

Merrymeeting News

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The Newsletter of Friends of Merrymeeting Bay • PO Box 233 • Richmond Maine 04357 • 207-666-1118 • www.fomb.org

Friends of Merrymeeting Bay (FOMB) is a 501(c)(3) non-profit organization. Our mission is to preserve, protect, and improve the unique ecosystems of the Bay through:

Education

Conservation & Stewardship

Research & Advocacy

Member Events

Support comes from members' tax-deductible donations and gifts.

Merrymeeting News is published seasonally and is sent to FOMB members and other friends of the Bay. Article hyperlinks and color images are available in our [online edition](http://www.fomb.org) at www.fomb.org

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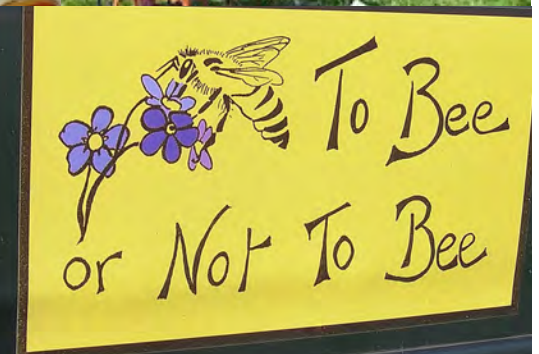
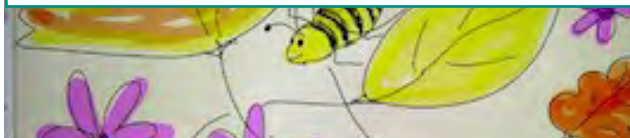
To Bee or Not to Bee

On October 13 and 14, with help from the New England Foundation for the Arts (NEFA), FOMB brought the [Piti Theatre Company](#) to town! The Massachusetts artists Jon Mirin and Laura Josephs performed their show *To Bee or Not to Bee* live and outside in sunny 70-degree weather at the Bowdoinham and Bowdoin elementary schools. The 45-minute play deals with critical threats to pollinators, part of the major worldwide decline in insect populations.

The shows were a resounding success. At Bowdoinham the entire school attended (about 180 students plus faculty); and at Bowdoin about 120 students plus teachers enjoyed their first assembly since the pandemic began.

The careful structure of the performances (even with its participatory nature) made it safe for viewers and actors.

Thanks to NEFA, Jon, Laura, and Ezekiel (Jon's son) for help with load-in and -out, Kathleen McGee for lodging, and the teachers, principals, and enthusiastic audiences who made this possible. A special virtual production of the show will be our final Winter Speaker Series Zoom presentation on May 11, 2022, just in time for pollination!



A “Climate Solution”? Big Hydro Is Anything But

A growing body of peer-reviewed scientific evidence shows large-scale hydropower generation is a significant source of greenhouse gas emissions.

By Ana Simeon, Reprinted from [Watershed Sentinel](#) October 5, 2021 (edited here for length)

The mantra about hydropower as a climate solution has been repeated so often that it seems self-evident—no longer placing any burden of proof on its proponents.

Forcible displacement. Massive deforestation. Loss of Indigenous cultural sites. Flooding of agricultural land. The litany of destruction unleashed in the wake of hydroelectric megaprojects has been known and documented for decades. Yet these inconvenient truths are often brushed aside as governments around the world rush to build thousands of new dams and reservoirs in the name of “fighting climate change.”

The mantra about hydropower as a climate solution has been repeated so often that it seems self-evident, no longer placing any burden of proof on its proponents. Until a recent proposal in Massachusetts to purchase power from Hydro-Québec as a way of meeting Massachusetts’ climate goals, even anti-dam activists rarely challenged Big Hydro’s climate claims.

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Rozengurt, M. 1991. *Strategy & Ecological & Societal Results of Extensive Resources Development in the South of the USSR.*
National Council for Soviet & East Europe Research, Washington, D.C.

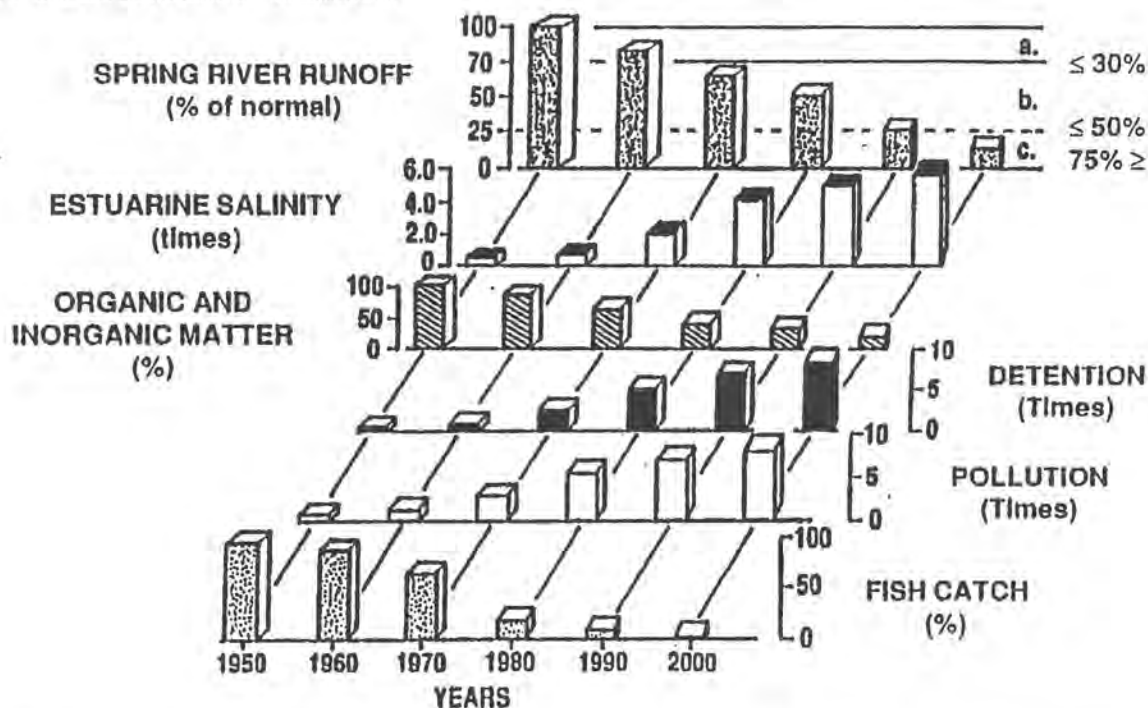


Figure 8. Conceptual chain reaction between spring river runoff and some major chemical, physical and economic parameters in the delta-estuary-sea economy.

- a. Range of natural limitations in spring fresh water diversions $\leq 30\%$ of normal.
- b. Detrimental range of spring diversions for living and non-living resources $\leq 50\%$ of normal.
- c. Range of residual spring runoff irrevocably damaging to environment and economics of ecosystems $75\% \geq$ of normal.

A “Climate Solution”? continued from page 2

Hydropower’s “clean energy” status was baked into the 1997 Kyoto Protocol and its Clean Development Mechanism, endowing the sector with preferential access to global climate finance for decades to come. Hydropower’s special status continued under Kyoto’s successor, the Paris Accord. Since then, powerful hydro utilities have entrenched themselves within the corridors of international climate diplomacy, aggressively lobbying for their dam-building agenda at the various COP (Conference of the Parties) summits.

Hydro-Québec’s largest reservoir, Caniapiscou, has a carbon footprint double that of coal power: about 2,200g CO₂-equivalent per kilowatt/hour.

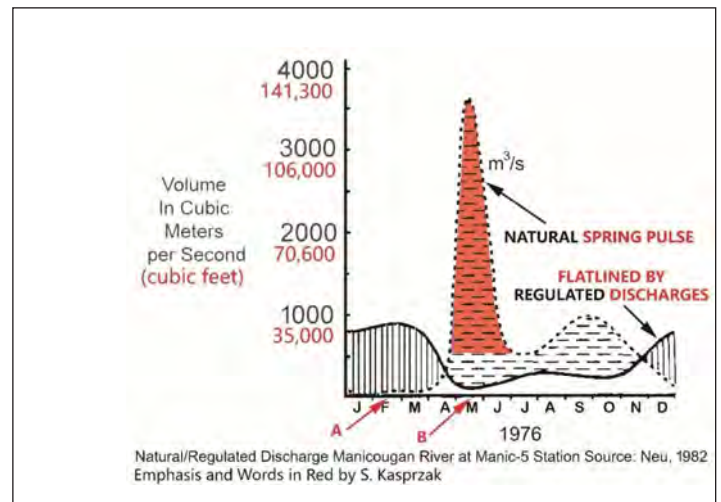
But a growing body of peer-reviewed scientific evidence shows that, far from being a climate solution, large-scale hydropower generation is a significant source of greenhouse gas emissions. A 2016 study by Swiss researchers that assessed the emissions of 1,500 dams and reservoirs around the world found that Hoover Dam and Lake Mead on the Colorado River near Las Vegas emit as much CO₂-equivalent, per kW/hour, as a coal-fired power plant.¹ On average, dams and reservoirs emit twice as much greenhouse gases as they store, according to a German study published in 2021.² As a particular concern, the German study highlighted the release of methane, a much more potent greenhouse gas than CO₂.

Why do reservoirs generate so many emissions?

When lands are flooded, vegetation decomposes under water and generates methane, which bubbles up through the water column and into the atmosphere. Initially, scientists thought that emissions would spike for a few years after flooding and then subside. But more recent measurements have shown that reservoirs continue to emit significant amounts of both CO₂ and methane throughout their lifecycle. This is because of the constant change in reservoir water levels, as utilities manipulate water flows to optimize power production. When large amounts of water are released to meet seasonal peak demand for power, reservoir levels drop, and previously vegetated areas are exposed to air. This speeds up decomposition, increasing emissions. Meanwhile, new vegetation grows on exposed reservoir slopes until the water levels rise again. This creates a perpetually renewing cycle of emissions.

How much a reservoir emits depends on a variety of factors, such as location, rainfall patterns, and reservoir age and size. Emissions differ wildly between different reservoirs, and studies cannot simply be extrapolated from one site to another. For a long time, it was believed that tropical reservoirs caused the most emissions. But recent studies show the key driver of climate impact is the amount of biological activity within a reservoir, rather than latitude: six of Hydro-Québec’s reservoirs are among the top 25% emitters of hydro plants worldwide. Québec’s largest reservoir, Caniapiscou, has a carbon footprint double that of coal power: about 2,200g CO₂-equivalent per kilowatt/hour

The IPCC report released in August is a “code red” warning. We can’t afford to give Big Hydro a pass based on industry propaganda. Any new hydropower proposal should undergo a climate test—a rigorous carbon accounting that must also include downstream emissions and assess the proposed hydropower project against other renewable alternatives.



Vital annual spring freshets, exporting nutrients and minerals like silica necessary for diatom growth, fishery health, and carbon sequestration, are flat-lined when rivers are dammed and flows altered. Neu, 1982. Enhancements: Arctic Blue Deserts.

1. [“Hydropower’s Biogenic Carbon Footprint.”](#)
2. Helmholtz Centre for Environmental Research–UFZ. [“Carbon emissions from dams considerably underestimated so far: Researchers re-evaluate the role of dams in the global carbon cycle.”](#) ScienceDaily, 13 May 2021.

Landmark Federal Court Ruling against the FCC

On August 13, 2021 the U.S. Court of Appeals for the D.C. Circuit ruled the Federal Communications Commission (FCC) ignored scientific evidence and failed to provide a reasoned explanation for its determination that its 1996 regulations adequately protect the public against all the harmful effects of wireless radiation.

The legal case challenged the FCC's 2019 decision not to update its 1996 regulations regarding allowable radio frequency radiation (RF) exposures from wireless technologies including 5G, cell phones, cell towers, Wi-Fi, and wireless networks.



Evidence of Harmful Effects below FCC Limits

FCC limits are based on the outdated belief that heating is the only proven harm from RF. Over 11,000 pages of evidence—447 exhibits in 27 Volumes—were submitted to the Court documenting biological effects and illness from wireless radiation exposure below heating levels. Research has found brain damage, headaches, memory problems, reproduction damage, synergistic effects, nervous system impacts, brain cancer, and genetic damage, as well as harm to trees, birds, bees, and other wildlife.

The Court Findings

The ruling stated that the FCC's "arbitrary and capricious" decision to maintain their 25-year-old exposure limits did not address evidence indicating non-cancer harm, such as impacts to children, testimony of persons injured by wireless radiation, impacts to the developing brain, impacts to the reproductive system, and impacts to wildlife/environment.

The Court Order

The Court ordered the FCC to provide a reasoned determination as to whether the evidence warrants a change to 1996 RF limits, especially in regard to children's vulnerability, long-term exposure, environmental impacts, new technological developments, the ubiquity of wireless, and how the FCC's cell-phone tests only measure heat and allow a space between the phone and body.

The Court found that the FCC had "completely failed" to address the "substantive evidence of potential environmental harms" on the record, which included science showing serious impacts to birds, bees, trees, and plants.

The Bottom Line—FCC Compliance Does Not Ensure Safety

Most of the public assumes that current FCC safety limits for cell phones, cell towers, smart meters, Wi-Fi, 5G, and wireless networks are based upon an up-to-date robust review of all relevant research. This assumption of safety is now clearly documented to be erroneous.

Lack of Oversight by Health and Environmental Agencies

The ruling reveals a lack of accountability with our federal health agencies regarding wireless radiation. The EPA, CDC, NIOSH, and NCI did not submit any reports to the Court, revealing that none of these agencies has reviewed the science on health effects to ensure safety for the public. The U.S. has no pre-market safety testing for health effects, no post-market surveillance, no environmental monitoring, and no meaningful interagency coordination.

The Court Did Not Agree That "Cell Phones Do Not Cause Cancer"

Contrary to the wireless industry's recent claims, the Court did not make a scientific determination regarding wireless and cancer. The ruling simply stated that in regard to cancer the FCC passed the minimum legal requirement for adequate review by at least referencing the reasons why the FCC dismissed cancer evidence. The FCC cited rejections of NIH studies by the FDA and ICNIRP—a small group with no oversight and whose members have a long history of industry ties.

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Landmark Federal Court Ruling against the FCC, Continued from Page 4

Children’s Vulnerability Ignored by the FCC

The Court states the FCC “dismissed” the American Academy of Pediatrics recommendations for strengthened regulations that ensure children and pregnant women would be protected. The Court found the FCC failed to explain why it ignored research indicating children were more vulnerable to wireless, i.e., that their developing brains are more sensitive, they absorb higher levels of RF deeper into their brains, and they will have a lifetime of exposure.

Wildlife Remains Unprotected

FCC’s limits were designed in 1996 to protect only humans, not flora or fauna. The Court found that the FCC had “completely failed” to address the “substantive evidence of potential environmental harms” on the record, which included science showing serious impacts to birds, bees, trees, and plants.

Timeline

1980s: EPA tasked to develop RF safety limits for heating and biological effects.

1996: EPA is fully defunded and halts all research on RF. The FCC adopts RF limits developed by industry-tied groups, based on heating.

1999: FDA requests the National Toxicology Program (NTP) study RF because of the lack of safety data on long-term exposure.

2008/2009 Congressional hearings

2011: Wireless RF classified as a “possible” Class 2B Carcinogen by WHO/International Agency for Research on Cancer.

2012: GAO report recommends FCC rules be reassessed to reflect current use patterns and recent science.

2013-2019: FCC opens record on RF limits; gets over 1,000 submissions.

2018: NTP/NIH releases \$30M animal study concluding “clear evidence” of cancer. FDA rejects the findings.

2019: FCC closes record, decides not to update its 1996 wireless RF limits.

2020: Cases filed against FCC.

2021: Ruling against FCC.

[Link to timeline hyperlinked to sources.](#)

Petitioners and Briefs

Environmental Health Trust (EHT), *Consumers for Safe Cell Phones*, Elizabeth Barris, and Theodora Scarato.

Children’s Health Defense (CHD), Michelle Hertz, Petra Brokken, Dr. David Carpenter, Dr. Toril Jelter, Dr. Paul Dart, Dr. Ann Lee, Virginia Farver, Jennifer Baran, and Paul Stanley M.Ed. CHD’s case was consolidated with EHT’s case by the Court. [Briefs and evidence were jointly filed.](#)

Amicus briefs were filed by [Natural Resources Defense Council](#), [Attorney Joe Sandri](#), includes the declaration of [Dr. Linda Birnbaum](#), former Director of the National Institute of Environmental Health Sciences, [Kleiber Family](#), [Building Biology Institute](#).

Key Resources

[Court ruling 8/13/2021](#)

[Evidence \(11,000 pages\)](#) (download PACER files)

[EHT press conference](#)

[CHD press conference](#)

Courtesy: Environmental Health Trust Fact Sheet

And in Maine, on October 6, FOMB attorney William Most argued before the Maine Supreme Judicial Court that FAA recommendations for tower lighting (and, by default, microwave emitting radar) at the Chops cannot preempt state law.

Former Naval Air Station Brunswick Has Contaminated Maine Mussels

I visited Maine during the last few days in October to test the surface water in Brunswick, Bath, and Kittery. I'm worried about PFAS (perfluoroalkyl and polyfluoroalkyl substances) in the fish and the seafood. My sampling plan in the Brunswick/Bath area was to try and catch surface water samples above and below Bath Iron Works, south of the Naval Air Station Brunswick near some previous Mere Creek sites, and then near the outfall of the Brunswick wastewater treatment plant in the tidal Androscoggin River. I was guided by FOMB volunteers Martha Spiess, Barbara West, and Ed Friedman.

Whenever I read or hear about PFAS in the news it always seems to be about contaminated drinking water. That's because the federal government and the U.S. military prefer talking about PFAS in municipal water systems where the problem is slowly being resolved. They don't want to address the environmental disaster and public health crisis caused by these chemicals in our surface water and groundwater.

PFAS are perfluoroalkyl and polyfluoroalkyl substances, and they're bad news. Arguably, the two most dangerous varieties of PFAS are PFOS (perfluorooctane sulfonate) and PFOA (perfluorooctanoic acid). They are used in a host of military and industrial applications. They never break down, and they move through soil, water, and wildlife, bioaccumulating to higher concentrations as they move up the food chain into those at the top, like us. PFAS have earned the nickname forever chemicals. They're linked to several cancers and profoundly affect the developing fetus. Think ADHD, obesity, hypertension, hypothyroidism, and gastroenteritis in children, as well as impairment of the liver, kidney, and immune systems. PFAS are associated with delayed menarche and mammary gland development. Experts say ingesting as little as 1 part per trillion (ppt) of these chemicals in drinking water may be dangerous.

In 2016, the EPA established a health advisory for PFOS and PFOA in drinking water at 70 ppt. Although at the time, the EPA recognized that the dominant source of human exposure to PFAS was primarily diet and other industrial sources, like indoor dust from carpets. The health advisory was calculated using a contribution of 20% from the water, which allows for PFAS exposure from other sources to make up the additional 80% exposure.

The European Food Safety Authority estimates that 86% of the PFAS in our bodies comes from food, especially seafood caught from contaminated waters. When we allow for the carpets and the dust and the frying pans, this doesn't leave much of a slice of the pie for municipal water, which, in the case of Brunswick, is reported to be PFAS free. Instead, it's the fish, the mussels, and pretty much everything we eat from the rivers and the sea that are making us sick.

Groundwater Contamination

For more than 40 years the Navy recklessly discarded thousands of gallons of toxic firefighting foam into the ground in Brunswick. This region will suffer the consequences for a millennium—and perhaps forever. The DOD reported groundwater at the former Naval Air Station Brunswick was contaminated with concentrations of PFOS at 24,000 ppt and PFOA at 15,000 ppt. Combined, that's 39,000 ppt. In June 2021, the Maine Legislature established a new interim state drinking water standard of 20 ppt for the combined sum of six different PFAS: PFOA, PFOS, PFHpA, PFNA, PFDA, and PFHxS. The groundwater coming out of the base is 1,950 times over the limit.

People who drink from wells near military bases are in peril. Although PFOS plumes are known to travel many miles, the DOD says it recently [sent notifications](#) to agricultural operations within just one mile of the former Brunswick installation, warning of the contamination in groundwater.

Surface Water Contamination

The Navy reported during a Restoration Advisory Board (RAB) meeting on July 21, 2021, that water from a storm drain at the airfield contained concentrations of 8,260 ppt of PFOS and 339 ppt of PFOA. Unfortunately the latest RAB meeting minutes posted or broadcast online are from 2019.

The European Environmental Quality Standard limit value is .65 ppt for inland surface waters. The Wisconsin Department of the Environment says more than 2 ppt of PFOS in surface water is a threat to human health. Brunswick has 8,260 ppt in surface waters near the airfield.

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Former Naval Air Station Brunswick Has Contaminated Maine Mussels, Continued from Page 6

What about the Mussels?

In 2020 two Ribbed Mussels at the mouth of Mere Creek where it empties into Harpswell Cove were tested by [Brunswick Area Citizens for a Safe Environment \(BASCE\)](#). Harpswell Cove receives freshwater input from Mere Creek, which drains portions of the former Naval Air Station Brunswick. Total PFAS contents were 10,500 and 12,020 ppt dry weight. Another nearby site was similar but somewhat lower, and a third site further south had considerably lower concentrations although still high. The state of Maine tested Blue Mussels from further south in Harpswell Cove in 2014 and 2016 and found PFAS levels up to 5,320 ppt. Toxicity diminished with distance from BNAS.

I was surprised to find low PFAS levels in South and North Bath of 3.7 and 7.2 ppt respectively. The Brunswick WWTP Outfall was also a surprise but with reasonably high levels of 183.1 ppt, almost identical to a pond adjacent to the Otis Air National Guard base in E. Falmouth, MA. Unfortunately we could not find the original Mere Creek sites to resample.

In July, Maine adopted a law that will ban PFAS in products like food packaging. The state, however, has not moved to regulate the food in that packaging—and that brings us back to the mussels. Almost all of the attention given to PFAS in the media is focused on the levels of toxins in drinking water, while few address the seafood. What’s in your fish?

*Pat Elder, investigative journalist, “citizen scientist,” and Director, Military Poisons.
For more information: [FOMB/Cybrary/Chemical/PFAS](#)*

WE NEED YOU! PLEASE SUPPORT OUR IMPORTANT WORK

FOMB Leadership

Our accomplishments are due to the hard work of dedicated volunteers, especially those who serve on our committees. If you want to get involved and serve, please contact the committee chair or Ed Friedman. We always welcome member input and we’d love for you to join us!

Steering Committee

- Ed Friedman, Chair (Bowdoinham)
- Vance Stephenson, Treasurer (Kettering, OH)
- Tom Walling, Secretary (Bowdoinham)
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| <input type="checkbox"/> \$1,000+ Sturgeon | <input type="checkbox"/> \$250 Striped Bass | <input type="checkbox"/> \$20 Smelt |
| <input type="checkbox"/> \$750 American Eel | <input type="checkbox"/> \$100 Shad | <input type="checkbox"/> Other |
| <input type="checkbox"/> \$500 Wild Salmon | <input type="checkbox"/> \$50 Alewife | |

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|-------------------------------------|---|
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| <input type="checkbox"/> New Member | <input type="checkbox"/> I would like a sticker |

\$7 Enclosed (optional) for a copy of Conservation Options: A Guide for Maine Land Owners [\$5 for book, \$2 for postage].



Thanks to Rebecca Bowes for newsletter layout.



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The Big Footprint of Mega Dams and Flow Regulation

Some of the impacts of this big footprint that should have been included in regulatory hearings for NECEC, fisheries policies, and climate change discussions.

From Sebago Lake we learned the impacts of flow regulation and dams:

- Beach erosion and loss
- Water quality degradation
- Fishery changes
- Lake wetland losses and degradation
- Groundwater flow changes and stagnation
- Heat pollution of the water
- Fragmentation of ecosystems
- Invasive species proliferation

-From mega dam opponent groups:

- Mercury pollution of food chain
- Methane releases from reservoirs
- Loss of biodiversity
- Sedimentation
- Destruction of valuable recreational lands
- Freshwater fishery destruction
- Loss of valuable forests
- Social culture losses and disintegration
- Loss of biodiversity
- Species extinction

From information gathering efforts by environmental organizations and the book, *Arctic Blue Deserts*

- Weakening of coastal and ocean currents
- Key initial direct driver for melting sea ice
- Increased humidity of Arctic air in fall and winter
- Key driver causing Earth's Energy Imbalance in the Arctic
- Amplifies impacts of fossil fuel emissions
- Harming natural CO2 removing mechanisms
- Increases in intensity of weather events
- Heat pollution of rivers, oceans, and the atmosphere
- Melting of Greenland glaciers
- Sea level rise
- Destruction of valuable marine fisheries and mammals
- Reducing diatom populations
- Melting land and under sea permafrost
- Major driver of atmospheric CO2 increases
- Major driver of climate change especially in high latitude regions