Michael Henry, PhD

Technical Director

Dr. Michael Henry is a Technical Director at ERM and is the Manager of the Canadian Freshwater and Marine Sciences Division in Vancouver, BC. Dr. Henry has more than 20 years of experience in the field of freshwater and marine ecology, project delivery, data analysis, and technical writing and editing and has a PhD in Oceanography from UBC. He has vast experience conducting freshwater and marine surveys related to Capital Projects, completing Environmental Impact Assessments, permit-related monitoring and reporting, and developing and executing Environmental Effects Monitoring (EEM) and Aquatic Effects Monitoring (AEMP) programs in Nunavut, the Northwest Territories, British Columbia, Labrador, and internationally in the Dominican Republic and Chile.

Experience: 20 years' experience in academics and government; 10 years' experience in metal, diamond, and coal mining; 10 years' experience in marine outfalls; 5 years' experience in LNG and Oil and Gas; 5 years' experience in Power.

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Education

- Ph.D., Oceanography, University of British Columbia, Canada, 2005
- B.Sc., Ecology and Evolution, University of Western Ontario, Canada, 1994

Languages

- English, native speaker

Fields of Competence

- Environmental Impact Assessment
- Development and design of aquatic baseline programs, Aquatic Effects Monitoring Programs (AEMPs), and Environmental Effects Monitoring (EEM) programs
- Regulatory permitting and compliance
- Water Quality, Sediment Quality, and Biological Assessments

Key Industry Sectors

- Mining
- Oil and Gas
- Power (thermoelectric, hydro, and wind)

Honors and Awards

- NSERC Canada Graduate Scholar

Key Projects

Hope Bay Project, Nunavut, Canada, 2008-present.
Aquatics and Marine Lead
Dr. Henry was the lead technical expert for the freshwater and marine volumes of TMAC's Phase II/Madrid-Boston DEIS and FEIS, including the development of the Aquatic Effects Monitoring Program (AEMP) and the hydrodynamic modelling of effluent discharge in the marine and freshwater environments. Dr. Henry also developed and has been responsible for the execution and re-evaluation of the Doris AEMP since 2010 to comply with the Doris Mine Type A Water Licence.

During his 10 years on the Hope Bay Project, Dr. Henry has been instrumental in several water licence and mine certificate amendments, including the amendment to move the tailings impoundment water discharge from a small stream to the coastal marine environment. Dr. Henry has been responsible for the permitting of marine effluent discharge into Roberts Bay, including the near-field and far-field hydrodynamic dispersion modelling, and was responsible for developing the the Roberts Bay EEM program to comply with MMER regulations.

The Doris AEMP program has successfully evaluated potential Doris Mine effects in the freshwater and marine environments for water quality, sediment quality, benthic macroinvertebrates, and phytoplankton data since 2010. No mine effects have been observed to date under the AEMP. Dr. Henry has also evaluated the effects of drilling salt spills on the aquatic environment and has been responsible for developing all freshwater and marine programs since 2008.

Back River Project, Nunavut, Canada, 2009-present
Aquatics and Marine Lead
Dr. Henry was responsible for the development and direction of freshwater and marine baseline programs since 2009, including baseline and monitoring studies that were designing to identify potential risks associated with marine ports in Bathurst Inlet. Dr. Henry provided senior review and direction of the freshwater and marine components of the DEIS and lead the oil spill modelling component designed to track the fate of a large scale spill in Bathurst Inlet.

Hackett River, Nunavut, Canada, 2008-2013.
Aquatics and Marine Lead
Dr. Henry was responsible for the development and execution of freshwater and marine baseline studies to support the future permitting of the project. The baseline studies including sampling of water and sediment quality and aquatic resources in Project lakes and streams, as well as local and basin-scale studies in Bathurst Inlet.

Bathurst Inlet Port and Road Project, Nunavut, Canada, 2008-2013.
Aquatics and Marine Lead
Dr. Henry was responsible for the development and execution of freshwater and marine baseline studies to support the future permitting of the project. The marine programs included local and basin-scale sampling of Bathurst Inlet, including physical profiling, water and sediment quality, and marine resources such as benthic invertebrates and primary producers. Acoustic Doppler Current Meters (ADCPs) were also installed throughout Bathurst Inlet to support the hydrodynamic modelling of the inlet circulation.

Baffinland Mary River Project, NU, Canada, 2014–2015.
Project Manager and Aquatic Scientist
Dr. Henry oversaw the development of construction environmental monitoring program at the Milne Ore Dock, which involved physical profiling, turbidity measurements, marine mammal observations, and noise modelling during the construction of the marine port. Dr. Henry provided on-site and desktop support for the construction environmental protection

program to meet permitting and regulatory requirements specific to the Fisheries Act.

EKATI Diamond Mine, Northwest Territories, Canada, 2009-present
Aquatics Lead
Dr. Henry been a senior reviewer for the AEMP since 2008. He has developed baseline programs for various aspects of the Ekati programs and has developed several response plans as part of the AEMP. Dr. Henry has developed several mitigation plans to reduce potential mine effects such as designing the phosphate amendment program designed to mitigate on-site nitrate levels via phytoplankton drawdown.

Kitimat LNG, BC, Canada, 2015–present.
Senior Scientist Water Quality, Sediment Quality, and Aquatic Resources
Aquatics Lead
Dr. Henry has developed and overseen several freshwater and marine monitoring programs related to Chevron's stormwater permit, including the Bish Creek AEMP; a pH Benchmark Study to re-evaluate discharge pH criteria, a periphyton monitoring study, and writing Chevron's annual stormwater permit monitoring report. Dr. Henry acts a senior advisor and reviewer for Chevron and represents the client at regulatory meetings

Trans Mountain Expansion Project, 2017-present.
Dr. Henry acted as the senior marine expert for the Due Diligence reporting of the Trans Mountain Expansion Project related to project risks in Burrard Inlet, the Strait of Georgia, and coastal British Columbia. Dr. Henry continues to track project compliance and associated risks with the project.

Iona Deep Sea Outfall Receiving Environment Monitoring Program – Sediment Effects Survey, Burrard Inlet, 2017-present.
Project Manager and Technical Lead
Dr. Henry served as the Project Manager and senior reviewer of the 2017 and 2018 programs. Dr. Henry oversaw the successful execution of field sampling, sample analysis, and reporting of the project. Dr. Henry was instrumental in the statistical approach and the use of temperature-salinity relationships in tracking the effluent plume in the Strait of Georgia.

Lions Gate Receiving Environment Monitoring Program – Sediment Effects Survey, Burrard Inlet, 2015-present
Project Manager and Technical Lead
Dr. Henry served as the Partner-in-Charge of the 2015 Lions Gate Sediment Effects Survey and the Project Manager of the 2017 and 2018 programs. Dr. Henry oversaw the successful execution of field sampling, sample analysis, and reporting of the project. Dr. Henry presented the results of the 2015 Lions Gate program to Metro Vancouver staff and the Environmental Monitoring Committee.

Pueblo Viejo Project, Dominican Republic, 2008-present
Aquatics and Marine Lead
Dr. Henry has been responsible for the development and direction of freshwater and marine baseline programs at PV since 2009. During this time he has written freshwater and marine assessments for EAs, designed baseline and monitoring programs, and provided senior review and guidance for all phases of the project.

Key Projects Prior to Joining ERM

BC Hydro Burrard Generating Station, Port Moody Arm, British Columbia, 1998-2005
PhD Research
Dr. Henry carried out an intensive study how cooling water discharge from a once-through cooled thermoelectrical powerplant affected the marine ecosystem in a small, tidal estuary. Key findings negated any effects of entrainment on marine organisms through the cooling water system, but found that the primary effect was by moving nutrient-rich bottom water into the surface waters, thereby stimulating primary production.

Macroecology of Marine Mammal-Seabird-Plankton Interactions in North Pacific Ocean, Pt. Reyes Bird Observatory, 2002-2008.
Research Scientist

Dr. Henry was responsible for the development and execution of a 7,500 km transect study of marine mammal, seabird, zooplankton, and phytoplankton interactions as determined by physical forcings. During this Dr. Henry spend more than 350 days at sea over a 6-year period and surveyed more than 200,000 km of the North Pacific Ocean. This research has produced several published papers.

Publications

- Sydeman, W.J., S.A. Thompson, J.A. Santora, M.F. Henry, K.H. Morgan and S.D. Batten (2010) Macro-ecology of plankton-seabird associations in the North Pacific Ocean. Journal of Plankton Research, 32:1697-1713.
- Hyrenbach, K.D., Henry, M.F., Morgan, K.H., Welch, D.W., and Sydeman, W.J. (2007) Optimizing strip transects for seabird surveys from ships of opportunity. Marine Ornithology, 35:29-38.
- Needoba, J.A., Marchetti, A., Henry, M.F., Harrison, P.J., Wong, C.S., Johnson, W.K., and Pedersen, T.F. (2006) Stable Nitrogen Isotope Dynamics of a Mesoscale Iron Enrichment Experiment in the NE Subarctic Pacific. Deep Sea Research II, 53: 2214-2230.
- Batten, S.D., Hyrenbach, K.D., Sydeman, W.J., Morgan, K.H., Henry, M.F., Yen, P.P.Y., and Welch, D.W. (2005) Characterising Meso-Marine Ecosystems of the North Pacific. Deep-Sea Research II, 53: 370-386.
- Sharma, S., Vingarzen, R., Barrie, L.A., Norman, A.L, Sirois, A., Henry, M., and DiCenzo, C. (2003) Production of dimethylsulphide and its impact on the atmospheric sulfur budget on the Canadian West Coast. Journal of Geophysical Research D., 108(D15), 4459.

Key Presentations

- Henry, M.F., Batten, S.D., Hyrenbach, K.D., Morgan, K.H., and Sydeman, W.J. (2008) Macroecological patterns in North Pacific ecosystem dynamics: spatio-temporal co-variation in upper and lower trophic level diversity and productivity from Canada to Japan. Pacific Seabird Group 35th Annual Meeting, Feb. 27-March 2, 2008, Blaine, Washington, USA (Poster Presentation)
- Henry, M.F., Batten, S.D., Hyrenbach, K.D., Morgan, K.H., and Sydeman, W.J. (2007) The meso-scale response of subarctic North Pacific seabird community structure to lower trophic level abundance and diversity. PICES 16th Annual Meeting, Oct. 26-Nov. 5, 2007, Victoria, British Columbia, Canada. (Oral Presentation)
- Henry, M. F., and Harrison, P.J. (2005) The effects of nutrient loading from power plant cooling-water discharges on the phytoplankton dynamics of Port Moody Arm, British Columbia, Canada. American Society for Oceanography and Limnology Ocean Summer Meeting. Santiago de Compostela, Spain. (Poster Presentation)
- Henry, M.F., Sharma, S., Marchetti, A., Peterson, T.D., and Harrison, P.J. (2002) Seasonal Responses of Phytoplankton Growth and Particulate Dimethylsulfoniopropionate (DMSPp) Concentrations to Iron-additions in the NE Subarctic Pacific. ASLO Ocean Meeting. Honolulu, Hawaii. (Oral Presentation)
- Henry, M.F., and Harrison, P.J. (1999) The effects of thermoelectric cooling water discharge on the phytoplankton ecology of Port Moody Arm. Workshop on the Effects of Burrard Generating Station Cooling Water Discharge in Port Moody Arm, Port Moody, British Columbia. (Oral Presentation)