

Society  
of Canadian  
Limnologists



Société  
canadienne de  
Limnologie

The Honourable Dr. Gary Goodyear, P.C., D.C., F.C.C.S.S.  
Minister of State (Science and Technology) House of Commons  
Ottawa, Ontario  
K1A 0A6

May 6<sup>th</sup>, 2013

Dear Minister,

I am writing to you in my capacity as President of the Society of Canadian Limnologists, Canada's foremost society of freshwater scientists. In recent statements to the media and in the House of Commons, you indicated that whole-lake experiments like those performed at Canada's Experimental Lakes Area (ELA) are unnecessary and out-dated and may be replaced by smaller scale experiments that do not jeopardize the entire lake<sup>1</sup>. I see two serious inaccuracies with your views on freshwater science, which I believe require correction so as to not mislead the public.

The first is your suggestion that small-scale experiments, in bottles or enclosures, can replace whole-lake ecosystem experiments like those performed at Canada's ELA. This issue has been scrutinized at length in the scientific literature over the past 40 years, and it is clearly established<sup>2</sup> that such small-scale experiments are inadequate to address issues related to ecosystem services, food web structure, land-

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<sup>1</sup> House of Commons, March 20, 2013:

Minister Gary Goodyear: "Mr. Speaker, I know my hon. colleague is in fact a scientist himself and would understand that there is the capability of not actually using the entire lake to do freshwater studies. I am sure my scientific colleague knows that equipment can be set in the lake so that research can be done in a contained area and the entire lake is not exposed to the experiment. I would encourage scientists to consider that."

<http://www.parl.gc.ca/HousePublications/Publication.aspx?Language=E&Mode=1&Parl=41&Ses=1&DocId=6049662>

When asked about the cuts to the ELA in an interview before Wynne's announcement, Goodyear said there's still money for freshwater lake science. "There's more money for scientists to do exactly that kind of research and to be specific on that issue," he said. "Scientists know that they have the capacity to do experiments, of whatever nature it is, on a lake without jeopardizing the entire lake. And we can do that, we have the ability to do that and that is the current and the most technologically advanced way to experiment on a freshwater lake."

[http://www.huffingtonpost.ca/2013/05/01/science-cuts-canada-pearl-ela\\_n\\_3162105.html?utm\\_hp\\_ref=stifling-science](http://www.huffingtonpost.ca/2013/05/01/science-cuts-canada-pearl-ela_n_3162105.html?utm_hp_ref=stifling-science)

<sup>2</sup> Schindler DW. 1998. Replication versus realism: The need for ecosystem-scale experiments. *Ecosystems* 1: 323-334.

water interactions, air-water interactions, shoreline communities, and migratory species<sup>3</sup>, all of which are essential to natural ecosystem function. For example, the collapse of the food web supporting lake trout during acid rain simulations at ELA would never have been observed in small-scale enclosure experiments, and were not anticipated by laboratory experiments<sup>4</sup>. The whole-lake ELA experiments were instrumental in establishing the effects of acid rain on Canadian lakes, and this research led directly to widespread reductions in sulfur emissions under the Clean Air Act, dramatically improving the health of millions of Canadian lakes. Another example is the small-scale bottle and enclosure experiments that suggested carbon, not phosphorus, was the key nutrient limiting algal production in lakes, but experiments in ELA's Lake 227 proved otherwise<sup>2</sup>. The resounding success of phosphorus abatement in improving water quality throughout the world is clear vindication of ELA's whole-ecosystem approach in dealing with issues related to toxic algae and other water quality issues.

The second is your suggestion that whole-lake experimentation may permanently jeopardize lakes under investigation. Experiments at the ELA are carefully designed to simulate environmentally-relevant conditions, and are only performed if ecosystems will recover naturally from the manipulation. After 45 years of experimentation at ELA, there has never been a single example of permanent damage to a lake ecosystem, or of a lake requiring any expensive remediation after the experiment was completed.

It is unfortunate that Canada's current government does not appreciate the importance of Canada's ELA despite overwhelming evidence to the contrary and opposition from the global scientific establishment, including the Canadian Society of Ecology and Evolution, the Canadian Aquatic Resources Section of the American Fisheries Society, the International Society of Limnology, the American Association for the Advancement of Science, the Canadian Rivers Institute, the Board of the International Association of Great Lakes Research, the North American Lake Management Society, North America's Society of Environmental Toxicology and Chemistry, the Groupe de recherche interuniversitaire en limnologie et en environnements aquatiques, all of whom have indicated their support for Canada's ELA, not to mention the nearly 30,000 Canadians who signed a petition to save the ELA.

Please correct the public record so that the Canadian public is not led to believe any of these false and ill-informed statements.

Yours sincerely,



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<sup>3</sup> Carpenter SR et al. 1995. Ecosystem experiments. *Science* 269: 324-327.

<sup>4</sup> Schindler DW. 1988. Effects of acid rain on freshwater ecosystems. *Science* 239: 149-157.

cc:

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