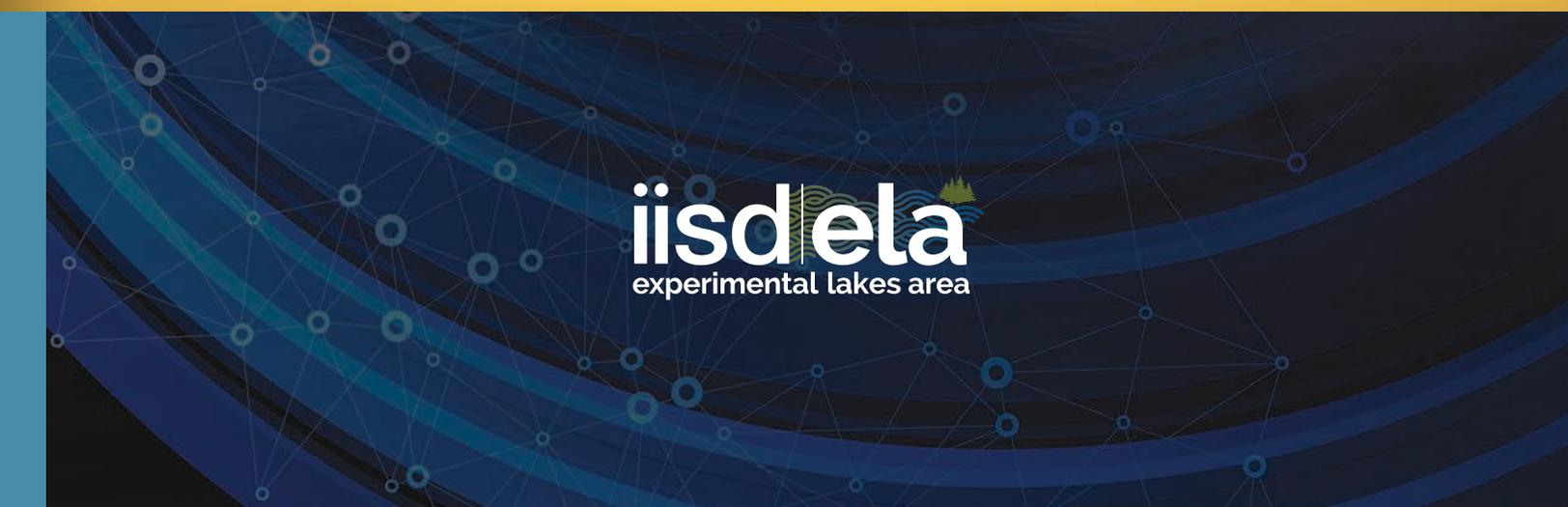




IISD Experimental Lakes Area

“IISD-ELA IS THE PLACE FOR HIGH-IMPACT SCIENCE. IT IS UNLIKE ANY OTHER FACILITY FOR ITS ABILITY TO ANSWER THE BIG AND PRESSING QUESTIONS.”

—Dr. Karen Kidd, Canada Research Chair, Canadian Rivers Institute and University of New Brunswick



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experimental lakes area

In a time of growing populations and a rapidly changing climate, many countries are struggling to respond to challenges to their fresh water. These include the impacts of climate change, agricultural runoff, water management, contaminants such as mercury and organic pollutants, and a growing list of new chemical substances.

The IISD-ELA is an exceptional natural laboratory comprised of 58 small lakes and their watersheds set aside for scientific research. Located in a sparsely populated region of northwestern Ontario, Canada, it is one of the only places in the world where it is possible to conduct experiments on whole ecosystems. By manipulating these small lakes, scientists are able to examine how all aspects of the ecosystem — from the atmosphere to fish populations — respond. Findings of real-world experiments are often much more accurate than those from research conducted at smaller scales, such as in laboratories.

This unique research approach has influenced billion-dollar decisions of governments and industries. It has generated more cost-effective environmental policies, regulations and management.



Eutrophication

Eutrophication occurs when waterways become overloaded with nutrients, causing higher growth of algae. Scientists studied this effect in a number of experimental lakes and determined which nutrients were most important for controlling eutrophication and limiting excessive algal blooms. This research resulted in policy changes around the world that restrict phosphorus inputs to lakes and rivers.



Acid Rain

By gradually acidifying experimental lakes over a period of years, ELA scientists were able to observe major changes in the ecosystem. Several key species—including opossum shrimp, crayfish and fathead minnows—disappeared entirely, while lake trout were starved. Research from these lakes was instrumental in bringing about changes in legislation to reduce acid rain.

Reservoir Impacts

By creating a series of small experimental reservoirs, ELA scientists helped governments and hydroelectric companies improve the design of dam reservoirs in order to minimize environmental impacts such as increases in methyl mercury and greenhouse gas production.



Mercury

By adding small amounts of mercury to a lake and its watershed using a crop-duster airplane, scientists examined the relationship between atmospheric mercury loading and toxic methyl mercury concentrations in fish. This research provided strong support for proposed legislation to restrict emissions of mercury to the atmosphere from coal-fired power plants.

IISD-ELA IS “THE SUPERCOLLIDER OF ECOLOGY.”

—Dr. David W. Schindler, OC, AOE, DPhil, FRSC, FRS, Killam Memorial Chair and Professor of Ecology (emeritus), Dept. of Biological Sciences, University of Alberta

“THE ONGOING EXPERIMENTS AND LONG-TERM DATA SETS AT THE EXPERIMENTAL LAKES AREA ARE AN UNPARALLELED RESOURCE FOR CRITICAL EVALUATIONS OF THE ONGOING CHANGES TO OUR PLANET.”

—Dr. William Schlesinger, President of the Cary Institute of Ecosystem Studies, New York



Climate Change

By reducing water flows to an experimental lake, IISD-ELA scientists are mimicking conditions that could be seen with climate change, and examining the impacts on the lake's ecosystem. Using long-term data from the site, researchers are also uncovering further insights on the response of lakes, their watersheds and fish to climate change to help predict and plan for what could happen in future scenarios.

The Research

Throughout its history, researchers at ELA have addressed a range of environmental issues, including the impacts of nutrients, acid rain, mercury and other contaminants. The facility has been used to examine the effects of freshwater aquaculture and to assist hydroelectric companies in improving the design of reservoirs. It has also enabled the study of emerging chemicals including synthetic hormone disruptors, flame retardants, and household antibacterial products containing nanosilver.

Since its creation in 1968, scientists at ELA have also amassed one of the longest and most comprehensive data sets on freshwater lakes in the world. These long-term records have provided invaluable information for regional and global climate modelling, and helped us understand climatic variation and its effects on freshwater lakes and the plants and animals that depend on them.

Aquaculture

An experimental cage fishery was established to determine the impacts of freshwater aquaculture. Results from this experiment are being used to develop improved regulations for the industry.



Education

IISD-ELA believes in engaging young people and the general public in the importance of freshwater science for sustainable development in Canada and around the world. The unique nature of the facility and our approach provide an opportunity to deliver applied ecosystem education programs for a wide variety of audiences, inspiring and training the next generation of research scientists and decision-makers.

The Facilities

The IISD-ELA field station is a state-of-the-art facility that provides on-site living and working amenities for researchers. Consisting of over 20 buildings, including laboratories, a workshop, kitchen and dining hall, dormitories and living quarters, it is a self-contained community for up to 60 research personnel.



IISD and ELA – Join us and help science create policy change

On April 1, 2014, the International Institute for Sustainable Development (IISD) signed agreements to assume management of the ELA, and a new organization was born. IISD-ELA is committed to continuing ongoing research operations and to expanding the capacities of the facility. This will include ecosystem-based science, collaboration and partnerships with outside researchers and universities, externally-led investigation, and educational activities that promote and build capacity for freshwater science and policy action in Canada and around the world.

IISD's independent, evidence-based approach to the development of policy recommendations and tools complements the ELA's strong scientific foundation. A combined IISD and ELA offers the opportunity to strengthen efforts to address global freshwater issues by directly applying world-class scientific research to create innovative policy solutions for regional and global water management.

IISD-ELA's status as a registered charity rather than a federal facility means that its core operations and scientific goals will require funding and public support to maintain and continue its long history of influential and unique whole-ecosystem research.

IISD-ELA is looking for partners and collaborators to continue to grow and expand this unique body of work.

“COMBINING ELA'S VAST SCIENTIFIC KNOWLEDGE BASE WITH THE INSTITUTE'S EXPERIENCE IN INTEGRATED MANAGEMENT PRACTICES REPRESENTS A UNIQUE OPPORTUNITY TO BRIDGE APPLIED SCIENCE WITH ON-THE-GROUND SUSTAINABILITY POLICY SOLUTIONS.”

—Scott Vaughan, President and CEO of IISD



To help us continue the incredible work of the IISD-ELA and preserve a legacy that began in 1968, please consider donating online via CanadaHelps.org. You can find a link at IISD.org/ELA.

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