the United States.³⁶ As government scientists begin to migrate to greener pastures, it is the people of Canada that will suffer. Without strong science, Canadian policy decisions will be unbalanced, voters will be misled, and democracy will not flourish.

Series of Five News Media Articles: Article 3

Science Suppression in Canada: You Don't Always Get What You Pay for

As the ongoing senate expense scandal continues, many Canadians are wondering where their hard earned tax dollars are going. As taxpayers in Canada, we deserve to know whether our money is being put to good use.

One interesting issue related to the use of tax dollars is the phenomenon of science suppression in Canada. Many federal scientists allege that government communication policies restrict their freedom of speech, preventing researchers from sharing their findings with the public. This well-documented trend has resulted in numerous reports from individual scientists describing how they were banned from communicating their *already published* findings with the media.



Figure 4. MP Kellie Leitch makes an appearance on the Canadian talk show, The Social, during which she discussed the issue of science suppression.

When questioned about the science muzzling phenomenon in Canada, Kellie Leitch, the Simcoe-Grey Member of Parliament, explained that federal scientists have the opportunity to publish their research in peer-reviewed journals and that “when it is published, everyone can read it.”³⁷ While this sentiment is factually correct, it is very misleading. Peer-reviewed journal articles are usually accessible either through a subscription to a database or by paying for every article individually. The language is often

technical jargon, and the data are presented in ways that are completely opaque to readers that do not have a background in the issue. That scientists are not allowed to translate their findings into plain English suggests a lack of transparency at the government level.

A recent Professional Institute of the Public Service of Canada (PIPSC) survey found that of the federal government researchers questioned, a staggering “90% feel they are not allowed to speak freely to the media about the work they do and that, faced with a departmental decision that could harm public health, safety or the environment, nearly as many (86%) would face censure or retaliation for doing so.”³⁸ PIPSC, the largest union in Canada representing scientists and professionals employed at the federal government, “also found... that over one-third (37%) had been prevented in the past five years from responding to questions from the public and media.”³⁹

Tom Spears, an Ottawa Citizen reporter, also hit roadblocks when trying to speak with government researchers about a study of snowfall patterns that was jointly conducted by NASA and the National Research Council of Canada (NRC).⁴⁰ After filing an Access to Information request, Spears found that over 50 emails had gone back and forth between 11 NRC bureaucrats discussing what might be written and how the government would be portrayed.⁴¹ By contrast, it took NASA just fifteen minutes to put Spears in touch with a climatologist for the article.⁴²

Needless to say, Canada's reputation in science research is failing at the international level. The issue of science muzzling has appeared in international media outlets across the globe, including Al Jazeera, BBC, and the New York Times. In October 2014, 815 scientists from 32 countries wrote an open letter asking Prime Minister Harper to allow Canadian government scientists to do their jobs effectively.⁴³ "As scientists outside of Canada committed to international cooperation in confronting threats to the planet and human health," the letter opens, "we urge you to remove excessive and burdensome restrictions and barriers to scientific communication and collaboration faced by Canadian government scientists."⁴⁴

The letter expresses concern that "Canada's leadership in basic research, environmental, health, and other public science is in jeopardy."⁴⁵ Indeed, the communication policies subjected upon Canadian government researchers are becoming increasingly burdensome to foreign scientists looking to collaborate. Dr. Andreas Muenchow, an oceanographer at the University of Delaware, was required to sign a non-disclosure agreement before beginning his research with Canadian colleagues. "I feel that it threatens my academic freedom and potentially muzzles my ability to publish data and interpretation and talk timely on science issues," he explains in a blog posting.⁴⁶

**"I feel that it threatens my academic freedom and potentially muzzles my ability to publish data and interpretation and talk timely on science issues."
- Dr. Andreas Muenchow**

Critics of the muzzled scientists believe that government researchers should not be allowed to openly criticize government policy. This is a sentiment that is also shared by many scientists. Undeniably, insubordination has no place in a democratic government, but scientific data are incapable of insubordination, and media blackouts and communication bans threaten democracy. If there is nothing to hide, why can't the data be shared? It is a democratic right of the public in Canada to know what research their tax dollars have funded. We are entitled to this information. If Ottawa believes otherwise, the people of Canada can voice their discontent by exercising another democratic right come October.

Series of Five News Media Articles: Article 4

The Fox Guarding the Henhouse: Industry Monitoring Industry

It is undeniable that the oil and gas industry in Canada is critical to Canada's current energy strategy. This sector creates jobs and produces the cars, plastics, and numerous other goods we depend so heavily upon to maintain our standard of living. While environmentalists push for renewables and green energy solutions, oil and gas is what currently drives the world. As with any industry, however, safety is of paramount concern. We are all familiar with the destruction caused by the Exxon Valdez and Gulf of Mexico spills, as well as the devastation wrought by the Lac Megantic train derailment. Environmental health and human health must be considered to ensure that oil and gas extraction occurs in the safest way possible. These two factors, however, are being disregarded to streamline development projects and increase extraction rates.

In 2012, the Jobs, Growth, and Long-term Prosperity Act (Bill C-38) amended several environmental policies through 400 pages of policy. This omnibus budget bill implemented changes to the environmental assessment procedures in Canada through the creation of the new Canadian Environmental Assessment Act 2012 (CEAA 2012). It also decreased the amount of time required for assessments and cut down the level of public participation.^{47,48} To streamline the assessment process, CEAA 2012 now mandates narrow scopes and that testimony must only be heard from those that are "directly affected by the carrying out of the designated project."⁴⁹

Environmental health and human health must be considered to ensure that oil and gas extraction occurs in the safest way possible.

This stipulation towards public participation was proposed by the Energy Policy Institute of Canada (EPIC).⁵⁰ This oil lobby group is comprised of several big players in the Canadian oil and gas sector including Suncor, TransCanada, Enbridge, and the Canadian Association of Petroleum Producers (CAPP).^{51,52} While the nature of lobby groups is to promote interests and try to persuade governments, rarely is this influence so overt as to find precise wording from an oil and gas lobby group embedded within environmental protection legislation.

Perhaps this is unsurprising if you consider the oil industry was able to have meetings or communications with government officials 2,733 times between July 2008 and November 2012.⁵³ For perspective, the 11 charities that work on oil and gas issues were able to secure 485 of these opportunities during the same time period.⁵⁴

It is not uncommon for industry representatives to have strong relationships with government officials as they try to influence regulation decisions. This is a nonpartisan trend that exists across a variety of sectors. It is surprising, however, to find industry representatives acting as regulators. The Alberta Energy Regulator (AER), for example, is a "regulatory body with a mandate to provide for the efficient, safe, orderly, and environmentally responsible development of Alberta's energy resources."⁵⁵ The AER website reveals that 100% of their funding comes from industry,⁵⁶ and that Gerry Protti, the Chair of the Board of Directors, worked for Encana for over 15 years and was the founding member of CAPP.⁵⁷ Protti's appointment as the head overseer of environment and safety in Alberta's oil sector is essentially industry regulating industry. It is important to note that this is not a one-time occurrence. Indeed, industry representatives have been appointed to regulating and monitoring roles by the Canadian

government more than once. At 1:33pm on July 31, 2015, the afternoon of a Friday before a long weekend, the Ministry of Natural Resources posted a news release publicizing the fact that Stephen Kelly had been appointed to the National Energy Board, Canada's energy and safety regulator.⁵⁸ As a former consultant for the energy infrastructure company Kinder Morgan Canada, Kelly's appointment appears to be a conflict of interest given Kinder Morgan's NEB application for the Trans Mountain Pipeline Expansion Project. Indeed, as part of their application, Kinder Morgan filed a report created by Kelly about the financial benefits of this expansion project.⁵⁹ Once again, the industry is regulating industry.

In order for democracy to flourish, the public must be given a chance. Regardless of where you lie along the political spectrum, there must be space for the people of Canada to voice their opinions and concerns against industry. This is being lost. In February 2014, the British Columbia Civil Liberties Association (BCCLA) filed complaints to the oversight bodies of the RCMP and the Canadian Security Intelligence Service (CSIS) alleging that these federal government agencies have been monitoring and spying on the "peaceful and democratic activities" of environmentalists opposed to the proposed Enbridge Northern Gateway Pipeline project, including sign-painting in church basements.⁶⁰ Through documents released under the *Access to Information Act*, BCCLA confirmed that these agencies, in cooperation with the National Energy Board, "engaged in systematic information and intelligence gathering about individuals and organizations opposed to the proposed Enbridge Northern Gateway Pipeline project."⁶¹ The documents also revealed that this information was shared with Enbridge and other oil corporations as well.

If this allegation is found to be true, it is difficult to understand why the government would spend tax dollars to monitor arts and crafts sessions in church basements. Citizen privacy, rights, and freedoms should not be superseded by the nation's desire to participate in global oil markets. Even if the environmentalists are correct about the risks of oil and gas extraction, it will take time to create an energy strategy for Canada that focuses on renewable energy. Until then, we need to work with what we have to the best of our ability. Sustainable development must come through safe and democratic means. We need government policy that is created by government officials, and independent scientific bodies regulating the industry. It is reckless to abandon government regulatory frameworks and allow industry to monitor themselves. What is happening right now is not democracy- it is the fox guarding the henhouse.

Sustainable development must come through safe and democratic means. We need government policy that is created by government officials, and independent scientific bodies regulating the industry.

Series of Five News Media Articles: Article 5

Who Watches the Watchmen?

“Forever our leader.”

This note, along with many others bidding farewell and giving praise, was left on Dr. John Wilmshurst’s office door after he was fired from his role as Resource Conservation Manager at Jasper National Park on June 11.^{62,63} Known for its immense natural beauty, Jasper is a popular destination for nature enthusiasts, skiers, and tourists visiting Canada. It was Dr. Wilmshurst’s task to conserve this gem, a duty he did not take lightly. Last year, he spoke with the Canadian Press about his observations of the melting Athabasca Glacier’s decreasing size.⁶⁴ While an official reason for the scientist’s departure is unknown, many feel that it was because of this interview that this top scientist was fired.



Figure 5. Dr. Wilmshurst, a conservation biologist and wildlife management expert that was recently dismissed by Parks Canada.

Alison Woodley, the national director for Canadian Parks and Wilderness Society, made a statement expressing her shock at the dismissal of Dr. Wilmshurst. “As a scientist John has made an enormous contribution to protecting Canada’s national parks... this news raises even more concern about the future of science and scientists in our national parks.”⁶⁵

The implementation of an independent Science Officer would transcend partisan influences and ensure free flowing and transparent information is exchanged between government scientists and the public.

Attempts to determine why Dr. Wilmshurst was fired are pointless. There is no way to conclusively state that this scientist was fired for speaking to the media about his research, and the public does not have a right to know about the internal human resources and employment decisions of the federal government. Understandably, queries directed to Environment Canada and Parks Canada revealed no information and the dismissal is shrouded in mystery.⁶⁶

It is for reasons like these that Canada is in dire need of a science office to monitor government science and ensure that federal researchers are able to speak with the media. A Science Officer would be able to determine whether the dismissal of Dr. Wilmshurt was unwarranted without publicly discussing employee information with the media. In May, a few weeks prior to Dr. Wilmshurst’s dismissal, the Liberal Party of Canada put forward a motion to stop science suppression.

That, in the opinion of the house: a) the government has constrained the ability of federal scientists to share their research and to collaborate with their peers; b) federal scientists have been muzzled and prevented from speaking to the media about their work; c) research is paid for by taxpayers and must be done in the public interest in order to protect the environment and the

*health and safety of Canadians; and , therefore, d) the government should immediately rescind all rules and regulations that muzzle government scientists... and create a Chief Science Officer whose mandate would include ensuring that government science is freely available to those who are paying for it, namely, the public, and allow scientists to be able to speak freely on their work with limited and publicly stated exceptions.*¹⁶⁷

While the motion was ultimately rejected, it provided the House with lively debate regarding the merits of such a position. Key to this motion is the idea that as taxpayers, the people in Canada must be considered when decisions regarding science are made. Since we are paying for the research, science should be communicated to the public. The implementation of an independent Science Officer would transcend partisan influences and ensure free flowing and transparent information is exchanged between government scientists and the public.

As Canada prepares for an October election and the campaign trail heats up, it will be important to consider which leaders value transparent scientific communication and public knowledge when the party platforms are released.

Classroom Lecture on Science Suppression

Silence in Science



Examining the Effects of Science Suppression in Canada

Amanda Chrisanthus
August 4, 2015





#unmuzzlescience




ED Evidence 4 Democracy @E4Dca · May 27
Great work, Ottawa! Science integrity is on the map & #unmuzzlescience is trending in this city! #cdnsoci #cdnpoli

 Voices-Voix @voices_voix · Jun 17
According to fed govt, if you want to #unmuzzlescience you're #sidingwithterrorists huff.to/1Gt5wQF #DismantlingDemocracy #Cdnpoli

 Josée Nadia Drouin @joseenadia · Jul 24
Une émoticône pour représenter un(e) scientifique muselé(e)! ow.ly/Q1bzA @IsaBurgun) #UnMuzzleScience ow.ly/i/bZeaV

 B Harrington @smarysb · Jun 29
Canadian researchers asked to see @HealthCanada #windturbine noise and health study data - 7months ago. Why? #unmuzzlescience @caroloffcbc

V. Jobson @softgrasswalker · Jun 26
Report on science R&D delayed until after election? #cdnpoli #ConservativesmakingCanadastupidier #unmuzzle:

 André Picard @picardonhealth · Jun 3
Why Canadian researchers need to be more vocal in the media longwoods.com/content/24193 via @elongwoods @MedicineMatters #unmuzzlescience

 David Isaac @DIsaac8 · May 29
Timeline of cuts to Canadian #science scientistsfortherighttoknow.ca/timeline #cdnpoli #unmuzzlescience #cdnsoci



Bob Heaslip @BobHeaslip · May 27

Slides 1-2: For these introductory slides, I will inform students of who I am and what I will be presenting on. Before actually describing science suppression in Canada, I will show students how this is a topic that is active in social media. By using a forum students are familiar with, I hope to make this issue more relatable. For example, the muzzled scientist icons in the corner of the header illustrate that this issue is so relevant to people in Canada, that it is represented in “emojis.”

Science Suppression in Canada



It is all over the news and social media, but
what is science suppression?

Science Suppression in Canada



Government Cuts to Science Funding

- Less funding for research
- Closure of research centres and labs
- Elimination of departments
- Ending advisory positions

The Muzzling of Government Scientists

- Denying media interviews
- Mandating public relations mediator
- Threats of unemployment
- Lawsuits to remain silent

Slides 3-4: At this point in the presentation, I will explain the phenomenon of science suppression in Canada to the students. I will underscore the difference between funding cuts and the silencing of government researchers.

Cuts to Science Funding

“If you restrict public access to information on fresh water by closing libraries, then you limit people’s ability to understand the environmental impact that kind of industrial development will have.”



Cuts to Science Funding – The Closure of DFO Libraries

Slides 5-6: The first part of science suppression that I will discuss with the students will be government cuts to science funding. I will begin with a case study examining the closure of several Department of Fisheries and Oceans libraries. I will explain why this is problematic and touch on the rumours of book burnings. To illustrate the severity of this issue, I will read quotes from concerned scientists and contextualize the issue to students as though they had lost their campus libraries but needed baseline data from decades ago to complete their research.

“What can happen when factual discoveries raise inconvenient questions for politicians?”

“She said ‘you have five minutes to collect important personal things,’ and I said ‘everything here is important to me- this is my life.’”



Cuts to Science Funding – The Silence of the Labs

Funding Cuts to Federal Programs (until 2014)

1. Environmental Emergency Response Program	47. Motor Vehicle Fleet	93. Biogenescence Institute
2. Urban Wastewater Program	48. Inshore Recreational Boat Program	94. Corvids II research Vessel
3. Canadian Foundation for Climate and Atmospheric Sciences	49. Species at Risk Science: Salmon Production Facilities	95. OIL Laboratory for Infectious Salmon Anemia
4. Smokestack Emissions Monitoring Team	50. Northwest Atlantic Fisheries Organization	96. Canadian Physiological Culture Centre
5. Hazardous Materials Information Review Commission	51. At-Sea Observer Programs	97. Brockhouse Institute
6. National Roundtable on the Environment and the Economy	52. Financial Management Services	98. Faints Portable Observatories for Lithospheric Analysis and Research
7. Canadian Environmental Assessment Agency, Winnipeg Office	53. Pacific Forestry Centre, Nanaimo Office (Prince George, BC)	99. Mount Megantic Observatory
8. Municipal Water and Wastewater Survey	54. Canadian Center for Remote Sensing	100. Smack Shack Emissions Monitoring Team
9. Environmental Protection Operations	55. Pulp and Paper Green Transformation Program	101. National Roundtable on the Environment and the Economy
10. Compliance Promotion Program	56. Intrepid Supply Initiative	102. Environmental Protection Operations Compliance Promotion Program, Sustainable Water Management Division
11. Action Plan on Clean Water	57. Clean Energy Fund	103. Environmental Effects Monitoring program
12. Polar Environment Atmospheric Research Laboratory	58. Sustainable Development Technology Canada - Next Generation Enriched Funds	104. Fresh Water Institute
13. Sustainable Water Management Division	59. Program of Energy Research and Development	105. Canadian Centre for Inland Waters (Burlington)
14. Environmental Effects Monitoring Program	60. Pacific Forestry Centre	106. World Ozone and Ultraviolet Radiation Data Centre
15. Federal Contaminated Sites Action Plan	61. Astronomy Interpretation Centre - Centre of the Universe	107. Environmental Emergencies Program
16. Chemicals Management Plan	62. MRI research, Institute Biotechnology	108. Parks Canada
17. Canadian Centre for Inland Waters	63. Fisher Continental Shelf Program	109. Montreal Biosphere
18. Clean Air Agenda	64. Canadian Neutron Beam Centre	110. Statistics Canada
19. Air Quality Health Index	65. Aquatic Ecosystemology, Aquatic and Crop Resource Development	111. Fields Institute for Research in Mathematical Sciences
20. Species at Risk Program	66. Molecular Biochemistry Laboratory, Aquatic and Crop Resource Development	112. Laboratory for the Analysis of Natural and Synthetic Environmental Toxicants
21. Weather and Environmental Services	67. Plant Metabolism Research, Aquatic and Crop Resource Development	113. National Ultrahigh-field NMR Facility for Solids
22. Substance and Waste Management	68. Human Health Therapeutics research program	114. InEFrac AMS Facility
23. Ocean Contaminants & Marine Toxicology Program	69. Automobile and Surface Transportation program	115. Canadian Physiological Culture Centre
24. Experimental Lakes Area	70. Magnetic Resonance Imaging Research	116. Canadian Resource Centre for Zebrafish Genetics
25. DFO Marine Science Libraries	71. Environmental Risks to Health program	117. Neuroendocrinology, In vivo Laboratory at the University of Western Ontario
26. Centre for Offshore Oil & Gas Energy Research	72. Substance Use and Abuse program	118. Canadian Centre for DNA Encoding
27. Kilauea Coast Guard Station	73. First Nations and Inuit Primary Health Care program	119. Portable Observatories for Lithospheric Analysis and Research Investigating (POLARIS) (Ontario)
28. St. Johns Marine Traffic Centre	74. Health Infrastructure Support for First Nations and Inuit program	120. Canadian Institute for Theoretical Astrophysics
29. St. Anthony's Marine Traffic Centre	75. Inuita Federal Health Program	121. Brockhouse Institute for Materials Research
30. Conservation and Protection Office x Atlantic Lobster Sustainability Measures Program	76. Female Farm Rehabilitation Administration	122. St. John's Centrifuge Modeling Facility
31. Species at Risk Program	77. Environmental Knowledge, Technology, Information, and Measurement program	123. Quebec Eastern Canada high field NMR facility
32. Habitat Management Program	78. Science, Innovation and Adoption program	124. Filsil d'Hélie Reference Center for Bacterial Viruses
33. DFO Institute of Ocean Sciences (Sidney, BC)	79. Rural and Co-operation Development program	125. Canadian Neutron Beam Laboratory
34. Freshwater Institute - Winnipeg	80. Farm Debt Mediation Service	126. The Computer Client Canada
35. Oil Spill Counter-Measures Team	81. Centre for Plant Health (Sidney, BC)	127. Center for Innovative Geochronology
36. Maurice-Lamontagne Institute's French language library	82. National Aboriginal Health Organization	128. Biogenescence Institute
37. Canadian Coast Guard Management	83. First Nations Statistical Institute	129. Pacific Institute for the Mathematical Sciences
38. Water Pollution Research Lab (Windsor, BC)	84. Cultural Connections for Aboriginal Youth	130. Pacific Northwest Conversion Synchrotron Radiation Facility
39. Water Pollution Research Lab (Windsor, ME)	85. First Nations and Inuit Health	131. Centre for Molecular and Materials Science at TRIUMF
40. Water Pollution Research Lab (Burlington, ON)	86. Fertilizer Pre-Market Efficacy Assessment program	132. Pacific Centre for Inorganic and Geochemical Research
41. Water Pollution Research Lab (Montreal, QC)	87. Enforcement of Product of Canada label	133. Canadian Cosmogenic Neutron Exposure Dating Facility
42. Water Pollution Research Lab (Moncton, NB)	88. e-SMARSAT Constellation Mission	134. Atlantic Regional Facilities for Materials Characterization
43. Water Pollution Research Lab (Dartmouth, NS)	89. Whangmoungas Kangiangyik Research station	135. The Canadian SuperDMN/PolarDMN facility
44. St. Andrew Biological Station	90. Khazir Lake Research Station	
45. Canadian Scientific Submersible Facility	91. Banff/In situ Marine Science Centre	
46. Ice Information Partnership	92. Microfungal Collection and Herbarium	

Slides 7-8: I will continue discussing cuts to science funding by showing students the first minute of “Silence of the Labs,” the Fifth Estate segment that illustrates the loss of science infrastructure in Canada. The first minute is a very good introduction to the piece, and I personally feel will hook students to watching it later (or even the course instructor to show it in class another time). The next slide is deliberately cumbersome. The point is for students to see the volume of funding cuts that have been taking place. Over 130 laboratories and research centres have lost some or all of their funding. This slide conveys the magnitude of that number. I will also direct students to the Fifth Estate website where the list can be seen in its entirety.

Changes to CIHR Funding



- Elimination of several grant opportunities
- Removal of face-to-face interviews
- Implementation of a system that benefits senior researchers over new ones

“Losing a complete generation of promising scientists to an administrative revamping of the operating grant programs would be a disaster, certainly for these individual scientists, but also for the competitiveness of Canada in research and discovery.”

Muzzling Government Scientists

Slides 9-10: Continuing the discussion of funding cuts, I will describe the new changes to the Canadian Institutes of Health Research funding process. I will describe how this increases the challenges faced by researchers and emphasize that the changes make it difficult for younger researchers to receive funding. The next part of my presentation will focus on the muzzling of government scientists and the restrictions on their freedom of speech.

The Importance of Science Communication

African Golden Wolf, a New Species of Wild Dog, Discovered

“They look alike, act alike and long have been considered to be the same species. But, in the case of the golden jackals found across parts of Africa, the Middle East, Asia and Europe, it turns out that appearances can be deceiving. Scientists said on Thursday a comprehensive genetic analysis found that these populations are made up of two entirely distinct species, with those in Africa different from the others.”

Thomson Reuters. (2015). “African golden wolf, a new species of wild dog, discovered.” *Canadian Broadcasting Network*. Published 30 July 2015. Online at: <http://www.cbc.ca/news/technology/african-golden-wolf-a-new-species-of-wild-dog-discovered-1.3174118> (Accessed August 1, 2015).

Genome-wide Evidence Reveals that African and Eurasian Golden Jackals Are Distinct Species

“The golden jackal of Africa (*Canis aureus*) has long been considered a conspecific of jackals distributed throughout Eurasia, with the nearest source populations in the Middle East. However, two recent reports found that mitochondrial haplotypes of some African golden jackals aligned more closely to gray wolves (*Canis lupus*), which is surprising given the absence of gray wolves in Africa and the phenotypic divergence between the two species.”

Koepfli, Klaus-Peter, John Pollinger, Raquel Godinho, Jacqueline Robinson, Amanda Lea, Sarah Hendricks, Rena M. Schweizer et al. (2015). “Genome-wide Evidence Reveals that African and Eurasian Golden Jackals Are Distinct Species.” *Current Biology* (online) [http://www.cell.com/current-biology/abstract/S0960-9822\(15\)00787-3](http://www.cell.com/current-biology/abstract/S0960-9822(15)00787-3).

Slide 11: While this slide is text heavy, I feel that it is important to include in this presentation as it underscores the importance of interviews with scientists. There is a comparison of a news media interview and a journal article discussing the same topic. One is very easy to understand, and one is well beyond the comprehension of non-scientists. I feel that this slide will convey why science suppression is so strong a problem.

Muzzling Case Studies



- Scott Dalimore, a geoscientist at Natural Resources Canada, was prohibited from discussing a study that had already been published in *Nature* about a 13,000-year-old flood.
- Kristi Miller, a researcher at the Department of Fisheries and Oceans, was not allowed to publicly discuss her work on decreasing salmon populations with the media, even though her findings had previously been featured in *Science*.
- David Tarasick, an Environment Canada environmental scientist, was not allowed to publicly speak about the research he conducted on the ozone layer research, despite having already published his data in *Nature*.

Science Muzzling – A Blizzard of Democracy

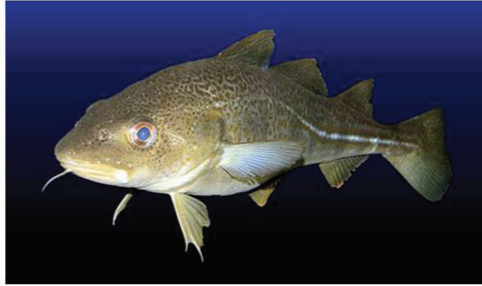


- *Study*: Analysis of snowfall patterns to better understand snowstorms; study conducted by NASA and the National Research Council(NRC)/Environment Canada
- *Request*: “What’s this joint study that you and NASA are doing on falling snow?”
- *Response from NASA*: 15 minute phone call during which all questions were answered
- *Response from NRC*: email with very little information after hours of internal debate between 11 government bureaucrats

Slides 12-13: The next slides contain some case studies of government scientists who were not allowed to speak to the media about their results. For the first slide on this page, I will just briefly describe these examples. I feel that even these short points illustrate the problem effectively. For the second slide pictured here, I will describe the story of the media request that took hours to get an answer from government bureaucrats. This story, mentioned in one of my news media articles, will highlight the shortcomings of Canadian science communication with the media through a comparison with NASA. It is almost comical how ineffective this media request was, a point that I plan to make clear to the students.

Atlantic Cod Collapse of 1992

By 1986, scientists had already concluded that there had been an overestimation of the size of cod populations for almost a decade.



The cod collapse was the “most wrenching societal upheaval since the Great Depression... Communities are in crisis. The people of the fishery are in turmoil.”

- Earle McCurdy, president of the Fish, Food, and Allied Workers Union

A Knight in Muzzled Armour

Dr. Ransom Myers



“The critical issue here is northern cod collapse. There was delay before a moratorium was declared on the rest of the cod stocks in eastern Canada. Why was this? There was direct suppression of information... that led to a one-year delay in examining the state of other cod stocks....During this year delay, 70% of the remaining cod were removed and this caused a much greater collapse in the rest of eastern Canada than was needed. We could have stopped fishing then. **It was a direct decision, a bureaucratic decision, to suppress the information.**”

Slides 14-15: At this point in the presentation, I will underscore that science suppression is not an issue that is only plaguing our current government. I will describe the Atlantic cod collapse of the early 1990s to explain to students that if we do not do something about science suppression, the economy will suffer. As part of this explanation, I will read testimony from Dr. Ransom Myers’s appearance in the House of Commons to talk about the failure of the government during the cod collapse.

Why Should You Care?

- You are paying for this research as taxpayers
- You might be pursuing a career in research
- You are unable to make informed decisions
- Policy development is not based on science
- Numerous environmental and health effects

What Can You Do?



- Write to your MPs!
- Join a campaign promoting free information flow between government researchers and the public
- Do your research and vote in October!

Slide 16-17: As the presentation concludes, I will help students realize that this is an issue that is directly relevant to their lives. I will encourage students to vote, and to consider this issue as they go to the polls in October. I will not tell students to vote for a particular party, but I will encourage them to research which campaign platforms include the issue of science suppression and the implementation of a Science Officer position in parliament. I will also look up whether students can vote on their campus and include this information in the presentation as well.

“Information is the lifeblood of a democracy. Without adequate access to key information about government policies and programs, citizens and parliamentarians cannot make informed decisions and incompetent or corrupt governments can be hidden under a cloak of secrecy.”

- Stephen Harper, 2005

Slide 18: The last slide of my classroom lecture will feature this quote from Stephen Harper. While I personally find it highly ironic, the students in the class that support the Prime Minister will find it inspiring. I will simply read the quote as my last words and let the students interpret it as they please. The goal is to keep the presentation non-partisan and I feel that ending with this quote will help me to conclude on a (seemingly) balanced note.

Conclusion

“Tonight, my friends, our great country has voted for change.”
- Prime Minister Harper, 2006 (Martin, 2010, p.1).

Following his first successful election as Prime Minister of Canada, Stephen Harper opened his victory speech to the country with this statement. Looking back to this moment with over eight years’s worth of hindsight, these words have a chilling resonance.

Throughout the reign of the Harper government, Canada has undergone dramatic political change across numerous sectors. Environmental legislation in particular has been affected greatly, with policy changes being implemented that amended numerous protective regulations. Unfortunately, government scientists are being silenced, prevented from speaking to the public about their research. This keeps the people of Canada uninformed about the true effects of the oil and gas industry on the environment. It also denies people the knowledge of how their tax dollars are spent on research. Science funding is also being cut dramatically, with hundreds of research centres experiencing cuts to their funding (or even elimination of funding altogether) during the Harper government’s tenure.

Two days before this project was submitted, Prime Minister Harper’s request for Parliament to be dissolved was met; the writs were issued and the election was called on Sunday, August 2, 2015 (The Canadian Press, 2015a). This will be the longest, and subsequently most expensive, federal election campaign in recent Canadian history. The Conservative Party of Canada has the most political donations out of all the other parties, giving them a strategic advantage when campaigning for 78 days (CBC -The House, 2015).

During election campaigns, the issue of citizen apathy frequently arises. Low voter turnout and little interest in the political system are critical issues that are often cited as contributing to poor democratic health. A lack of accountability for unfair decisions, however, is also a factor that affects the health of a democracy. It is for this reason that I chose to do this major research project in the form of articles and a presentation to university students. I want to make the issue of science suppression relatable, relevant, and memorable while going to the polls in October.

Challenges

The primary challenge that I had while writing the news media articles was writing in a non-partisan fashion. While I did attempt to model my writing after right-leaning media outlets, I found that this was not a helpful strategy as these arguments were often poorly constructed. There were holes in the logic, or the omission of an obvious idea that would undermine the point of the article. Arguments used inflammatory rhetoric, were fragmented, and rarely sourced. Conservative media personality Ezra Levant, for example, takes on the issue of freedom of speech, pointing out the censorship that often occurs when people speak about issues regarding sexuality and gender on university and college campuses (Levant, 2015). Levant’s argument fails when he does not consider the reasons for censorship, failing to acknowledge that the language used is often oppressive and offensive and may constitute hate speech. Another example of flawed debates can be seen in a recent Forbes article titled “Earth to Environmentalists: Celebrate Florida’s Turn to Natural Gas” (Clemente, 2015). In this article, the author fails to explain why environmentalists are perturbed by the increase in hydraulic fracturing (“fracking”), portraying their concerns as trivial impediments to the financial gains that could be seen from extracting

shale gas. By describing the decreased CO₂ emissions that would occur from fracking, the author disregards the other pollution and contamination that this technology generates. Such are the flawed arguments found in the writing style that I attempted to emulate for my MRP. This challenge, however, encouraged me to carefully consider the use of tone and language while writing, and ensure that science suppression was presented in a balanced and non-partisan fashion.

Another challenge that I encountered was securing interview participants for this project. To contribute to the depth of these articles, I had intended to include excerpts from interviews that I conducted with scientists in these articles. Early on, I reached out to academic scientists and environmentalists by email and eventually conducted four interviews during the month of May asking about the relationship of science to democracy and their thoughts on science suppression in Canada. After analyzing participant responses, however, I realized that the people I reached out to would not be deemed credible experts by a right-leaning audience. I then attempted to secure interviews from government scientists in late May and early June, but was unsuccessful. I had many candid conversations with researchers off the record where they would comment on the overall despondent atmosphere surrounding federal scientists, but every single person refused to be quoted (even anonymously). Because of this oversight and lack of planning for a right-leaning audience, the articles in this project rely on interviews that were already published.

Next Steps

After this project has been submitted, I will send emails to university professors that teach first year science classes (biology, chemistry, and environmental science and studies) to see if they would be interested in presenting this lecture to their students prior to the election. If the professors are amenable to this, I would research the academic institution further and see how they facilitate voting on campus. This information would be added at the end of the presentation.

After I have defended this project and received feedback for the articles and the presentation, I will incorporate suggestions to both project components. I will then attempt to publish the articles in advance of the election, and use the revised presentation for the classroom lecture. As mentioned before, my goal is to make the intended audience of these project outputs aware of the issue of science democracy and to help them consider this as they go to vote in October. Hopefully, with enough public knowledge as to how democracy has been eroded over the past several years, at this election, the people of this great country will indeed vote for change.

Series of Five Articles - End Notes

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