

November 13, 2020

Our File: OWA 1120

Charles Hatry: Summary of Expertise

Lake Sturgeon – Acipenser fulvescens

Charles has studied Lake Sturgeon in the Spanish River and Nipigon River, Ontario, as well in Quebec on the St Lawrence River near Montreal and in the Richelieu River near Sorel-Tracy in Quebec. Studies involved impacts of dam operations on Lake Sturgeon spawning behavior and available habitat, use of available spawning habitat near dams and other infrastructure (bridges) as well as residency times in large rivers. Studies were conducted using a variety of methods employing one or more of the following gear types; radio telemetry, gill netting as well as sonar and visual survey (camera) techniques Charles assisted with the development of plans to mitigate impacts to Lake Sturgeon potentially affected by dam operations as well as mitigate impacts to Lake Sturgeon potentially affected through the construction of new infrastructure – primarily bridges. These studies evaluated the potential of proposed projects to impact Lake Sturgeon or its spawning habitat.

Surface Water Quality Subject Matter Expert

Charles has both helped with the design as well as the delivery of numerous projects involving the analysis of surface water quality. Projects include the analysis of water chemistry from environmental effects monitoring programs (EEMs) carried out for the mining community (conductivity, metals, nutrients etc.), water quality studies for the pulp and paper industry, designing sampling programs and conducting monitoring for water quality during in-water construction (TSS, turbidity) and assisting with the design and delivery of surface water quality monitoring for lakes and rivers related to subwatershed studies in Ontario and watershed health studies (nutrient loading) in both Ontario and Quebec.

Fish Sampling Subject Matter Expert

Charles has both designed and carried out numerous fish sampling programs for the hydropower, mining and heavy civil industries. Fish sampling has included:

- both small and large bodied fish;
- the collection of whole fillet and tissue biopsy punches for the study of contaminants in fish tissue; and,
- has involved a variety of gear types including fyke nets, trap nets, gill nets, boat and backpack electrofishers, minnow traps, as well as custom made minnow traps for the collection of sculpin species.

Fish sampling has also involved the removal of fish from in-water work construction areas.

EXPERTISE and EXPERIENCE IN DEVELOPMENT OF MITIGATION, EFFECTS MONITORING and EFFECTIVENESS MONITORING PLANS

Charles has experience with the development and implementation of mitigation plans related to protocols around in-water work, timing windows, fish salvages, sediment and erosion controls, water quality monitoring during construction, DFO pathways of effects as well as monitoring for

species at risk. Charles has also worked on a variety of projects related to the effectiveness of fish ladders at moving fish upstream of dam and hydro operations. Charles has written numerous study designs and monitoring programs for environmental effects monitoring programs for the mining sector. Additionally, Charles developed a radio telemetry study to confirm Lake Sturgeon were using a specific plunge pool beneath a dam on the Spanish River as spawning habitat. Charles' graduate research involved studying the effectiveness of a fish ladder on a low head dam at passing Redhorse Suckers, as well as assisted a PhD student with their research on Lake Sturgeon use of the same fish ladder.

EXPERTISE and EXPERIENCE in the HYDROELECTRIC SECTOR

Charles has worked on a variety of projects in the hydroelectric sector related to fisheries. Charles has completed several fish passage studies in Ontario and Quebec. Fish passage studies included assessments of passage efficiency for both large fish ladders and smaller natural fish passageways. Charles conducted fisheries monitoring in support of an environmental assessment being conducted for the retrofitting and reconstruction of two dams along the Spanish River. Charles has conducted Lake Sturgeon tagging and sampling in the Spanish River in support of hydroelectric operations on the River. Charles assisted with the development and implementation of a fish tissue sampling plan for the Umbatta Falls Generating Station near Marathon, Ontario. Charles co-authored a technical report series paper on the effectiveness of fish friendly turbines designed for low-head dams.

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Attachments: Curriculum Vitae





Charles has worked on a variety of projects involving fisheries, permitting, fish habitat mapping, species at risk monitoring and inventories as well environmental monitoring of water and sediment quality, fish communities and fish health and benthic invertebrate communities. As an aquatic biologist with Kilgour & Associates Charles has worked on and led numerous environmental monitoring programs and fish sampling surveys in rivers and lakes in the Ottawa, Sudbury, Timmins, Thunder Bay, Northern Saskatchewan and Athabasca River areas. Recently, Charles has been involved leading crews in the field as well as reporting for projects related to water quality monitoring, fisheries assessments, and environmental monitoring programs in Sudbury, Timmins, Thunder Bay, Northern Saskatchewan.

Charles has led numerous fish relocation programs in support of various in-water works projects related to stormwater management pond reconstruction and land development in the Ottawa and Peterborough areas as well as the realignment of portions of the Carp River in Ottawa. Charles has led broader scale environmental monitoring projects including wildlife and erosion and sediment control monitoring for long term construction projects in the Ottawa area. Additionally, Charles has taken care of permitting for sensitive in-water works projects including permitting the in-water work related to the demolition of the old Highway 11/17 bridge over the Nipigon River, a project that interacted with four species of salmonid and two listed species at risk.

Charles has also worked on a wide variety of projects involved with fish and fish habitat related to lakes as well as tributaries to lakes and tributaries of the Great Lakes. Recently, Charles led the bathymetric data collection as well fish habitat and fish community data collection and reporting for the Wabagishik and Nairn Generating Stations environmental assessments. In 2016, Charles designed and led sampling for the listed Deepwater Sculpin in several lakes in Quebec, just north of Ottawa. In 2014, Charles led a Lake Sturgeon habitat use project on the Spanish River, ON, under Environment and Climate Change Canada's Environmental Damages Fund.

EDUCATION

BSc, Microbiology, McGill University, 2007

BSc Honours, Environmental Science, Carleton University, 2010

MSc, Biology, Carleton University, 2013

PROFESSIONAL QUALIFICATIONS

Class I Boat Electrofishing Certificate (Boat Crew Leader/Backpack Trainer and Crew Leader)

Accredited Professional Erosion Control Installer (Completed February 2016)

CISEC Inspector – Certified Inspector of Sediment and Erosion and Control measures – Certification issued in February 2020.

MTO Fisheries Protocol Course (Completed October 2015)

Headwater Drainage Feature Assessment Course (April 2015)

Butternut Health Assessor (# 551 – Completed in Spring 2014)

EMPLOYMENT HISTORY

Kilgour & Associates, Ottawa, ON, Biologist, (2013 to present)

Fisheries and Oceans Canada, Research Associate (Jan – Jun 2013)

Research Assistant, Carleton University, Fish Ecology and Conservation Physiology Laboratory, 2010 to 2013

SAMPLE PROJECT EXPERIENCE

Wabagishik Generating Station Fisheries Assessment – (April to 2019) – Project Scientist/Manager – Assist with collection of fish and bathymetric data and reporting.

Nairn Generating Station Studies – (August 2017 to 2019) – Project Scientist/Manager – Responsible for organizing field work related to 2017 studies and performing bathymetric data collection and fish community assessment in 2018 and reporting.

Spawning activity and residency of Lake Sturgeon beneath Espanola Falls, Lower Spanish River – (Project Team Leader, Field Team Manager – Spring 2014) – Determined if and when Lake Sturgeon were entering the plunge pool beneath Espanola Falls to spawn. Spawn and they leave the Spanish River in the fall.

Seabee Gold Mine – (February 2020 to Present) – Project Manager – Responsible for developing the Study Design for the Mine's Cycle 7 EEM.

Timmins West Mine – (October 2020 to Present) – Project Manager – Responsible for developing the Study Design for the Mine's Cycle 4 EEM.

Nepean South Town Center – (July to Present) – Project Manager - Responsible for monitoring ESC mitigation measures on site

Richmond Village Development Corporation – (July 2020 to Present) – Project Manager – Responsible for monitoring ESC mitigation measures on site and water quality monitoring for a Municipal Drain re-alignment and reporting to DFO related to the Fisheries Authorization for the site.

Barrhaven Conservancy Development Corporation – (November 2019 to Present) – Project Manager – Responsible for monitoring ESC measures on site and water quality monitoring in nearby watercourse for large cut and fill operation near a River.

Abandoned Gould Mine Bat Monitoring – (Late Summer 2019) – Project Manager – Monitored and reported potential hibernacula for bat activity.

Strathcona Mill Environmental Effects Monitoring Program – (Spring 2019) – Field Crew Lead – Collected sentinel fish data

Holt Mine Environmental Effects Monitoring Program – (Spring 2018) – Project Manager – Reporting on data collected by Parks Environmental (sentinel fish, benthos, water quality).

Timmins West Mine Environmental Effects Monitoring Program – (Fall 2017 to October 2020) – Project Manager – Responsible for Study Design, monitoring, and reporting for the Timmins West Mine EEM.

Umbatta Falls Generating Station Fish Health Assessment – (Winter 2018 to 2019) – Project Manager – Responsible for data collection and

reporting on mercury concentrations in fish near the Umbatta Falls GS.

Seabee Gold Mine – (Fall 2017 to Present) – Project Manager – Responsible for field data collection and reporting for the Seabee Mine's EEM.

Shebandowan Closure Plan Monitoring – (Fall 2017 to Present) – Project Scientist/Field Crew Lead – Responsible for data collection and reporting.

Crean Hill Mine Environmental Effects Monitoring Program – (2017 to Present) – Fisheries Crew Lead – Responsible for collection of sentinel fish and reporting for the Crean Hill Mine's EEM.

Sudbury Smelter Investigation of Cause EEM – (April 2017 to 2019) Field Crew Lead – Responsible for collection of temperature and periphyton data for the Smelter's IOC EEM as well as reporting.

Totten Mine Investigation of Cause EEM – (April 2017-2019) – Project Manager – Responsible for Installation of temperatures, depth and dissolved oxygen for the Totten Mine IOC EEM as well as reporting.

Whitson River Subwatershed Study – (September 2017 to August 2018) – Project Manager – Responsible for water chemistry data collection as well as fish community assessment and reporting

Holt Mill Environmental Effects Monitoring Program – (Fall 2017) – Project Manager – Collect data required for reporting (sentinel fish, benthos, sediment and water sample collection). Report on findings.

Ethel Lake Assimilative Capacity Study – Fall 2017 – Project Scientist - Perform data collection on Lake, assist with reporting on fish habitat.

Whitson River Fish Habitat Assessment – Project Manager – (August 2017) – Assess fish habitat in a stretch of the Whitson River for presence of Brook Trout.

Whitewater Lake Subwatershed Study – (April to Present) – Operations Manager – Ensure water sample collection and analysis is conducted on schedule.

Domtar Conductivity Survey – (April 2017) – Project Scientist – Involved with data collection and analysis for reporting for a conductivity survey conducted for Domtar.

Toronto Harbour Index of Biotic Integrity – (Spring 2015 to Present) – Project Scientist – Calibrate TRCA electrofishing dataset to DFO dataset and write manuscript.

Whistle Mine Closure Study – (Summer 2016 to June 2017) – Project Manager – Conduct aquatic assessment (benthic collection, water sampling and fisheries) work related to mine closure plan and responsible for reporting.

KGHM Baseline Aquatic Assessment – (November 2015 – June 2017) – Project Manager – Responsible for submitting Study Design to Environment Canada (submitted) and carrying out field work in Fall of 2016.

Nolin Waste Water Treatment Plant Environmental Monitoring Program – (Fall 2016 to June 2017) – Project Scientist – Responsible for benthic collection in fall and reporting through to June.

Deepwater Sculpin Lake Sampling – (September 2016) – Project Manager – Design study and carry out sampling for deepwater sculpin in five lakes north of Ottawa under contract with DFO.

Monahan Drain (Creek) Rehabilitation – (January 2016 to August 2016) – Project Manager – Coordinate environmental work (regarding turtle/fish and other wildlife mitigation) with contractor for life of project.

KGHM Northern Pike and water sampling – (Winter 2016) – Project Manager – Responsible for organizing the collection of Northern Pike tissue samples and water samples for mercury analysis from waterbodies near Worthington Ontario.

Monahan Stormwater Pond Wetland Retrofit – (Summer 2015) – Project Manager – Coordinate environmental work (fish/turtle protection, goose mitigation etc.) with contractor and City of Ottawa throughout life of project.

Alberta Environmental Monitoring, Evaluation and Reporting Agency Oil Sands Monitoring Project – (September 2015) – Crew Leader – Primarily responsible for fish collection for lethal Trout-Perch surveys, additional responsibilities included water quality sampling and sediment sampling during the field season as well as reporting on the fish component (Winter 2016) of the project.

Seabee Mine EEM program (Summer 2015)– Field Manager – With Dr. Bruce Kilgour, responsible for sediment coring component of the EEM program and reporting of it. This program

employed a new AVS/SEM method for looking at dissolved metals near the sediment/water interface at the bottom of lakes.

Crean Hill and Totten Mine EEM programs – (Spring 2015) – Field Manager – Responsible for fish collection activities related to the Crean Hill and Totten Mine EEMs conducted in the Spring of 2015.

Request for Project Reviews to Fisheries and Oceans Canada – (Winter 2014 – 2015 – Project Manager) – Produced project reviews for Highway 11/17 Nipigon River bridge reconstruction and NCC shoreline remediation along the Rideau River. Onsite work ensured projects followed federal and provincial legislation related to fisheries and fish habitat.

Ottawa Airport Authority – Species at Risk Report – (January 2015) – Project Scientist – Acted as an editor of the report before finalization.

Aquatic Baseline Assessment of Red Pine Lake (Project Scientist and Field Team Manager - Fall and Winter 2014) - Take sediment and benthic samples from the lake, conduct a fish community assessment of the lake, assist with reporting and data analysis.

Whistle Mine Biodiversity Study, Capreol, ON – (Summer 2014 – Project Manager/Field Team Manager) – Design and report on biodiversity study on the Whistle Mine pit cover, Capreol, ON.

Fish and fish habitat study of the Simpson Drain local land developer, Ottawa, ON – (Summer 2014 – Project Manager/Field Team Manager) – Conduct and report on fish community assessment.

Fish and Fish Habitat Assessment of the Kingsview Park Shoreline, Ottawa, ON – (Summer 2014 – Project Manager/Field Team Manager) – Responsible for reporting on fish and fish habitat assessment conducted on Rideau River shoreline.

Analysis of Project Water for Shell Canada – (2014 – present – Project Scientist – Database Manager). Assists with report generation, manage Shell database.

Regional Aquatics Monitoring Program (RAMP, now JOSMP) – (Data Analyst - 2013-2014) - Provide support related to data analysis and report generation to Project Manager.

Baseline Aquatic Environmental Assessment, Victoria Creek, ON – (Project Scientist – Field Team Manager – Fall 2013) – Take sediment

benthic and fish community samples for the Victoria Mine project (KGHM International) and assist with data analysis and reporting.

Sudbury Smelter Closure Sampling, Falconbridge, ON – (Project Scientist – Field Team Manager – Fall 2013) – Take sediment and benthic samples for the Sudbury Smelter and assist with data analysis and reporting.

Xstrata Nickel, Sudbury Smelter, Environmental Effects Monitoring Cycle 2, Falconbridge, ON – (Project Scientist – Fall 2013) - Take sediment, benthic and fish samples for the Sudbury Smelter cycle 2 EEM and assist with data analysis and reporting.

Aquatic Environment Characterization in the vicinity of the Shebandowan Closed Mine Site, ON – (Project Scientist – Fall 2013) – Take sediment, benthic and fish samples for the Shebandowan Mine closure sampling plan and assist with data analysis and reporting.

Terra Nova offshore oil benthos and sediment monitoring program – (Data Analyst – 2013) – Assist with data analysis.

CanFishPass Database – (Project Manager – 2010 – 2013) – Created a national database (CanFishPass) of fishways in Canada for Fisheries and Oceans Canada.

PUBLICATIONS

Hatry C, JD Thiem, D Hatin, P Dumont, KE Smokorowski and SJ Cooke. 2016. Fishway approach behaviour and passage of three redhorse species (*Moxostoma anisurum*, *M. carinatum* and *M. macrolepidotum*) in the Richelieu River, Quebec. *Environmental Biology of Fishes*, 99:249-263.

C. Hatry, JD Thiem, TR Binder, D Hatin, P Dumont, KM Stamplecoskie, JM Molina, KE Smokorowski, and SJ Cooke. 2014. Comparative physiology and relative swimming performance of three redhorse (*Moxostoma* spp.) species: associations with fishway passage success. *Physiological and Biochemical Zoology*, 87(1):148-159.

Hatry C, TR Binder, JD Thiem, CT Hasler, KE Smokorowski, KD Clarke, C Katopodis, and SJ Cooke. 2013. The status of fishways in Canada: trends identified using the nation CanFishPass database. *Reviews in Fish Biology and Fisheries*, 23(3):271-281.

Hatry C, TR Binder, CT Hasler, KD Clarke, C Katopodis, KE Smokorowski, and SJ Cooke. 2011. Development of a national fish passage

database for Canada (CanFishPass): rationale, approach, utility, and potential applicability to other regions. *Canadian Water Resources Journal*, 36:219-228.

Silva AT, C Hatry, JD Thiem, LFG Gutowsky, D Hatin, D Zhu, JW Dawson, C Katopodis and SJ Cooke. 2015. Behaviour and locomotor activity of a migratory catostomid during fishway passage. *PLoS One* DOI: 10.1371/journal.pone.0123051

Thiem, JD, C Hatry, JW Brownscombe, F Cull, AD Shultz, AJ Danylchuk, and SJ Cooke. 2013. Evaluation of radio telemetry to study the spatial ecology of checkered puffers (*Sphoeroides testudineus*) in shallow tropical marine systems. *Bulletin of Marine Science* 89(2): 559-569.

Thiem, JD, TR Binder, P Dumont, D Hatin, C Hatry, C Katopodis, KM Stamplecoskie, and SJ Cooke. 2013. Multi-species fish passage behaviour in a vertical slot fishway on the Richelieu River, Quebec, Canada. *River research and Applications* 29:582-592

Brownscombe JW, JD Thiem, C Hatry, F Cull, CR Haak, AJ Danylchuk, and SJ Cooke. 2013. Recovery bags reduce post-release impairments in locomotory activity and behaviour of bonefish (*Albula* spp.) following exposure to angling-related stressors. *Journal of Experimental Marine Biology and Ecology* 440:207-215

Steffensen SM, JD Thiem, KM Stamplecoskie, TR Binder, C Hatry, N Langlois-Anderson, and SJ Cooke. 2013. Biological effectiveness of an inexpensive nature-like fishway for passage of warmwater fish in a small Ontario stream. *Ecology of Freshwater Fish* 22:374-383

Larocque SM, Hatry C, and EC Enders. 2014. Development of habitat suitability indices and bioenergetics models for Arctic grayling (*Thymallus arcticus*). *Can. Tech. Rep. Fish. Aquat. Sci.* 3097: vi + 57 p.

Cooke SJ, C Hatry, CT Hasler and KE Smokorowski. 2011. Literature review, synthesis and proposed guidelines related to the biological evaluation of “fish friendly” very low head turbine technology in Canada. *Canadian Technical Report of Fisheries and Aquatic Sciences* 2931.

PRESENTATIONS

C Hatry, BW Kilgour, C Portt, M Davies, C Hunt. 2015. A little bit of: Hydrodynamic modeling and HSI's to predict Lake Sturgeon spawning habitat in the Spanish River, And a short study on: Spawning activity and residency of Lake Sturgeon beneath Espanola Falls, Lower Spanish River, Ontario. *Canadian Conference for*

Charles Hatry, MSc

Fisheries Research, January 8-11, 2015, Ottawa, Ontario. (This presentation was subsequently performed at over 10 other workshops)

Hatry C, JD Thiem, TR Binder, D Hatin, P. Dumont, KM Stamplecoskie, JM Molina, KE Smokorowski, SJ Cooke. Comparative physiology and relative swimming performance of three redhorse (*Moxostoma* spp.) species: associations with fishway passage success. International Conference on Engineering and Ecohydrology for Fish Passage, June 25-27, 2013.

C Hatry, KE Smokorowski, SJ Cooke. Trends in fish passage in Canada and a case study on redhorse (*Moxostoma* spp.) passage at a vertical slot fishway. HydroNet symposium, March 20th-22nd, Vancouver, British Columbia, 2012.

C Hatry, KE Smokorowski, SJ Cooke. Comparative aspects of fish passage success by three redhorse species at a vertical slot fishway: behavioural and physiological perspectives. Research proposal, HydroNet symposium, March 29th-30th, 2011, Winnipeg, Manitoba.

JD Thiem, C Hatry. Field and laboratory approaches to addressing barriers to fish migration. DFO Habitat Workshop, March 3rd, Picton, Ontario, 2011.

C Hatry, T Binder, C Hasler, C Katopodis, K Clarke, KE Smokorowski, and SJ Cooke. Development of a National Fish Passage Inventory for Canada: CanFishPass. Poster presentation at the Canadian Conference for Fisheries Research, January 4th-7th, 2011, Toronto, Ontario.