Canadian Rivers Institute
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BACKGROUNDER

ABOUT THE CANADIAN RIVERS INSTITUTE

The Canadian Rivers Institute (CRI), hosted at the University of New Brunswick, with 22 science directors at 14 university and institutions in Canada and abroad, has become an international leader in multi-disciplinary science involving partners in academia, industry and government. Their work is advancing understanding of the health of fresh waters and estuaries and being used to inform policy and management decisions by governments and industry. CRI science directors have been awarded 10 Canada Research Chair programs to date.

Research led by CRI Science Directors has influenced national and international advancements in aquatic science:

- The CRI's Mactaquac Aquatic Ecosystem Study (MAES) now underway in New Brunswick is the scientific basis for planning one of the largest hydroelectric facility renewal project in the world. A partnership with NB Power, this research is one of the largest freshwater science projects in Canada and it will be transferable to more than 100,000 aging dam facilities world-wide.

- CRI researchers are leaders in an international scientific effort to develop the first-ever circumpolar assessment of freshwater biodiversity in the Arctic – an especially important task as northern regions are on the front lines of the increasing effects of climate change.

- The CRI's partnership since its inception with Irving Pulp and Paper to test improvements in industrial wastewater effluent has led to enhancements in the Federal Environmental Effects Monitoring Program for pulp and paper mills in Canada, and new made-in-Canada patented procedures to recover commercially-valuable compounds from pulp mill wastes.

- In 2011, the CRI released the *Saint John River: State of the Environment Report* summarizing 10 years of multi-disciplinary research. This report has become a go-to scientific resource for governments, organizations and communities and a model for conducting research to assess whole river ecosystems.

- The CRI-led Saint John Harbour Environmental Monitoring Program and the Northumberland Strait

- Environmental Monitoring Partnership, each with multiple government, industrial and community stakeholders, have led to recommendations to policy makers and resource users for monitoring the cumulative impacts of projects as prescribed in Canadian legislation.

CRI is a job readiness incubator for highly qualified aquatic scientists

Since its foundation, CRI has placed significant emphasis on **meeting the global demand for highly qualified professionals and environmental scientists** in aquatic and watershed sciences. Over the past 15 years, through their university research programs, CRI Science Directors have supervised and mentored **more than 450 students**. A Natural Science and Engineering Research Council (NSERC) grant that has enabled the CRI to provide $1 M in stipends to students to participate in additional professional development programming.

Ranging from undergraduates to post-doctoral fellows in various disciplines, trainees have come from every province and territory in Canada. After their time with CRI, students and post-doctoral fellows move into the workforce, occupying jobs across all provinces in Canada notably in New Brunswick (30%) and Ontario (15%).

Of those now in the workforce, 38% are working in industry (including consulting), 28% in academia, 27% at all levels of government, and 9% in other areas, including non-profit organizations.

CRI has **contributed significantly to attracting world-wide intellectual capital to Canada**, a significant proportion of the Institute's students (20%) have immigrated to Canada from countries as diverse as Bhutan, Chile, China, Finland, Italy, New Zealand, Romania and Senegal to take part in studies lead by CRI Science Directors. About 40% of CRI's international students and alumni are currently continuing their education or working in Canada.

The CRI has also conducted professional development courses for more than 3,000 registrants – professionals from universities, industry, governments and First Nations communities – in aquatic research and monitoring protocols such as invertebrate and fish biodiversity assessments, water quality analysis and interpretation, and river habitat restoration.

The CRI is attracting millions of dollars for research that is internationally valued.

CRI researchers at UNB alone have:

- attracted a total of $9.9 M in research through 7 Canada Research Chairs over the past 15 years.
- been awarded over $30M for their multi-disciplinary research from various sources including the National Science and Engineering Research Council, Canadian Foundation for Innovation, New Brunswick Innovation Foundation, Atlantic Canada Opportunities Agency, and more.
- developed innovative research technology centres, including a $5.5M science building at UNB Saint John that houses state-of-the-art analytical, molecular, and wet-lab laboratories to accommodate saltwater, freshwater and terrestrial biota studies involving environmental

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stressors. These facilities and CRI-developed methods are now used by researchers from around the world and support the integration of laboratory and field research for the assessment of aquatic health.