



St Lawrence River Institute of Environmental Sciences

1998 Annual Report

Introduction

The St Lawrence River Institute of Environmental Sciences is an incorporated, not-for-profit, and charitable organization based in Cornwall. This document summarizes activities of the River Institute over the past year: **research** in ecotoxicology, water and air quality; the continued development of **analytical capabilities and services**; and programs in **environmental education and outreach** which involve and empower the **community**.

Research Activities

To better understand factors which determine the health of the upper St Lawrence River the River Institute is working with the University of Ottawa on a 5-year program called the NSERC/Industry Research Chair in Ecotoxicology . The Chair commenced in December 1997 and is funded jointly by Ontario Hydro, Domtar, Dupont, PCI Forest Products, and Universal Terminals Inc. with matching funding from Natural Science & Engineering Research Council of Canada (NSERC).

Ecotoxicology combines the sciences of chemistry, toxicology, biology and ecology to understand the effects of chemicals and other stresses on ecosystems. While the initial focus of the research is mercury and PCBs, the program will also draw past and present research on the Kingston to Quebec portion of the river into predictive models of the river and its responses to environmental stressors. Recent efforts of the Chair program include:

- ◆ a **synoptic review of the St Lawrence River**, where contributors to the 5th Annual Conference on the St Lawrence River are publishing their papers in a leading international journal, *Canadian Journal of Fisheries and Aquatic Sciences*. Capping this special edition will be a review paper by Dr. David Lean;
- ◆ 2 major **research expeditions on the biology and chemistry of the Upper St Lawrence River** was carried out using the CSS Limnos research vessel, funded by a grant to Dr. David Lean. The hypothesis that water from the South shore of Lake Ontario negatively affects the water quality of the Upper St Lawrence River was tested; and
- ◆ the Chair and the River Institute are working with the Great Lakes Research Consortium to develop a **synoptic binational research program on Lake Ontario-St Lawrence River system**.

Other research and research-oriented consulting projects presently include:

- ◆ studies of **taste and odour problems in drinking water from the St Lawrence River**, in which the occurrence of natural products which provide seasonal off-tastes in drinking water is investigated. A paper on this subject by River Institute researchers, Drs. Jeff Ridal and David Lean, and Dr. Brian Brownlee from Environment Canada, has been accepted very recently for publication in the *Journal of Great Lakes Research*;
- ◆ a research program focussing on the **St Lawrence River-Forest interface**, which is being developed in partnership with the Mohawk Council of Akwesasne Department of the Environment, the Department of Environmental Science and Forestry of SUNY Syracuse and the Eastern Ontario Model Forest;
- ◆ an investigation of **fish habitats in the St Lawrence River**, in which River Institute researchers, Drs. Brian Hickey and Jeff Ridal, are working with the Department of Fisheries and Oceans to investigate the effects of rock fill on fish habitat in the Middle corridor (Brockville to Cornwall) of the St Lawrence River;
- ◆ a study on **water quality in the South Nation river**, where River Institute researchers have worked with a local consulting firm, The Rosemount Group, to develop a water quality program to document improvements in water quality derived from non-point source abatement programs of the local conservation authority. This work is relevant to the water quality of St Lawrence River tributaries and the research is being continued by **University of Ottawa biology students, Pierre Fontaine and Shari Helgason**, as honours year projects;
- ◆ an investigation of **contaminant body burdens in bats** has been investigated by Dr. Brian Hickey and colleagues from York University to determine whether bats feeding on emergent insects from polluted St Lawrence River tributaries accumulate greater amounts of pollutants than bats feeding at other sites;
- ◆ the **Cooper Marsh biodiversity project**, a summer student project under the guidance of Dr. Brian Hickey and River Institute interpreter, Julie Flaro, to document the incredible diversity of the flora and fauna of Cooper Marsh;
- ◆ participation of River Institute scientists in the **IDRC WaterTox International Research Network** to determine simple bioassay methods for analysis of potable water in developing countries;
- ◆ a collaboration with the **Mohawk Council of Akwesasne**, where River Institute researcher, David Leech, is investigating the use of **Naturalized Knowledge Systems** for technology transfer in developing countries as part of his Masters degree at the University of Ottawa;

- ◆ research with scientists from Environment Canada, where Dr. Jeff Ridal is continuing a study to compare over-water versus over-land measurements of **persistent organic pollutants in rain and air.**

The St Lawrence River Institute of Environmental Sciences is a member of several research consortiums including the International Development Research Centre (IDRC) WaterTox research group, the Lake Ontario-St Lawrence River (LOSLR) Binational Initiative co-sponsored by the Great Lakes Research Consortium, and the Groupe Inter-universitaire pour Research en Limnology (GRIL).

Education and Outreach

The River Institute continues to develop and deliver courses, workshops and education programs for students of all ages. Programs presently include:

- ◆ the **Ontario Universities Field Course in Ecotoxicology**, which is hosted by the River Institute and delivered in partnership with **Ottawa University and Queen's University**. This field course introduces advanced university students to techniques used for regulating industrial effluent discharges and for environmental effects monitoring.
- ◆ **"hands on" science education programs** both at the River Institute and at the Cooper Marsh Interpretative Centre for elementary and high school students. These programs encourage scientific creativity and interests in students of Eastern Ontario and are delivered to over 3000 students annually.
- ◆ **science summer day camps** for youth aged 6-13 to explore the world of science during the summer break period. The River Institute was awarded a grant from Industry Canada that assisted in creating the program and providing 4 challenging summer positions for local university students.

Analytical Testing

The River Institute's laboratories continue to develop to serve the analytical needs of the local community. Certified testing is in place and provides a local point of service for standard water quality testing at reasonable rates. Revenues generated by analytical testing support research and education programs. Local real estate agents, in particular, have found this aspect of the River Institute of significant benefit to their activities.

Community Involvement

The formation of the River Institute was fostered by a community desire to take a proactive approach to local and regional environmental distresses. The support of our stakeholders

(citizens, business, industry and governments) rests in the development of leadership committed to the local and regional concerns of our environment and a commitment to share our knowledge and research in languages that everyone can understand.

Examples of the River Institute's involvement in these issues include taking a lead role in the formation of the **St Lawrence River Restoration Council** to implement the St Lawrence River Remedial Action Plan. The River Institute has formed partnerships with the Raison Region Conservation Authority and Friends of Cooper Marsh to found **Cooper Marsh Conservators**, a group dedicated to the protection and restoration of this important wetland located on the St Lawrence River near Cornwall.

In addition, the River Institute recently completed its **5th Annual Conference on the St Lawrence River**. Attended by representatives from academia, governments, conservation authorities, non-profits, teachers and individuals interested to learn more about the St Lawrence River, the conferences have been important instruments to foster interest and debate about the health of the ecosystem.

The River Institute has also been named as the host the **Year 2000 Conference of the International Association of Great Lakes Research (IAGLR)**. The IAGLR conference will be run simultaneously with the River Institute's annual conference and help focus attention on the role of the St Lawrence River as part of the Great lakes ecosystem.

Through these events, its outreach programs, and participation in remedial action committees, the River Institute aims to provide a unique resource for research and environmental action for the communities of Eastern Ontario and Akwesasne.

Summary

The St. Lawrence River Institute of Environmental Sciences -- a unique community partnership that has continued to grow since its inception into a valuable environmental resource for Eastern Ontario. Its progress on environmental research and education on larger river ecosystems is built from the grass roots - a Board of Directors from the community, broad-based partnerships, and staff and scientists dedicated to the health of the St Lawrence River ecosystem.