

Rivers Institute at BCIT

Report to Our Community, 2010-2011



Photo: D. Catt

“Rivers are the arteries of our planet... they are our lifelines in the truest sense.”

Mark Angelo, Chair, Rivers Institute at BCIT



The Rivers Institute at BCIT will become a leader in the protection and restoration of waterways in British Columbia and beyond by initiating public awareness activities, conducting applied research, developing best practices in river management, and mentoring the next generation of environmental stewards.

The Rivers Institute at BCIT was created in 2009 through a visionary gift from environmental philanthropist Rudy North. As a result of his generosity and the enthusiastic support of our community, the Rivers Institute at BCIT is developing into a passionate protector of our waterways.



Photo: B. Stewart

“The Rivers Institute at BCIT will become a driving force for keeping BC a natural wonder of the developed world.” Rudy North, Founding Donor, Rivers Institute at BCIT

Message from the Chair

It is a pleasure to present our 2010-2011 Report to our Community, which outlines some of our exciting accomplishments over the past year. We are grateful to you – our community of supporters, donors, and partners – for helping us to pursue our mission of being a leader in the protection and restoration of waterways in British Columbia and beyond.

The Rivers Institute’s second year has certainly been an exciting one. We have played a leadership role in an array of initiatives ranging from the coordination of World Rivers Day, which saw a massive global turnout, to the organization of a major Water for Life benefit concert that was filmed for Global TV. We have continued to support and mentor students with an interest in river conservation while also contributing to educational programs and departments with a focus on river conservation and management. From a public awareness perspective, we have also developed a variety of materials and published dozens of articles.

Looking to the future, we continue to be involved in numerous river conservation and recovery projects, just one of which is our ongoing work to restore Guichon Creek in conjunction with the BCIT Fish, Wildlife, Recreation and Ecological Restoration Programs. Still another encouraging development is taking place along Britannia Creek, which just a decade ago topped the BC Outdoor Recreation Council’s endangered rivers list. This fall, we will commence with a multi-year effort to re-introduce salmon to the creek – a development made possible through a concerted and collaborative effort with a variety of partners.

There are many other exciting initiatives under way. Consequently, we have much to celebrate - but also, a great deal left to achieve. **Thank you** for your ongoing support and enthusiasm. With our community of supporters so firmly behind us, together we can do much to ensure a healthy future for our waterways.

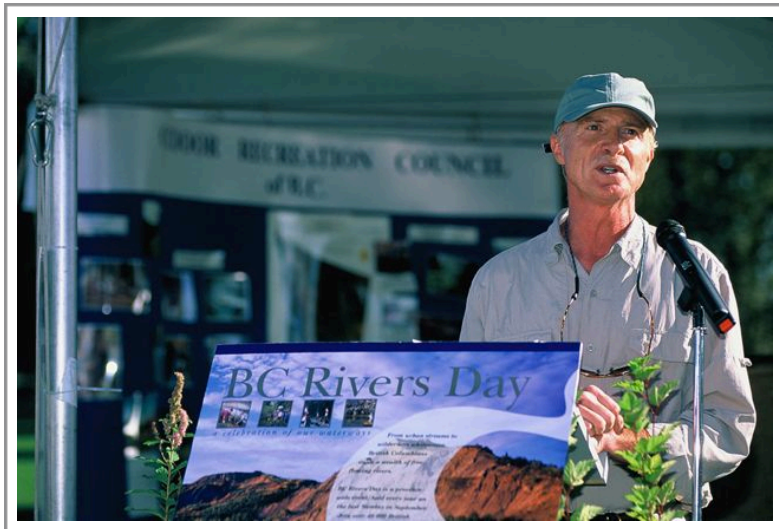


Photo: D. Catt

Mark Angelo
Chair, Rivers Institute at BCIT

Mark Angelo, celebrated conservationist and Order of Canada recipient, has led the Rivers Institute since its creation. Throughout this period, he and his team have enthusiastically applied themselves to the pursuit of **six key objectives**:

1. Conduct state-of-the-art river-related **research**,
2. Increase **public awareness** about the importance of our waterways as well as the threats that confront them,
3. Promote sound river **stewardship**,
4. Play a science-based **leadership** role in key river management issues,
5. Spearhead leading edge river **restoration** initiatives, and
6. Remain closely linked to river related **education** programs while helping to mentor the next generation of river stewards.

Our progress in each of these areas is outlined in the following pages.



Students fish sampling



World Rivers Day



Mark, Upper Pitt River

Objective #1:

Conduct state-of-the-art river-related research

In early 2011, Mark Angelo initiated discussions with the Department of Fisheries and Oceans (DFO) about the Pemberton avalanche area and the need to assess the slide's impact on fisheries as well as outline a plan for habitat restoration in the watershed. This resulted in the DFO's request that the Rivers Institute lead a student research project and develop long-term monitoring and restoration plans to be implemented in coming years. A fly-over of the area is planned for this spring.

The Pemberton slide, which occurred in August 2010, was the second largest in Canadian history. Approximately 40 million cubic metres of rock, sand, and debris rushed down the mountainside at 30 metres per second. The slide eventually settled into a dam across Meager Creek and the Lillooet River and formed a lake, which gradually drained. The research project is an outstanding opportunity for BCIT students to gain experience in the field and to learn from Mark and contacts in his professional network.



Photo: T. Saare

Additional accomplishments:

- The Rivers Institute has supported several important year-long applied research projects led by students of the Fish, Wildlife, Recreation Program. These projects have ranged from the study of aquatic insects within Guichon Creek (to help gauge the stream's productivity) to the assessment of important off channel habitats within the "heart of the Fraser" just downstream of Hope. In addition, we supported key student field trips with a focus on fisheries research, ranging from a major sturgeon study on the Fraser to a chinook salmon tagging program on the Harrison.
- Mark is working with Ken Ashley, BCIT Ecological Restoration instructor, Al Lill of the BC Conservation Foundation/Living Rivers, and other river scientists to develop innovative solutions to mitigate the impact of rising water temperatures on salmon spawning. In June, the group accompanied Global TV to the Somass River system on Vancouver Island to profile some of these efforts.
- Marvin Rosenau, BCIT Fish, Wildlife, & Recreation Instructor, completed his leave assignment with the Australian Rivers Institute (ARI) in Brisbane, where he produced a research paper comparing water use in Brisbane and Vancouver. We have now developed a productive relationship with the ARI and we look forward to collaborating on future projects.
- We participated in the 2010 Science Think Tank in December. The focus of this initiative was to assess the possible reasons behind the year's extraordinarily high sockeye salmon return, and is a follow-up to the 2009 Science Think Tank, which sought reasons for the exceptionally low 2009 return. After a two-day session involving many of Canada's foremost fisheries scientists, we then hosted a sold-out public forum at Simon Fraser University's downtown campus.

Objective #2:

Increase public awareness about the importance of our waterways as well as the threats that confront them.

The Rivers Institute spearheaded the 6th annual World Rivers Day (WRD) and 30th annual BC Rivers Day celebrations. This year marked our largest event ever, with millions of participants in 60 countries on 6 continents. Events ranged from river clean-ups and habitat enhancement activities to educational outings and community riverside celebrations.

"It's pretty exciting to see a local event that started 30 years ago in British Columbia evolve into such a positive global effort to better care for our rivers", said Mark. "Beyond celebrating our rivers, WRD helps

to create a greater awareness of the many threats that confront our waterways. Many rivers are also being hard hit by climate change and have come to symbolize the freshwater crisis facing many countries, making improved stewardship imperative."



Over 100 events took place in British Columbia alone, including one held at BCIT to celebrate the restoration of Guichon Creek. The year's extraordinary sockeye run added to the festive nature of Rivers Day events throughout BC.

Additional accomplishments:

- Mark wrote a variety of articles for the National Geographic website drawing attention to river issues around the world. Topics included the importance of urban stream restoration, a history of World Rivers Day, dam decommissioning, and struggles being faced by indigenous groups. This last topic included a piece on the Mara River in Africa to coincide with the premier of National Geographic's epic seven-part TV series on the world's great migrations. It also included an article about Mark's recent trip along the Oro River in Ethiopia, where he learned about the Karo people's battle against a dam project that will impact their ability to practice flood-control agriculture.
- We have produced a series of YouTube videos that can be found on the Rivers Institute's website (www.riversinstitute.ca). These include clips about the history of Guichon Creek, the Adams River sockeye run, and Mark's recent trip to Ethiopia.
- The Burnaby News Leader ran a feature interview of Mark Angelo in January. The article was entitled "A Closer Look at our Rivers" and focused on his hopes for the year ahead.



Objective #3:

Promote sound river stewardship

We played a key role in the organization of the Water for Life benefit concert in Burnaby, BC on April 7, 2011. The concert drew attention to the importance of water and the need to be good water stewards. An enthusiastic audience helped to celebrate rivers and water through a mix of images, inspirational stories, film clips and music. Locally, proceeds benefited the Nature Trust of BC for their work on the Heart of the Fraser, and internationally, WaterCan, in support of their water relief efforts in Africa.

Over \$100,000 in sponsorship funding made this exciting event possible and will help the Rivers Institute create a legacy educational program for schools. These materials will be developed in conjunction with WildEd, an organization that delivers Nature Education Programs to students throughout BC.

The educational and public awareness benefits of the Water for Life concert have been significant and the program will receive international exposure. The live event was filmed and will air on Global TV on June 25, 2011.



Photo: S. McAlpine

Additional accomplishments

- We are assisting West Vancouver stream-keepers on efforts to maintain their conservation (or habitat protection) covenants. Discussions have taken place with local governments in support of these efforts.
- Tom Saare, BCIT Fish, Wildlife and Recreation Instructor, represented the Rivers Institute at the Metro Vancouver Regional District's Ecological Health Workshop and in April, delivered a presentation on the restoration work completed on Guichon Creek for the BC Wildlife Federation Annual General Meeting.
- Mark delivered a number of public talks, including a presentation at the Fraser River Discovery Centre September 24 and the Vancouver Public Salon event at the Playhouse Theatre on November 3, and videotaped a welcome and opening address for the Stewardship conference, which also took place on November 3.

Objective #4:

Play a science-based leadership role in key river management issues

The Rivers Institute has partnered with the group "Rivers Without Borders" in developing a background document that will provide the rationale for designating the Taku as North America's first international "Salmon Stronghold". If we are successful, the Taku would become the second river in BC to gain such recognition, after the Harrison River. The paper, upon its completion, will be presented to the Wild Salmon Center in Portland, Oregon.

Additional accomplishments:

- In conjunction with the Outdoor Recreation Council of BC, we helped to identify the list of the province's most endangered rivers, released in April 2011. At the top of the list was the Kettle River, which runs through BC's southern interior near the towns of Midway, Rock Creek and Grand Forks. The Outdoor Recreation Council recommends a water management plan be developed to ensure the river's long-term viability.

- In March, we participated in the Pacific Fisheries Resource Conservation Council's public meeting. The purpose of this meeting was to discuss future directions for the management of the Harrison River was recently established as BC's first formally recognized "Salmon Stronghold". The Rivers Institute continues to be a partner in this initiative, which is an important component of our overall Heart of the Fraser initiative.



Photo: M. Angelo

- Last fall, we began participating in the public planning phase of the "Experience the Fraser" trail being developed by Metro Vancouver and the Fraser Valley Regional District. We will be sharing environmental information for the Heart of the Fraser stretch, in an effort to ensure the trail is well planned from an environmental perspective. During a public presentation in October, we also highlighted the importance of educational and interpretive materials as part of this project that would help to make visitors more aware of the extraordinary values of this part of the river.

Objective #5:

Spearhead leading edge river restoration initiatives

On August 14th, the Rivers Institute led a restoration initiative with volunteers from HSBC Bank Canada's BC Women's Network, the BCIT Fish Wildlife Recreation Program, Evergreen, and the Catching the Spirit youth group to re-vegetate an area adjacent to Guichon Creek that was previously a parking space. Volunteers wielded pickaxes and shovels, removing invasive species and replacing them with native vegetation. When their project was complete, the group participated in a tour along the creek, during which they learned to identify local plant species and vegetation.

"We are very pleased to support the great research and restoration efforts that the Rivers Institute stewards across British Columbia," said Jocelyn Hsiung, HSBC Bank Canada District Vice President, BC Region and the B.C. Women's Network Regional Chair. "It was a good opportunity for our volunteers to gain exposure to the importance of waterways in our local communities."

To kick off the morning's efforts, HSBC Bank Canada announced their second \$50,000 donation to the Rivers Institute in support of World Rivers Day. Noted Mark Angelo: "This is a great example of how local businesses and residents can take action in restoring and conserving their local environment."



Additional accomplishments:

- We are working in partnership with the Department of Fisheries and Oceans to develop a plan to re-establish fish stocks in Britannia Creek and nearby waterways. Repopulation was made possible because of an improvement in water quality due to the installation of the treatment plant that is now neutralizing the acidity associated with run-off from the old mine site. This is especially exciting as only a few years ago, this project would not have been possible because of the levels of pollution in the water.
- As part of the Britannia initiative, we will record the extent to which resident cutthroat trout move down from the upper reaches into the once-polluted stretch. From the bottom end, we will discuss the feasibility of re-introducing salmon. A display will be developed and placed in the Mining Museum to celebrate our success and encourage future efforts. Starting next term, we also hope to incorporate some innovative BCIT Fish, Wildlife, and Recreation and Ecological Restoration student projects.

Objective #6:

Remain closely linked to river related education programs while helping to mentor the next generation of river stewards

In September, we initiated our first student exchange between the BCIT Ecological Restoration program and the University of Waikato in New Zealand. Courtney Kellock travelled to New Zealand and participated in work experience focusing on the restoration of large river systems. In the future, we anticipate one of their students travelling to BC to learn more about the Fraser.

Courtney Kellock, 4th year Ecological Restoration Student:

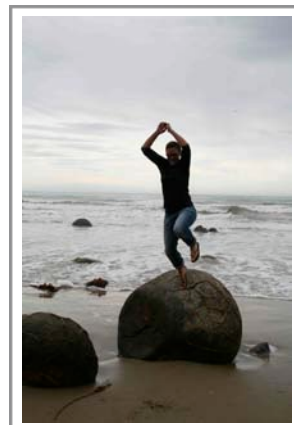
Thanks to The Rivers Institute at BCIT I was granted a three-month work term at the University of Waikato based in Hamilton, New Zealand. I was working out of the Biological Sciences Department with the Large Rivers group. Most of my time at the University was spent helping Dr. Konrad Gorski a Post Doctorate. Dr. Gorski is attempting to model the side channel habitat of the lower Waikato River to gain a better understanding of the structure and function of the river ecosystem. He will use deterministic modeling which will couple a hydrodynamic model with

ecological components that will link together biological and chemical processes. He will also be looking at reconstructing a historical geo-morphological and hydrological template of the lower Waikato River. And finally he will be investigating the utilization of different riverine habitats by different fish species (native and introduced). His research will aid in management decisions and restoration approaches by providing invaluable information that is currently unknown in the lower Waikato River.



My role in Dr. Gorski's research was mainly linked to the investigation of the utilization of riverine habitats by different fish species. We spent many days out in the field collecting water samples and fish data. I was also taught several lab procedures and left to analyze Dr. Gorski's samples. I was taught to process Chlorophyll a, suspended solids, and colour gradients within the water column. Our results at this point are inconclusive as more data is yet to be collected, however there are some very interesting trends in terms of night vs. day migration patterns.

*During my stay in New Zealand, I met many fabulous people, many of whom I will stay in touch with for many years. I was able to travel the country and experience much of what New Zealand has to offer. **My time at Waikato University has been an invaluable learning experience not only in terms of my education, but also in my professional career in the field of ecosystem restoration. I cannot thank the River's Institute and my instructors at BCIT enough for giving me this opportunity and allowing me to not only represent them but my classmates as well.***



Additional accomplishments:

- We continue to mentor and support BCIT students in projects undertaken as part of the Fish, Wildlife, Recreation and Ecological Restoration Programs. Projects have included Heart of the Fraser habitat assessments near Hope, a study of benthic invertebrates, a Chinook salmon tagging field trip along the Harrison River, and a tagging exercise for sturgeon along the Fraser.

In November, due to the ongoing generosity of our founding donor Rudy North as well as Judy Gale of Blue Planet Links, the Rivers Institute awarded scholarships to six excellent students from both the BCIT Fish, Wildlife, Recreation and Ecological Restoration programs.

- Tom Saare regularly meets with local students and school groups to provide resources and guidance for their ecological restoration efforts. This included a meeting with a high school student from Chilliwack who had



entered her school district science fair with a project focusing on "disappearing salmon". Her project was later selected to go onto the provincial Science Fair competition. He has also led a river and fish-related interpretive program along Guichon Creek with a group of Beaver Scouts, leaders and parents from Burnaby, and authored an article on salmon for the fall edition of Nature Wild, a magazine for the young naturalists of BC. Entitled "Home Stream Home"

- We are supporting and contributing to the establishment and maintenance of a new Fisheries Library at BCIT. This was made possible in part by the generosity of well-known fisheries scientist, Pat Slaney, who is donating an outstanding collection of books, reports, discs and other resources.

Many thanks to our generous supporters:

Rudy North and the North Growth Foundation

Founding donor, Rivers Institute at BCIT

Blue Planet Links

British Columbia Institute of Technology

City of Burnaby

Habitat Conservation Trust Foundation

HSBC Bank Canada

Metro Vancouver

Mountain Equipment Co-op

Nature Trust of BC

Outdoor Recreation Council of BC

Serge Mazerand

United Nations Water for Life Decade; 2005-2015

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