Dr. Mike Henry

Technical Director, Freshwater and Marine Sciences

Dr. Michael Henry is a Technical Director and Discipline Manager of Freshwater and Marine Sciences at ERM based 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. He has vast experience in basin-scale oceanography and has conducted marine-specific Environmental Impact Assessments and Environmental Effects Monitoring (EEM) programs in British Columbia, Nunavut, and internationally in the Dominican Republic and Chile. He has also studied how thermoelectrical power generation affects estuarine environments.

Dr. Henry's technical expertise lays in the investigation of how physico-chemical processes shape biological communities in marine environments on macro scales. He has conducted research on more than 30 open-ocean surveys and has studied all trophic levels including microscopic bacteria and primary producers to macrofauna including seabirds and marine mammals. Most of Dr. Henry's marine field-going experience has taken place in coatal British Columbia (Burrard Inlet, Strait of Georgia, various fjords, and the west coast of Vancouver Island) and the northeast Pacific Ocean.

Recently, Dr. Henry has focused his career assessing the environmental effects of Capital Project development on water quality and aquatic life. He has recently designed the marine programs for the Potash Port Project, Metro Vancouver, Kitsault Mine in BC; the Hope Bay Gold Mine, Back River Gold Mine, Hackett River Mine, and Bathurst Inlet-Road-Port projects in Nunavut; and marine programs in the Dominican Republic (Pueblo Viejo) and Chile. He has also been involved in the development of several Aquatic Effects Monitoring Programs including the Hope Bay Gold Mine and Back River Gold Mine in Nunavut, Dome Mountain in BC, and at the EKATI diamond mine and the Jericho Mine in the Northwest Territories.

Fields of Competence

- Environmental Impact Assessment
- Macro-scale Ecology
- Development and design of Aquatic Effects Monitoring Programs (AEMPs) and Environmental Effects Monitoring (EEM) programs
- Regulatory permitting and compliance
- Water Quality, Sediment Quality, and Biological Assessments
- Seabirds and Marine Mammals
- Oceanographic remote sensing

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

Key Industry Sectors

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

Honours & Awards

- NSERC Canada Graduate Scholar

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.

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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.

Henry, M.F., and Harrison, P.J. (2002) Burrard Generating Station Cooling Water Impact Study: The effects of Burrard Generating Station (BGS) cooling water discharge on the phytoplankton ecology of Port Moody Arm, BC. Report prepared for BC Hydro. 108pp+appendices.

Key Projects

Potash Port Project, BC, Canada, BHP Billiton, 2009
Marine Lead Investigator
Dr. Henry was responsible for scoping three potential port locations in coastal BC for the shipping of potash from Canada's interior to global markets. Dr. Henry provided permitting support, including that for ocean disposal, and designed and conducted marine surveys near Prince Rupert for water quality, sediment quality, and marine biota including micro-organisms, fish, seabirds, and marine mammals. Dr. Henry also developed and conducted the marine sampling program to support ocean disposal permitting.

Lions Gate Sewage Outfall Microbial Effects Study, Burrard Inlet, MetroVancouver, 2014
Marine Lead Investigator
Dr. Henry developed the study design to quatify potential effects of treated sewage effluent on the microbial communities of Burrard Inlet using molecular probes. This study was designed to compliment MetroVancouver's 15-year sediment quality and benthic invertebrate study of the effects of Lions Gate wastewater discharge and will yield new insights into how the discharge affects the surrounding marine environment.

Greater Nanaimo Pollution Control Centre Wastewater Outfall Sediment Effects Study, 2004
Marine Lead Investigator
Dr. Henry was responsible for the statistical effects assessment of the Greater Nanaimo sewage discharge o the surrounding sediment quality and benthic infaunal communities in the surrounding Strait of Georgia. A variety of spatial statistical techniques were used to determine how the discharge affected the surrounding sediment quality, and in turn, how this shaped the surrounding benthic infaunal communities.

BC Hydro Burrard Generating Station, Port Moody Arm, British Columbia, 1998-2005
Research Scientist

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.

Hope Bay Project, Nunavut, Canada, Newmont, 2008-present.
Aquatics and Marine Lead Investigator
Dr. Henry was responsible for developing the Doris North Aquatic Effects Monitoring Program (AEMP) to comply with water licence and MMER regulations. This program has successfully evaluated potential mine effects since 2010. Dr. Henry has also 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. He has 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, NU, Canada, Sabina, 2009-present
Aquatics and Marine Lead Investigator
Dr. Henry has been responsible for the development and direction of freshwater and marine baseline programs since 2009. This has included senior review, study design to comply with EA expectations, and permitting.

Pueblo Viejo Project, Dominican Republic, Barrick Gold, 2008-present
Aquatics and Marine Lead Investigator
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 assessements for EAs, designed baseline and monitoring programs, and provided senior review and guidance for all phases of the project.

Macroecology of 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 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. This research has produces several published papers.

Atmospheric and Marine Trace Gases in the Strait of Georgia, BC, Environment Canada
1999-2002
Dr. Henry developed the study plan to determine the spatiotemporal trends of the atmospheric and marine trace gas, dimethylsulphide (DMS), and biological precursor, dimethylsulphoniopropionate (DMSP), through the entire Strait of Georgia, BC. Dr. Henry was instrumental in the study design pertaining to the physical and chemical oceanography and how this influenced phytoplankton dynamics and thus DMS dynamics. He was responsible for the field collection and statistical analysis and contributed to the preparation of the scientific manuscript.

EK**ATI Diamond Mine, NU, Canada, BHP Billiton, 2009-present**
Aquatics Lead
Dr. Henry developed the phosphate amendment program designed to mitigate on-site nitrate levels via phytoplankton drawdown. This program has been ongoing since 2009. Dr. Henry has also carried out or has been the senior reviewer for the AEMP since 2008.