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## **Marc S. Porter**

### **Post-Secondary Education**

- **MSc. Zoology.** University of Guelph, 1990–1993
- **BSc. Wildlife Biology.** University of Guelph, 1982–1986

### **Professional Associations**

- **Registered Professional Biologist (RPBio)** with the British Columbia College of Applied Biology

### **Professional Experience**

- 2003 - present **Systems Ecologist**, ESSA Technologies Ltd., Vancouver, BC.
- 2001 - 2003 **Habitat Inventory Biologist/GIS Analyst**, DFO Pacific Region, Habitat Enhancement Branch, Vancouver, BC
- 1997 – 2001 **Research Biologist**, BC Fisheries Research Branch, Ministry of Environment, Lands and Parks, Vancouver, BC
- 1993 – 1997 **Environmental consultant** with various companies and government agencies

### ***Fisheries and Wildlife Research and Monitoring***

- Assisted in development of models for predicting the impacts to bull trout, Chinook and coho salmon of altered water temperatures and stream flows resulting from climate change in the Cariboo-Chilcotin region
- Facilitated the Collaborative, Systemwide Monitoring and Evaluation Project that is charged with developing monitoring designs for assessing the status and trends of listed salmon, steelhead and bull trout and the effectiveness of recovery actions (hydrosystem, harvest, hatcheries, and habitat) in the Columbia Basin (ESSA – CBFWA)
- Facilitating the Bull Trout Recovery Monitoring and Evaluation Technical group (RMEG) that is charged with developing monitoring plans for assessing recovery of ESA listed bull trout in the U.S. Pacific Northwest (ESSA - USFWS)
- Undertook analyses of large scale watershed restoration projects in the Columbia Basin across multiple watersheds to examine ability to detect population level response to habitat restoration actions (ESSA – BPA)
- Facilitated multi-agency analyses of the causes of differential mortality in Columbia River Chinook populations and evaluated the evidence for delayed mortality as a result of hydrosystem impacts (ESSA – Fish Passage Center)

- Developed models for predicting fish habitat use and anticipating effects of forestry activities on BC fish populations (*BC Ministry of Environment, Lands and Parks*)
- Undertook extensive fish inventories of trout and salmon in BC as part of investigation into logging impacts on coastal salmonids in small streams
- Facilitating development of a conceptual framework and an adaptive environmental assessment and management plan for fish and wildlife components of California's Trinity River Restoration Program (*ESSA – U.S. Bureau of Reclamation*)
- Assisted in development of California's Clear Creek Decision Analysis Model (CCDAM), a computer model for simulating a range of managed flow scenarios within an adaptive management framework (*ESSA – U.S. Bureau of Reclamation*)
- Conducted surveys of song birds, raptors and waterfowl within boundaries of Ivvuvik National Park, a remote wilderness reserve in the northwest Yukon (*Biota Consultant – Canadian Parks Services*)
- Undertook wildlife surveys along proposed natural gas pipeline corridors in southern Alberta, (*Axys Consultants – Alberta Natural Gas Co.*)
- Coordinated field crew undertaking assessment of distribution, life-history patterns and habitat requirements of the endangered Pacific Giant Salamander in southwestern British Columbia (*University of British Columbia – BC Ministry of Environment, Lands and Parks*)
- Conducted systematic aerial and ground-based surveys for large mammals in northeastern British Columbia as part of environmental scoping of natural gas project (*Axys Consultants – BC Ministry of Environment, Lands and Parks*)
- Conducted helicopter and ground based-surveys of ducks, geese and loons breeding on wetlands throughout northeastern Ontario (*Canadian Wildlife Service*)
- Monitored movements and behaviour of tagged and radio-collared Kaka (an endangered sub-alpine parrot) in the mountains of New Zealand's Nelson Lakes National Park (*New Zealand Department of Scientific and Industrial Research*)

#### *Modeling/Databases and Geographic Information Systems (GIS)*

- Developed, tested and refined field based protocols for spatially accurate GPS mapping of sensitive aquatic and wildlife habitats in streams and coastal shorelines (Federal/Provincial SHIM program) (*Department of Fisheries and Oceans*)
- Developed courses on the use of ArcView GIS and DFO's spatial data systems, and delivered the curriculum to DFO staff across the pacific region (*Department of Fisheries and Oceans*)
- Contributed to the development of a MapGuide Internet site (Community Mapping Network) for assembling and centralizing agency and community-based provincial fish and wildlife information (*Department of Fisheries and Oceans*)
- Undertaking development of spatial models describing and predicting fish species distributions within the province, based on mapped themes existing within the BC Watershed Atlas GIS (*ESSA - BC Ministry of Sustainable Resource Management*)
- Undertook preliminary sensitivity analyses of the BC MOE's Watershed Evaluation Tool (WET) to determine the model's robustness to biases and scoring assumptions in designating Fisheries Sensitive Watersheds (FSWs) for the province
- Coordinated review of USFWS hydraulic models for predicting Chinook strandings and extent of spawning habitat in the Columbia River's Hanford Reach (*ESSA – USFWS*)
- Undertook regional review of DFO (Pacific) data systems for delivering fish habitat information to internal staff, partners and the general public (*Department of Fisheries and Oceans*)

## Selected Publications and Reports

- Nelitz, M., M. Porter, K. Bennett, A. Werner, K. Bryan, F. Poulsen, and D. Carr.** 2009. Evaluating the vulnerability of freshwater fish habitats to the effects of climate change in the Cariboo-Chilcotin: Part I – Summary of technical methods. Report prepared by ESSA Technologies Ltd. and Pacific Climate Impacts Consortium for Fraser Salmon and Watersheds Program, B.C. Ministry of Environment, and Pacific Fisheries Resource Conservation Council.
- Nelitz, M., M. Porter, K. Bennett, A. Werner, K. Bryan, F. Poulsen, and D. Carr.** 2009. Evaluating the vulnerability of freshwater fish habitats to the effects of climate change in the Cariboo-Chilcotin: Part II – Summary of results. Report prepared by ESSA Technologies Ltd. and Pacific Climate Impacts Consortium for Fraser Salmon and Watersheds Program, B.C. Ministry of Environment, and Pacific Fisheries Resource Conservation Council.
- Wieckowski, K., D. Pickard, M. Porter, D. Robinson, D. Marmorek, and C. Schwarz.** 2008. A conceptual framework for monitoring Fisheries Sensitive Watersheds (FSW).. Report prepared by ESSA Technologies Ltd. for BC Ministry of the Environment (MOE), Victoria, BC. 61 p.
- Porter, M., D. Pickard, K. Wieckowski and K. Bryan.** 2008. Developing fish habitat models for broad-scale forest planning in the Southern Interior of B.C. Report prepared by ESSA Technologies Ltd. and B.C. Ministry of the Environment (MOE) for B.C. Forest Science Program, PricewaterhouseCoopers, Vancouver, B.C.
- U.S. Fish and Wildlife Service (USFWS) - Marmorek, D.R. and M. Porter (eds).** 2008. Bull Trout Recovery: Monitoring and Evaluation Guidance. Report prepared for the U.S. Fish and Wildlife Service by the Bull Trout Recovery and Monitoring Technical Group (RMEG). Portland, Oregon. Version 1.
- Marmorek D.R., M. Porter, and D. Pickard. eds.** 2008. Integrated Assessment Plan for the Trinity River Restoration Program (TRRP).. Report prepared for the Trinity River Restoration Program, Weaverville, CA
- Wieckowski, K., D. Pickard, D. Robinson and M. Porter.** 2008. A Conceptual Model for the Fisheries Sensitive Watersheds (FSW) Monitoring Framework. Final report prepared by ESSA Technologies Ltd. for the BC Ministry of Environment.
- Marmorek, D.R., M. Porter, D. Pickard and K. Wieckowski (eds.), Collaborative Systemwide Monitoring and Evaluation Project (CSMEP).** 2007. Snake River Basin Pilot Study: Volumes 1 and 2. Prepared by ESSA Technologies Ltd., Vancouver, B.C. on behalf of the Columbia Basin Fish and Wildlife Authority, Portland, OR. 2007.
- Nelitz, M., K. Wieckowski, M. Porter, and C. Perrin.** 2007. Refining habitat indicators for Strategy 2 of the Wild Salmon Policy: Practical assessment of indicators. Final report prepared by ESSA Technologies Ltd. and Limnotek Research and Development, Vancouver, B.C. for Fisheries and Oceans Canada, Kamloops, B.C.
- Nelitz, M., K. Wieckowski and M. Porter.** 2007. Refining habitat indicators for Strategy 2 of the Wild Salmon Policy: Identifying metrics and benchmarks. Final report prepared by ESSA Technologies Ltd. for Fisheries and Oceans Canada, Kamloops, BC.
- Nelitz, M., M. Porter, and D. Marmorek.** 2007. Scoping document to assess the feasibility, impacts, and benefits (FIBs) of restoring anadromous salmon to the Canadian reaches of the upper Columbia River. Draft report prepared by ESSA Technologies Ltd., Vancouver, BC for the Canadian Columbia River Inter-tribal Fishery Commission (CCRIFC), Cranbrook, BC.
- Porter, M.** 2007. Habitat creation briefing paper for the Hul'qumi'num Treaty Group. Report prepared by ESSA Technologies Ltd. for the Hul'qumi'num Treaty Group, BC. 20 pp.
- Porter, M. and M. Nelitz.** 2006. Preliminary analyses of the sensitivity of Fisheries Sensitive Watershed (FSW) scoring to alternative Watershed Evaluation Tool (WET) model structure, normalizations

- and component weightings. Draft report prepared by ESSA Technologies Ltd., Vancouver, B.C. for Ministry of Water, Lands and Air Protection, Victoria, BC.
- Porter, M., and M. Nelitz.** 2006. Range delineation and principal component (PC) based habitat model revisions for BC's freshwater fish species. Prepared by ESSA Technologies Ltd., Vancouver, BC, for the BC Ministry of Environment, Victoria, BC.
- Nelitz, M. and M. Porter.** 2006. Review of Deltaport Third Berth Project fish habitat compensation plan. Report prepared by ESSA Technologies Ltd., Vancouver, BC for Hul'qumi'num Treaty Group, Ladysmith, BC.
- Nelitz, M., C. Murray, M. Porter, and D.R. Marmorek.** 2006. Managing Pacific salmon for ecosystem values: ecosystem indicators and the Wild Salmon Policy. Report prepared by ESSA Technologies Ltd., Vancouver, B.C. for Pacific Fisheries Resource Conservation Council, Vancouver, BC. 76 pp.
- Marmorek D.R., I. Parnell and M. Porter, eds.** 2005. Conceptual models and hypotheses for the Trinity River Restoration Program. Report prepared for the Trinity River Restoration Program, Weaverville, CA.
- Porter, M.** 2005. Fall Chinook salmon habitat analysis and stranding/entrapment evaluation in the Hanford Reach of the Columbia River; Peer review report comments. Report prepared by ESSA Technologies Ltd., Vancouver, BC for the US Fish and Wildlife Service, Vancouver, WA.
- Marmorek, D.R., M. Porter, I.J. Parnell and C. Peters, eds.** 2004. Comparative Survival Study Workshop, February 11–13, 2004. Report compiled and edited by ESSA Technologies Ltd., Vancouver, B.C. for the Fish Passage Center, Portland, OR and the US Fish and Wildlife Service, Vancouver, WA.
- Marmorek, D.R., I.J. Parnell, M. Porter, C. Pinkham, C.A.D. Alexander, C.N. Peters, J. Hubble, C.M. Paulsen and T.R. Fisher.** 2004. A multiple watershed approach to assessing the effects of habitat restoration actions on anadromous and resident fish populations. Prepared by ESSA Technologies Ltd., Vancouver, B.C. for Bonneville Power Administration, Portland, OR.
- Porter, M., and L. Frid.** 2004. Principal Component (PC) based models for predicting distributions of BC's freshwater fish species. Prepared by ESSA Technologies Ltd., Vancouver, BC, for Vicki Marshall, BC Ministry of Sustainable Resource Management, Victoria, BC.
- Porter, M.** 2004. Delineation of fish species ranges based on the BC Watershed Atlas. Prepared by ESSA Technologies Ltd., Vancouver, B.C. for BC Ministry of Sustainable Resource Management, Victoria.
- Alexander, C.A.D., D.R. Marmorek, C.N. Peters and M. Porter.** 2003. Clear Creek Decision Analysis and Adaptive Management Model: Design document. Report prepared by ESSA Technologies Ltd., Vancouver, BC for U.S. Bureau of Reclamation, Shasta Lake, CA. 116 pp + appendices.
- Porter, M.** 2003. Introduction to Geographic Information Systems (GIS): An Instructional Manual for DFO Personnel. Internal DFO training manual.
- Lynch, C. N. and M. Porter.** 2003. Fisheries and Oceans Canada, Pacific Region, habitat information management review. Internal DFO Report - Habitat and Enhancement Branch. Fisheries and Oceans Canada, Vancouver, BC.
- Rosenfeld, J., M. Porter; M. Pearson, B. Wicks, P. van Dishoeck, T. Patton, E. Parkinson, G. Haas and D. McPhail.** 2001. The influence of temperature and habitat on the distribution of chiselmouth, *Acrocheilus alutaceus*, in British Columbia. *Environmental Biology of Fishes* 62: 401-413.
- Haas, G. and M. Porter.** 2001. Bull trout – identifying strategies for conserving a species at risk. Fisheries Project Report No. 88. BC Fisheries.
- Porter, M., G. Haas and E. Parkinson.** 2000. Sensitivity of British Columbia's freshwater fish to timber harvest: using species traits as predictors of species risk. Fisheries Management Report No. 114. BC Fisheries.
- Rosenfeld, J. M. Porter. E.A. Parkinson.** 2000. Habitat factors affecting the abundance and distribution of juvenile cutthroat trout and coho salmon. *Canadian Journal of Fisheries and Aquatic Sciences* 57: 766-774.

- Porter, M., J. Rosenfeld, and E.A. Parkinson.** 2000. Predictive models of fish distribution in the Blackwater drainage, British Columbia. *North American Journal of Fisheries Management* 20: 349-359.
- Porter, M. and J. Rosenfeld.** 1999. Microhabitat selection and partitioning by an assemblage of fish in the Nazko River. Ministry of Fisheries Project Report No. RD 77.
- Thompson, I.D., M.S. Porter, and S.L. Walker.** 1987. A key to the identification of some small boreal mammals of central Canada from guard hairs. *Canadian Field Naturalist* 101:614-616.