



North/South Consultants Inc.

Aquatic Environment Specialists

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Expertise and experience for Lake Sturgeon

I have over 19 years of experience studying Lake Sturgeon, having worked extensively on each life stage in large regulated river systems and associated tributaries, as well as smaller river systems throughout the species range. During my career, I have developed extensive expertise collecting field data and authoring scientific papers, reports, memoranda, effects monitoring programs and environmental assessments. Specifically, I have contributed to field work and/or authored works on Lake Sturgeon related to: population estimation, study of seasonal movements of juveniles and adults (mark-recapture; acoustic/radio telemetry), larval drift, egg collection, micro-scale habitat use, juvenile ecology, diet, standardized sampling techniques, growth, and inter-/intra- species interactions. I have worked for clients in the USA, and have collaborated with/learned from Lake Sturgeon biologists in Wisconsin to gain valuable insight into aspects of Lake Sturgeon physiology/biology. I have acted as a referee for several peer reviewed journals and have reviewed proposals for the United States Fish and Wildlife Service (USFWS) in relation to the Great Lakes Fish and Wildlife Restoration Act.

Expertise and experience in the development and implementation of mitigation, effects monitoring, and effectiveness monitoring for Lake Sturgeon

My expertise in the development and implementation of mitigation and effects monitoring includes the development of a standardized gillnetting approach for assessing Lake Sturgeon year-class strength in large rivers (based on juveniles age 1-10). I was the lead author of the Lake Sturgeon sections of the Environmental Impact Assessments for the Keeyask and Conawapa Generating Station (GS) projects (Nelson River, Manitoba), as well as the lead author of the Lake Sturgeon section of the Aquatic Effects Monitoring Program for the Keeyask GS project, which included mitigation and adaptive management strategies for aspects such as: upstream and downstream passage; stocking; spawning habitat creation; and young-of-the-year habitat creation). I have also managed several projects related to Manitoba Hydro's Lake Sturgeon Stewardship and Enhancement Program and have also been involved with brood stock and gamete collection in remote spawn camps located in northern Manitoba. Since 2014, I have managed several projects for Ontario Power Generation (OPG) related to OPG's Lake Sturgeon mitigation plans in the vicinity of Caribou Falls (English River), Whitedog Falls (Winnipeg River), and the Alexander GS on the Nipigon River. Most recently, I was a co-author for the 2016 Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Lake Sturgeon status report.

Expertise and experience in the hydroelectric sector

Most of my experience has been gained through working on rivers impacted by the hydroelectric industry. For example, my PhD research (completed in 2010) was focused on juvenile Lake Sturgeon ecology in a large, fragmented river system. Results of this research have particular relevance to the potential influences of hydroelectric development on Lake Sturgeon recruitment. Most of my more recent work has been focused on assessing how best to utilize/design mitigative strategies to improve Lake Sturgeon populations that are impacted by hydroelectric facilities.



EDUCATION

2011 **Doctor of Philosophy, Department of Biological Sciences, University of Manitoba**

Thesis – Ecology, behaviour and biological characteristics of juvenile Lake Sturgeon, *Acipenser fulvescens*, within an impounded reach of the Winnipeg River, Manitoba, Canada.

2001 **Masters of Natural Resources Management (M.N.R.M.), University of Manitoba**

RELATED EXPERIENCE

- **Manitoba Hydro** (2001 – ongoing): Senior biologist responsible for conducting field studies related to the Keeyask Generating Station (GS) and the proposed Conawapa GS on the Nelson River, Manitoba. Lead author of the Lake Sturgeon sections of the Keeyask and Conawapa environmental impact statements (EIS) and the Keeyask Aquatic Environment Monitoring Program (AEMP).
- **Ontario Power Generation** (2016 – ongoing): Senior biologist responsible for the Lake Sturgeon component of the aquatic monitoring plan for the Smoky Falls GS on the Mattagami River.
- **Ontario Power Generation** (2014 – ongoing): Project manager for work associated with the Lake Sturgeon monitoring and mitigation plans (in accordance with Ontario Endangered Species Act) at the Alexander GS on the Nipigon River, the Caribou Falls GS on the English River, and the Whitedog Falls GS on the Winnipeg River.

SELECTED PUBLICATIONS AND CONFERENCE PRESENTATIONS

- BARTH, C.C., and W.G. Anderson. 2015. Factors influencing spatial distribution and growth of juvenile Lake Sturgeon (*Acipenser fulvescens*, Rafinesque, 1817). *Canadian Journal of Zoology*. 93:823-831.
- BARTH, C.C., W.G. ANDERSON, S.J. PEAKE, and P. NELSON. 2013. Seasonal variation in the diet of juvenile Lake Sturgeon, *Acipenser fulvescens*, in the Winnipeg River. *Journal of Applied Ichthyology*. 29:(4)721-729.
- BARTH, C.C, W.G. ANDERSON, L.M. HENDERSON, and S.J. PEAKE. 2011. Home size range and seasonal movement of juvenile Lake Sturgeon in a large lake in the Hudson Bay drainage. *Transactions of the American Fisheries Society*. 140:1629-1641.
- BARTH, C.C. 2011. Ecology, behaviour, and biological characteristics of juvenile Lake Sturgeon, *Acipenser fulvescens*, within an impounded reach of the Winnipeg River, Manitoba, Canada. PhD Dissertation. University of Manitoba, Winnipeg, MB. Xv + 209 pp.
- BARTH, C.C., S.J. PEAKE, P.J. ALLEN, and W.G. ANDERSON. 2009. Habitat utilization of juvenile Lake Sturgeon, *Acipenser fulvescens*, in a large Canadian river. *Journal of Applied Ichthyology*. 25:18-26.
- BARTH, C.C., C.A. McDOUGALL, L.M. HENDERSON, C.L. HRENCHUK, J.K. AIKEN, and P.A. NELSON. 2013. Evaluation and use of a standardized gillnetting methodology to assess relative abundance, growth and year-class strength of juvenile Lake Sturgeon in large rivers. Presented at the 7th International Symposium on Sturgeon. Nanaimo, BC, Canada.
- BARTH, C.C., S.J. PEAKE, and W.G. ANDERSON. 2009. Differences in distribution, size, condition, and growth of Lake Sturgeon, *Acipenser fulvescens*, within an impounded reach of a large Canadian river. Presented at the 6th International Symposium on Sturgeon. Wuhan, China.