

## *Curriculum Vitae* - **William George Alliston**

**Born:** 16 August 1939, Fredericton, New Brunswick

**Citizenship:** Canadian

### **Education**

**Primary:** Garden Creek School  
Fredericton, New Brunswick (1945 - 1952)

**Secondary:** Fredericton High School (1952 - 1956)

**University:** University of New Brunswick (1956 - 1961)

McGill University (1968 - 1970)

Cornell University (1970 - 1974)

### **University**

**Degrees:** B.Sc. in Electrical Engineering (UNB, 1962)

Ph.D. in Wildlife Science with minors in animal behaviour  
and biometrics (Cornell University, 1979)

### **Professional**

**Certification:** Certified Wildlife Biologist (CWB), The Wildlife Society

Professional Engineer, Order of Engineers of Quebec

### **Professional Work Experience**

**1961-1968** Professional Engineer with **Bell Canada** (Montreal) designing  
and maintaining special long distance circuits.

**1975-1985** Biologist then Regional Director, Eastern Canada, with **LGL Ltd.**  
(Toronto), an environmental consulting firm specializing in  
biological research in arctic regions. Worked in various capacities as  
field biologist, field supervisor/biologist and project co-ordinator  
carrying out biological inventories and research and the preparation  
of environmental impact assessments. Projects included the proposed  
Polar Gas Pipeline, to bring gas south from Melville Island;  
B.C. Hydro's proposed Liard River hydro-electric dam and its  
potential impacts on water bird populations in the MacKenzie River  
Delta; and the effects of hydrocarbon development activities in the  
Beaufort Sea upon endangered Bowhead Whale populations.

*Curriculum Vitae* - **William George Alliston**

**Professional Work Experience** (continued)

**1985 - Present** - Retired to Nova Scotia to pursue a more independent life style.

Recently conducted wildlife inventory studies for several resource extraction projects.

Active volunteer, particularly with natural history/conservation organizations including:

**Blomidon Naturalists Society (BNS)** - co-edited the *BNS Newsletter* for eight years, member of the Board of Directors for four years, and member of the Conservation Committee for twelve years.

**Federation of Nova Scotia Naturalists (FNSN)** - member of the Board of Directors for six years.

**Nova Scotia Nature Trust (NSNT)** - Chair, NSNT Properties Committee for four years ; member of the Board of Directors for four years and currently Coordinator Kings Working Group (five years) .

**Acadia University Animal Care Committee** - currently the community representative (seven years).

**JOHN A. AMIRAUT, M.Eng., P.Eng.  
Consulting Engineer**

33 Greenmount Drive  
Dartmouth, NS B2V 2L7  
Tel: (902) 462-8794  
Fax: (902) 462-4856

Email: [john.a.amirault@ns.sympatico.ca](mailto:john.a.amirault@ns.sympatico.ca)  
<http://www3.ns.sympatico.ca/john.a.amirault/>

**PROFILE**

*An accomplished Professional Engineer and Manager with a reputation as a skilled executive planning strategist, tactician, negotiator and mediator. Repeatedly demonstrates superior knowledge and skills while managing project initiatives from concept feasibility through to successful completion. Broad expertise applied in diverse areas of government, mining, construction, transportation, environment, and community consultation. Demonstrates strong skills for proactive, articulate communication with a clearly focused, hands on operating style.*

**Consulting Engineer**

**Since 1994**

Offering professional services as an independent engineering and environmental consultant operating from a base in Atlantic Canada. Professional engineering experience over 30 years, has established an extensive network of contacts within the Professional Service Sector, Industry, Universities, Communities and Government, to facilitate the brokering of services from a variety of firms.

Professional activity focuses on natural resource management, environmental planning and assessment, site management including business development and the delivery of broad spectrum consulting services to the mining sector, mine site rehabilitation, technology development, human resources and mine safety, community consultation and communication. Recent assignments have centered on strategic and operational project planning, selection and management of multi-disciplinary professional teams in relation to resource development, construction and transportation and materials handling projects. Maintains an active executive role in industry and professional associations, and also as a senior policy development advisor to Federal and Provincial Governments.

**Vice President, Geotechnical and Environmental Consulting Group**

**1981 - 1994**

An employee owned engineering and environmental consulting firm of 250 individuals in Canada and internationally. Areas of speciality include geotechnical and materials engineering, concrete technology, and hydrogeology and environmental services. Primary focus included business development and the delivery of consulting services throughout Atlantic Canada and nationally. Managed a direct staff of 8 and up to 60 professionals on a project basis.

**Director of Engineering, NS Mines and Energy**

**1973 - 1981**

Hired as a Mining Engineer in 1973, was quickly promoted to Senior Mining Engineer, Director of Engineering and Chief Inspector of Mines. Directed the mine engineering division in all aspects of mine developments and operations in Nova Scotia. Managed three hundred employees working in six major divisions dealing with the mine engineering, mine inspection, workplace safety, mine rescue programs and the operation of a modern diamond drilling unit to service industry and government. Oversaw the setup and operations of a coal preparation plant, reclaiming coal from coal mine wastes and rehabilitating derelict mining lands to productive use. Member of Board of Directors of a Provincial Crown Corporation.

**Exploration Management, Falconbridge Nickel Mines Limited**

**1969 - 1973**

Directed and conducted grass roots exploration programs for base metals which involved staffing, negotiating of options, geological mapping, surveying, supervision of drill programs and senior responsibility for budget preparation and cost control.

RESUME - Natural History  
**Paul-Michael Brunelle, B.Des., FGDC**

**EDUCATION**

1971/76 - Bachelor of Design in Communication Design, Nova Scotia College of Art and Design, Halifax.

**CURRENT MEMBERSHIPS**

Atlantic Dragonfly Inventory Program (ADIP) - founder, Regional Coordinator.  
Dragonfly Society of the Americas (DSA).  
Entomological Society of Canada (ESC).  
Maine Damselfly and Dragonfly Survey (MDDS) - Coordinator.  
World Dragonfly Society.

**ENTOMOLOGICAL PROJECTS, GRANTS, AND AWARDS**

2005 Member of the Arthropods Subcommittee of COSEWIC (Committee on the Status of Endangered Wildlife in Canada).  
2004 Commissioned to begin preparation of an Atlas of Dameselflies and Dragonflies (Odonata) of Acadia.  
2004 Commissioned by Atlantic Canada Conservation Data Center, to survey for Odonata in Madawaska and Victoria counties, New Brunswick.  
2003 Invited consultant on Odonata, National General Status Working Group, Odonate National Roll-up, Ottawa, Ontario.  
2003 Commissioned by the New Brunswick Museum to confirm and curate Odonata holdings.  
2003 Commissioned by Atlantic Canada Conservation Data Center, to survey for Odonata on the Eel River system, New Brunswick.  
2002 Invited representative for Atlantic Canada to the National Status Assessment Workshop on Odonata, in Winnipeg, Manitoba.  
2002 Consulted with the Nova Scotia Department of Natural Resources on the review of status of Odonata in Nova Scotia.  
2001 Commissioned by Atlantic Canada Conservation Data Center, to review New Brunswick listing of odonate species.  
1999 Commissioned by The Nature Conservancy, National Office, to review Canadian national listing of odonate species.  
1999 Received a grant from the Nova Scotia Museum to study distribution of Odonata in Southwest Nova Scotia.  
1998/05 Received a Research Associate position from the Nova Scotia Museum.  
1998/03 Presented courses on larval and adult Odonata at Humboldt Field Research Institute, Steuben, Maine.  
1998 Consulted with the Nova Scotia Department of Natural Resources on the status of Odonata in Nova Scotia.  
1998 Commissioned by The Nature Conservancy, Maine Chapter, to survey the Odonata of the Saint John Stewardship Properties, Maine.  
1998 Received grants from the Nova Scotia Museum, and the International Odonate Fund, to study *Somatochlora brevicincta* (Odonata: Corduliidae) in Nova Scotia.  
1997/04 Commissioned by the Maine Department of Inland Fisheries and Wildlife to survey for rare species of Odonata.

- 1997 Commissioned by the Maine Department of Inland Fisheries and Wildlife to do baseline documentation of the order Odonata for the state.
- 1997 Commissioned by the Maine Department of Inland Fisheries and Wildlife to plan the Maine Damselfly and Dragonfly Survey (MDDS), a 5-year volunteer survey.
- 1997 Commissioned by Cape Breton Highlands National Park for a survey of Odonata of the Greater Highlands Ecosystem, Nova Scotia.
- 1996 Received the Entomological Society of Canada Norman Criddle Award for Non-Professional Entomologist.
- 1996 Received grants from Themadel Foundation, St. Andrews, N.B., and from the St. Croix International Waterway Commission, St. Stephen, N.B., for the study of *Neurocordulia michaeli* Brunelle 2000.
- 1996 Host for the 1996 Annual Meeting of the Dragonfly Society of the Americas in Charlotte County, New Brunswick.
- 1994 Established of the Atlantic Dragonfly Inventory Program (ADIP), intended to coordinate the efforts of those interested in the order in Atlantic Canada and northern New England.
- 1993/03 Received a Research Associate position in Zoology from the New Brunswick.
- 1993/95 Received the Florence M. Christie Grant in order to study odonate distribution in New Brunswick, from the New Brunswick Museum, Saint John.
- 1990/94 Catalogued Atlantic Canadian specimens in the Canadian National Collection, the Royal Ontario Museum Collection, the A.D. Pickett Entomological Museum Collection, and the collections of the Nova Scotia and New Brunswick Museums.

## PUBLICATIONS

- Bredin, K.A., and P.M. Brunelle. 2004. Atlantic Canada Conservation Data Centre Freshwater Mussel and Odonate Surveys of the Eel River, New Brunswick, in 2003. Report to the New Brunswick Wildlife Council Trust Fund: 19 p.
- Brunelle, P.M. 1992. Dragonflies of Nova Scotia. *Conservation* 16(1): 10-12.
- 1993b. Collecting dragonflies and damselflies in Eastern Canada. Unpublished
1994. Collecting dragonflies and damselflies in Atlantic Canada: edition 2. Unpublished
1996. Quality not quantity in Canada, or, where oh where did the ophios go? *Argia* 8(2): 9-13.
- 1997a. Distribution of dragonflies and damselflies (Odonata) of the Atlantic Provinces, Canada. *Northeastern Naturalist* 4(2): 61-82.
- 1997b. Cape Breton Island and Maine. *Argia* 9(3): 21.
- 1997c. The role of the amateur in insect conservation. *Northeastern Naturalist* 4(3): 159-164.
- 1998a. Distribution of the order Odonata (Anisoptera, Zygoptera) on Cape Breton Island, Nova Scotia, Canada. Unpublished report to Cape Breton Highlands National Park, Ingonish, Nova Scotia
- 1998b. The status of *Somatochlora brevicincta* Robert 1954 (Odonata, Anisoptera, Corduliidae) in Nova Scotia. Unpublished report to the Nova Scotia Museum of Natural History, Halifax: 10 p.
- 1998c. Maine Damselfly and Dragonfly Survey: report 1.2: baseline information on Maine Odonata. Unpublished report to the Maine Department of Inland Fisheries and Wildlife
- 1999a. Additions to the lists of dragonflies (Odonata: Anisoptera) of the Atlantic Provinces, Canada. *Northeastern Naturalist* 6(1): 35-38.
- 1999b. Distribution of damselflies and dragonflies (Odonata) of Maine, United States. *Northeastern Naturalist* 6(2): 95-118.

- 1999c. Rare and endangered Odonata of Maine. *Northeastern Naturalist* 6(1). Poster Appended.
- 1999d. Maine damselfly and dragonfly survey manual. Maine Department of Inland Fisheries and Wildlife, Endangered Species Group: 23 p.
- 1999e. Damselflies and dragonflies (Odonata: Zygoptera; Anisoptera), of Daly Point and nearby saltmarshes, Bathurst, Gloucester County, New Brunswick. Unpublished report to the New Brunswick Department of Natural Resources and Energy: 3 p.
- 1999f. Damselflies and dragonflies (Odonata: Zygoptera; Anisoptera), of the St. John Stewardship Properties, northern Maine. Unpublished report to The Nature Conservancy, Maine Chapter: 9 p.
- 2000a. A new species of *Neurocordulia* (Odonata: Anisoptera: Corduliidae) from eastern North America. *Canadian Entomologist* 132: 39-48.
- 2000b. Maine Damselfly and Dragonfly Survey (MDDS): results of 1999 survey. Unpublished report to the Maine Department of Inland Fisheries and Wildlife: 18 p.
- 2000c. Distribution of damselflies and dragonflies (Odonata) of Cape Breton Island, Nova Scotia, Canada. Parks Canada, Technical Reports in Ecosystem Science 24: 52 p.
- 2000e. Ways and means. *Mainensis* 1(1): 1-2.
- 2000f. The 1999 season. *Mainensis* 1(1): 2-3.
- 2000f. The Odonata (Zygoptera, Anisoptera) of Shelburne and Yarmouth Counties, southwestern Nova Scotia. Unpublished report to the Nova Scotia Museum of Natural History, Halifax: 18 p.
- 2000g. Feature researcher: Professor Harold B. White III. *Mainensis* 1(1): 3.
- 2000h. The coming season. *Mainensis* 1(1): 4.
- 2000i. Status of knowledge of Odonata (Anisoptera, Zygoptera) in Acadia as of 1999. Unpublished report to the Atlantic Dragonfly Inventory Program: 12 p.
- 2001a. A survey for *Williamsonia lintneri* in southern Maine, 2000. Unpublished report to the Maine Department of Inland Fisheries and Wildlife: 12 p.
- 2001b. Maine Damselfly and Dragonfly Survey (MDDS): results of 1999 to 2000 survey. Unpublished report to the Maine Department of Inland Fisheries and Wildlife: 30 p.
- 2001c. Analysis of the cost of MDDS 2000. Unpublished report to the Maine Department of Inland Fisheries and Wildlife: 2 p.
- 2001d. MDDS voucher collection. *Mainensis* 2(1): 1.
- 2001e. *Mainensis*. Newsletter of the Maine Damselfly and Dragonfly Survey 2(1): 1-8.
- 2001f. Feature researcher: Dr. Ronald G. Butler. *Mainensis* 2(1): 4.
- 2001g. The 2000 season. *Mainensis* 2(1): 7.
- 2001h. Status of *Somatochlora brevicincta* (Odonata: Corduliidae), the Quebec emerald, in North America. *International Dragonfly Fund Report* 3(1/2): 1-8.
- 2001i. Draft provincial and county lists for Odonata of New Brunswick. Unpublished discussion paper for the Atlantic Dragonfly Inventory Program: 13 p.
- 2002a. Proposed SRANKs for Odonata (Zygoptera, Anisoptera) of New Brunswick, Canada. Report to the Atlantic Canada Conservation Data Centre: 142 p.
- 2002b. Maine Damselfly and Dragonfly Survey (MDDS): results of 1999 to 2001 survey. Unpublished report to the Maine Department of Inland Fisheries and Wildlife: 30 p.
- 2002c. Atlantic Dragonfly Inventory Program manual. Unpublished: 30 p.
- 2002d. This issue. *Mainensis* 3(1): 1.
- 2002e. Book review: Stokes beginners guide to dragonflies and damselflies. *Mainensis* 3(1): 1.
- 2002f. Your contributions to date. *Mainensis* 3(1): 5-8.
- 2002g. Feature researchers: Robert Grobe and Donna Maritato. *Mainensis* 3(1): 5.
- 2002h. Current list and status ranks of Odonata (Zygoptera, Anisoptera) of Nova Scotia, Canada. Unpublished discussion paper for the Nova Scotia Department of

## Natural Resources

- 2003a. Maine Damselfly and Dragonfly Survey (MDDS): results of 1999 to 2002 survey. Edition 1. Unpublished report to the Maine Department of Inland Fisheries and Wildlife: 30 p.
- 2003b. Maine Damselfly and Dragonfly Survey (MDDS): results of 1999 to 2002 survey. Edition 2. Unpublished report to the Maine Department of Inland Fisheries and Wildlife: 27 p.
- 2003c. A preliminary list of the Odonata of Vermont. *The Boghaunter* 2(1): 3-7.
- 2003d. The White Pond Complex. *Mainensis* 4(1): 2.
- 2003e. The Northwest Roadside Fen. *Mainensis* 4(1): 3.
- 2003f. Our progress to date. *Mainensis* 4(1): 5-7.
- 2003g. Feature researcher: Dr. David S. Potter. *Mainensis* 4(1): 8.
- 2003h. Notable records received in 2002. *Mainensis* 4(1): 5-8.
2004. Ebony Boghaunter ♂ *Williamsonia fletcheri* Williamson 1923. White Mountain National Forest ♂ Expert Review SVE ♂ Odonate Species..
2004. Forcipate Emerald ♂ *Somatochlora forcipata* (Scudder 1861). White Mountain National Forest ♂ Expert Review SVE ♂ Odonate Species.
2004. Southern Pygmy Clubtail ♂ *Lanthus vernalis* Carle 1980. White Mountain National Forest ♂ Expert Review SVE ♂ Odonate Species.
2005. Damselflies and Dragonflies (Odonata: Zygoptera; Anisoptera) of the Atlantic Maritime Ecozone.
2005. Odonata survey 2005: (damselflies and dragonflies); Whites Point Property, Digby County, Nova Scotia. Unpublished report to Bilcon of Nova Scotia Corp.: 12 p.
2005. Proposed Revisions to Nova Scotia Odonata Ranks. Unpublished report to the Nova Scotia Department of Natural Resources: 16 p.
- Brunelle, P.M., and P.G. deMaynadier. 2004. Survey for Hine's Emerald, *Somatochlora hineana* Williamson 1931 (Odonata, Corduliidae) in Maine: 2001-2002. Maine Department of Inland Fisheries and Wildlife: 11 p.
- Brunelle, P.M., and T.W. Donnelly. 1998. *Somatochlora brevicincta* in New Brunswick and Nova Scotia. *Argia* 9(4): 5.
- Catling, P.M., R.A. Cannings, and P.M. Brunelle. 2005. An annotated Checklist of the Odonata of Canada. *Bulletin of American Odonatology* 9(1): 1-20.
- deMaynadier, P.G., and P.M. Brunelle. 2001a. Peatland damselflies and dragonflies (Odonata). In: survey of rare, threatened, and endangered fauna in Maine: East Coastal and Eastern Interior Regions (1999-2000): Odonata p. 36-41. Unpublished report to the Maine Department of Inland Fisheries and Wildlife: 72 p.
- deMaynadier, P.G., and P.M. Brunelle. 2001b. Riverine damselflies and dragonflies (Odonata). In: survey of rare, threatened, and endangered fauna in Maine: East Coastal and Eastern Interior Regions (1999-2000): Odonata p. 41-72. Unpublished report to the Maine Department of Inland Fisheries and Wildlife: 72 p.

## ILLUSTRATION PUBLISHED IN:

Argia (Dragonfly Society of America)  
Buntbarsche Bulletin (American Cichlid Association)  
Canadian Geographic  
Conservation (NS Department of Natural Resources)  
Walkeria (Societas Internationalis Odontologica, Canada)  
Mainensis (Maine Damselfly and Dragonfly Survey)

# **CURRICULUM VITAE**

**MICHAEL BRYLINSKY**

## **Personal:**

Birthdate: November 24, 1942  
Citizenship: U.S., Canadian Landed Immigrant  
Address: Acadia Centre for Estuarine Research  
Acadia University  
Wolfville, Nova Scotia  
Canada B0P 1X0  
Phone: (902) 585-1059  
Fax: (902) 585-1054  
e-mail: Mike.Brylinsky@acadiu.ca

## **Academic Degrees:**

A.B., 1966 (Zoology) Syracuse University, Syracuse, New York  
Ph.D., 1971 (Ecology) Institute of Ecology, University of Georgia, Athens, Georgia

## **Professional Societies:**

American Society of Limnology and Oceanography  
Estuarine Research Federation  
New England Estuarine Research Society  
National Shellfisheries Association  
Aquaculture Association of Canada  
World Aquaculture Society  
Canadian Water Resources Association

## **Professional Awards:**

NASA Pre-doctoral Fellowship (University of Georgia), 1966-68  
NDEA Pre-doctoral Fellowship (University of Georgia), 1968-69  
NRC Post-doctoral Fellowship (Dalhousie University), 1971-72  
Killam Research Fellowship (Dalhousie University), 1972-73  
Nova Scotia Environmental Award (Professional Category), 1998  
Gulf of Maine Visionary Award, 2000



## **General Research Interests:**

Ecosystem structure and function, systems analysis and ecosystem modelling, energy flow in freshwater and marine ecosystems. Recent or current research projects: (1) productivity and food chain dynamics of turbid water ecosystems, (2) evaluation of enhancement of productivity of acidified wetlands by artificial nutrient enrichment (3) influence of biological processes on sediment stability in intertidal systems (4) factors determining productivity and carrying capacity of bivalve aquaculture systems (5) development of monitoring programs for aquatic ecosystems, (6) impact of land-use practices on water quality.

## **Academic, Research, and Related Employment:**

1966-71 Graduate studies, Institute of Ecology, University of Georgia. Research dealing with the role of dissolved organic carbon as a food source in aquatic systems with particular reference to the release of dissolved organic matter by marine macrophytes.

1971-72 National Research Council Postdoctoral Fellow, Dalhousie University. Performed an analysis of production processes in freshwater ecosystems for the Freshwater Productivity Section of the International Biological Programme.

1972-73 Killam Research Fellow, Dalhousie University. Continuation of work for the International Biological Programme. Teaching: Systems Analysis and Modelling, Structure and Function of Ecosystems.

1973-75 Self-employed as a private consultant. Consulting projects during this period include application of loop analysis techniques in studies of marine food chains; evaluation of systems models dealing with the impact of nuclear power plants on fish, assessment of marine resources of southern Northumberland Strait.

1975-77 Assistant Professor, Biology Department, Dalhousie University, coordinator of Summer Marine Science Program. Research dealing with the relationship between energy, nutrients and lake eutrophication. Teaching: Biology of Invertebrates, Advanced Ecology Seminar, Systems Analysis and Modelling.

1996-1997 Acting Director, Acadia Centre for Estuarine Research, Assistant Professor, Biology Department, Acadia University, Wolfville, N.S., Canada.

1977-2004 Co-ordinator; Environmental Science Field Course, Environmental Studies Program, Acadia University; Honorary Research Associate, Acadia Centre for Estuarine Research, Acadia University; Private consulting. Teaching: Aquatic Ecology; Estuarine Biology, Environmental Science Field Course.

2004 - Present Part-time Lecturer, Department of Biology, Acadia University; Acting Director, Acadia centre for Estuarine Research, Acadia University.

**Other Activities (Since 1995):**

Steering Committee Member: 1992 - present. Scientific Advisory Steering Committee, Clean Annapolis River Project.

Steering Committee Member: 1995-1996. Fundy Marine Ecosystem Science Project Workshop. Wolfville, Nova Scotia. February, 1996.

Scientific Programme Chair. 1995-1998. Eight International Symposium on Microbial Ecology. Halifax, Nova Scotia. 1998.

Steering Committee Member. 1995-1997. Water Friendly Living, a project of the Clean Annapolis River Project.

Research/Advisory Committee Member. 1996-1999. Fundy Fixed Gear Council.

Board of Directors: 1996-2000. Clean Annapolis River Project.

Steering Committee Member: 1995-1999. Bay of Fundy Marine Ecosystem Project.

Steering Committee Member. 1997-present. Technical Committee of the Kings County Volunteer Lake Water Quality Monitoring Program.

Chairperson. 1997-1999. State of the Environment and Sustainable Development Sub-committee. Kings County Economic Development Agency.

Board of Directors. 1998-present. Atlantic Canada Society for Microbial Ecology.

Steering Committee Member. 2000-present. Science Advisory Committee. Maritime Resource Centre, Cornwallis, Nova Scotia.

Co-chair, Board of Directors. 2001-2003. Annapolis Valley Watershed Stewardship Board.

Chairperson. 2002-present. Minas Basin Working Group of the Bay of Fundy Ecosystem Project.

Steering Committee Member. 2002-present. Nova Scotia Department of Environment Water Quality Objectives and Modelling Steering Committee.

Committee Member. 2003-present. Planning Committee for the Sixth bay of Fundy Ecosystem Partnership Science Workshop.

Selection Committee Member. 2003-present. Nova Scotia Bay of Fundy Environmental Awareness Award.

Steering Committee Member - 2003-present. Gulf of Maine Council Habitat Monitoring Subcommittee.

Council member 2005- Present. K.C. Irving Academy of the Environment, Acadia University.

### **Publications:**

**Brylinsky, M.** 1972. Steady-state sensitivity analysis of energy flow in a marine ecosystem, p. 88-101. *In* B.C. Patten [ed.], *Systems Analysis and Simulation in Ecology*. Academic Press.

**Brylinsky, M.** and K. H. Mann. 1974. An analysis of factors governing productivity in lakes and reservoirs. *Limnol. and Oceanogr.* 18(1): 1-14.

**Brylinsky, M.** and K.H. Mann. 1975. The IBP/PF Synthesis - Estimating the productivity of lakes and reservoirs, p.222-226. *In* W.M. Cameron and L.W. Billingsley [eds.], *Energy flow - its biological dimensions*. Royal Society of Canada Press.

**Brylinsky, M.** and K.H. Mann. 1975. The influence of morphometry and of nutrient dynamics on the productivity of lakes. *Limnol. and Oceanogr.* 20(4): 666-667.

**Brylinsky, M.** 1977. Release of dissolved organic matter by some marine macrophytes. *Mar. Biol.* 39(3): 213-230.

**Brylinsky, M.** 1980. Estimating the productivity of lakes and reservoirs, p. 411-453. *In* E.D. LeCren and R.H. Lowe-McConnell [eds.], *The Functioning of Freshwater Ecosystems*. Cambridge University Press. Pp. 411-453.

**Brylinsky, M.** and G. Daborn. 1987. Community structure and productivity of the Cornwallis Estuary, Minas Basin. *Cont. Shelf Res.* 7(11/12): 1417-1420.

**Brylinsky, M.,** P. Crawford Kellock, G.R. Daborn. 1988. Marine resource inventory of Kejimikujik National Park, Seaside Adjunct. Acadia Centre for Estuarine Research Publication No. 6. Environment Canada Parks. vi + 105 p.

**Brylinsky, M.** and P. Crawford Kellock. 1988. Limnological resource inventory of Kejimikujik National Park, Seaside Adjunct. Acadia Centre for Estuarine Research Publication No. 7. Environment Canada Parks. iii + 32 p.

**Brylinsky, M.** and G.R. Daborn. 1988. Field and laboratory techniques guide for mussel growers' water quality monitoring programme. Acadia Centre for Estuarine Research Publication No. 8. 26 p.

**Brylinsky, M.** 1989. Biology of the blue mussel (*Mytilus edulis*). ERDA Report No. 16. Nova Scotia Department of Fisheries. vi + 56 p.

- Brylinsky, M.** 1989. Final report on the water quality monitoring programme for mussel growers. Acadia Centre for Estuarine Research Publication No. 11. i + 207 p.
- Brylinsky, M.** 1991. A short term study to evaluate the potential impact of flounder draggers on the intertidal benthic habitat and community in the Minas Basin, Bay of Fundy, Nova Scotia. (DSS Contract No. FP244-0-0029/01-OSC). Acadia Centre for Estuarine Research Publication No. 15. ii + 26 p.
- Brylinsky, M.** 1991. Evaluation of controlled fertilization of acidified wetlands for enhancement of waterfowl production - Year One Final Report. Acadia Centre for Estuarine Research Publication No.16. iii + 89 p.
- Brylinsky, M.** and T. Sephton. 1991. Development of a computer simulation model of a cultured blue mussel (*Mytilus edulis*) population. Can. Tech. Rep. Fish. Aquat. Sci. 1805 : viii + 81 p.
- Brylinsky, M.** 1992. An analysis of data on mussel performance (Report to Fish Health Unit, Atlantic Veterinary College, UPEI). Acadia Centre for Estuarine Research Publication No.19. iii + 102 p.
- Brylinsky, M.** 1992. Procedures manual for the Clean Annapolis River Project River Guardian Programme. Acadia Center for Estuarine Research Publication No. 24. ii + 32 p.
- Brylinsky, M.** 1992. Evaluation of controlled fertilization of acidified wetlands for enhancement of waterfowl production - Year Two Final Report. Acadia Centre for Estuarine Research Publication No. 20. ii + 73 p.
- Brylinsky, M.,** J. Gibson, G.R. Daborn, C.L. Amos and H. Christian. 1992. Miramichi Inner Bay sediment stability study (Public Works contract No. 2105182). Acadia Centre for Estuarine Research Publication No. 22. iii + 57 p.
- C.L. Amos , A.J. Gibson and **M. Brylinsky.** 1992. Sediment settling rate analyses for a sediment stability study of the Inner Miramichi Bay (Public Works Contract No. 2105182). Acadia Center for Estuarine Research Publication No. 23. 16 p.
- Brylinsky, M.** 1993. Evaluation of controlled fertilization of acidified wetlands for enhancement of waterfowl production - Year Three Final Report. Acadia Centre for Estuarine Research Publication No.28. iv + 89 p.
- Daborn, G.R., **M. Brylinsky** and D. L. DeWolf. 1993. Study of current flow patterns in the Annapolis Estuary in the vicinity of Fort Anne National Historic Park. (Canadian Parks Service Contract No. HS/SWNS 92-15). Acadia Centre for Estuarine Publication No. 25. 31 p.

- Fass, R.W., H.A. Christian, G.R. Daborn and **M. Brylinsky**. 1993. Biological control of surficial sediments: an example from Starr's Point tidal flat, Minas Basin, Bay of Fundy, p.360-377. *In* A.J. Mehta [ed.] Nearshore and estuarine cohesive sediment transport. American Geophysical Union, Washington, D.C.
- Daborn, G.R., C.L. Amos, **M. Brylinsky** and others. 1993. An ecological 'cascade' effect: migratory birds affect stability of intertidal sediments. *Limnol. Oceanogr.* 38: 225-231.
- Brylinsky, M.** 1993. Mussel carrying capacity. Aquanotes. Publication of the Fish Health Unit, Atlantic Veterinary College, University of Prince Edward Island, Charlottetown, P.E.I.
- Daborn, G.R., **Brylinsky, M.** and D.L. DeWolfe. 1993. A study of current flow patterns in the Annapolis Estuary in the vicinity of Fort Anne National Historic Park. Report to Canadian Parks Service, Environment Canada. Acadia Centre for Estuarine Research Publication No. 25. 31 p.
- Daborn, G.D., H.A. Christian, **M. Brylinsky**, D.L. DeWolfe. 1993. An experimental study of factors affecting current flow and sediment stability on the Fort Anne foreshore. Acadia Centre for Estuarine Research Publication No. 29. iii + 52 p.
- Brylinsky, M.** 1994. Grafton watershed ecological restoration monitoring project, Kejimikujik National Park. Centre for Wildlife and Conservation Biology Publication No. 5. Acadia University. iv + 17 p.
- Amos, C.L., **M. Brylinsky**, H.A. Christian and G.R. Daborn. 1994. Seabed stability, liquefaction and the development of fluid mud during dredging and dumping at the Miramichi Inner Bay. Acadia Centre for Estuarine Research Publication No. 32. i + 347 p.
- Brylinsky, M.** 1994. Continued evaluation of controlled fertilization of acidified wetlands for enhancement of waterfowl production. Acadia Centre for Estuarine Research Publication No. 34. iii + 16 p.
- Brylinsky, M.** 1994. Evaluation of environmental factors responsible for high waterfowl production at the Allain's Creek Ducks Unlimited impoundment. Acadia Centre for Estuarine Research Publication No. 35. iv + 30 p. Acadia Centre for Estuarine Research Publication No. 35. iv + 30 p.
- Brylinsky, M.**, A.J. Gibson and D.C. Gordon Jr. 1994. Impacts of flounder trawls on the intertidal habitat and community of the Minas Basin, Bay of Fundy. *Can. J. Fish. Aquat. Sci.* 51: 650-661.
- Brylinsky, M.** 1994. Evaluation of controlled fertilization of acidified and oligotrophic wetlands for enhancement of waterfowl production. *In* C.A. Staicer, M.J. Duggan and J.J. Kerekes [eds.], Proceedings of the Workshop on Kejimikujik Watershed Studies: Monitoring and Research Five Years after "Kejimikujik '88". Environment Canada.

- Proszynska, G. and **M. Brylinsky**. 1994. River Watch Community Program - Handbook and Reference Guide. Publication of the Clean Annapolis River Project and Fisheries and Oceans Canada.
- Brylinsky, M.** 1995. Grafton watershed ecological restoration monitoring project, Kejimikujik National Park: Phase I Final Report. Centre for Wildlife and Conservation Biology Publication No. 19. Acadia University. x + 125 p.
- G.R. Daborn, C.L. Amos, H. Christian and **M. Brylinsky**. 1995. Stability of the shoreline at Fort Anne National Historic Site. Publication No. 37 of the Acadia Centre for Estuarine Research. 184 p.
- Brylinsky, M.** 1995. Evaluation of the impact of peat moss deposits at Mill Creek, New Brunswick. Prepared for Malpec Peat Moss Ltd. 12 p.
- Amos, C.L., **M. Brylinsky**, S. Lee and D. O'Brien. 1995. Littoral mudflat stability monitoring the Humber estuary, S. Yorkshire, England - LISPUK. Geological Survey of Canada Open File Report No. 3214. 45p.
- Brylinsky, M.** 1996. An assessment of water quality of the Black River Lake watershed, Kings Co., Nova Scotia. Publication No. 39 of the Acadia Centre for Estuarine Research. 10 p.
- Brylinsky, M.,** C.L. Amos, H.C. Christian and C. Anderson. 1997. Collection and analysis of information required for evaluation and design of remediation measures for shoreline erosion control at Fort Anne national Historic Park. Publication No. 44 of the Acadia Centre for Estuarine Research. 180p.
- Brylinsky, M.** 1997. Grafton watershed ecological restoration monitoring project, Kejimikujik National Park: Phase II Final Report. Centre for Wildlife and Conservation Biology Acadia University. x + 130 p.
- Brylinsky, M.** 1997. Data report for collection and analysis of field data for environmental assessment of removal of the Rustico Island Little Harbour Causeway, Prince Edward Island. Publication No. 44 of the Acadia Centre for Estuarine Research.
- Brylinsky, M.** and A.J. Gibson. 1997. Results of a follow-up water quality survey of the Eastern portion of the Gaspreau-Black River Lake watershed. Publication No. 46 of the Acadia Centre for Estuarine Research.
- Amos, C.L., **M. Brylinsky**, T.F. Sutherland, D. O'Brien, S. Lee and A. Cramp. 1998. The stability of a mudflat in the Humber estuary, South Yorkshire, U.K., p. 25-43. *In* K.S. Black, D.M. Patterson and A. Cramp [eds.] *Sedimentary Processes in the Intertidal Zone*. Geological Society, London, Special Publications, 139.

- Brylinsky, M.** 1998. Assessment of potential water quality impacts resulting from removal of Rustico Island Little Harbour Causeway, Prince Edward Island. Publication No. 48 of the Acadia Centre for Estuarine Research. 50 p.
- Brylinsky, M.** 1999. A summary of results of the 1997-1998 Kings County Volunteer Water Quality Monitoring Program. Report prepared for the Planning Advisory Committee of Municipality of Kings and the Kings County Water Quality Monitoring Volunteers. 40 p.
- Brylinsky, M.** and S. Pittman. 1999. The Clean Annapolis River Guardian Program: Evaluation of a volunteer based water quality monitoring program, p. 219-225. *In* Partnerships in Water Resource Management: Proceedings of the Canadian Water Resources Association 52<sup>nd</sup> Annual Conference. Canadian Water Resources Association.
- Allen, M., A. Nelson and **M. Brylinsky**. 1999. A survey of water quality in the Cornwallis River, Kings County, Nova Scotia, p. 226-239. *In* Partnerships in Water Resource Management: Proceedings of the Canadian Water Resources Association 52<sup>nd</sup> Annual Conference. Canadian Water Resources Association.
- Brylinsky, M.** and F. Payne. 1999. Evaluation of the causes of a floating algal mat at a recently constructed coastal impoundment on the Beausejour Marsh, New Brunswick. Report to Ducks Unlimited Canada. 15p.
- Brylinsky, M.** 2000. A summary of results of the 1997-1998 Kings County Volunteer Water Quality Monitoring Program. Report prepared for the Planning Advisory Committee of Municipality of Kings and the Kings County Water Quality Monitoring Volunteers. 24 p.
- Bell, C.R., **M. Brylinsky** and P. Johnson-Green. 2000. Microbial Biosystems: New Frontiers. Proceedings of the 8<sup>th</sup> International Symposium on Microbial Ecology. Atlantic Society for Microbial Ecology.
- Brylinsky, M.** 2000. Sensitivity analysis of the Kings County, Nova Scotia Lakeshore Carrying Capacity Model - A first step towards improving the model's predictive capacity. Report prepared for the Planning Advisory Committee of Municipality of Kings and the Kings County Water Quality Monitoring Volunteers. 48 p.
- Brylinsky, M.** 2000. A field survey of nutrient inputs to Lumsden Pond, Kings County, Nova Scotia: Report to the Kings County Wildlife Association. Publication No. 57 of the Acadia Centre for Estuarine Research, Acadia University, Wolfville, Nova Scotia, Canada. 13p.
- Brylinsky, M.** 2000. An evaluation of changes in the yellow perch (*Perca flavescens*) population of Grafton Lake, Kejimikujik National Park after dam removal. Publication No. 59 of the Acadia Centre for Estuarine Research, Acadia University, Wolfville, Nova Scotia, Canada. 15p.

- Brylinsky, M.** 2000. An evaluation of changes in selected limnological parameters of Grafton Lake, Kejimikujik National Park After Dam Removal. Publication No. 60 of the Acadia Centre for Estuarine Research, Acadia University, Wolfville, Nova Scotia, Canada. 10p.
- Spooner, I.S., **M. Brylinsky** and B. Cook. 2000. Where's the science? Rethinking river restoration and enhancement. *Atlantic Geology*. 36(1): 47.
- Strain, P.M., G. Bugden, **M. Brylinsky**, and S. Deny. 2001. Nutrient, dissolved oxygen, trace metal and related measurements in the Bras d'Or Lakes 1995-1997. Canadian Technical Report of Hydrography and Ocean Sciences.
- Daborn, G., **M. Brylinsky, M., R. Newell.** 2001. Environmental Studies of the Halfway River System, Nova Scotia, Final Report to Minas Basin Pulp and Power Company Limited - p. 127.
- Daborn, G., **M. Brylinsky, R. Newell.** 2001 Environmental Studies of the St. Croix River and Big St. Margarets Bay Lake Systems, Nova Scotia, Final Report to Minas Basin Pulp and Power Company Limited. 184. p.
- Daborn, G., **M. Brylinsky, Lowe, J.** 2001. Environmental Studies of the Halfway River System, Nova Scotia. Supplemental Report to Minas Basin Pulp and Power Company Limited.
- Brylinsky, M.** and N. Pindam. 2001. East-Flowing Rivers (Canard, Habitant and Pereaux) Baseline Water Quality Survey. Prepared for the N.S. Department of Agriculture and Fisheries. 96 p.
- Brylinsky, M.** 2001 An Evaluation of Changes in the White Perch (*Morone Americana*) Population of Grafton Lake, Kejimikujik National Park After Dam Removal. Prepared for Parks Canada. 50 p.
- Brylinsky, M.** 2002. Nova Scotia Lake Hypolimnion Project- Searching for Cold-water Fish Habitat. Prepared for the N.S. Department of Agriculture and Fisheries. 51p.
- Brylinsky, M.** 2002. A Summary of Results of the 1997-2001 Kings County Volunteer Water Quality Monitoring Program. Report prepared for the Planning Advisory Committee of Municipality of Kings and the Kings County Water Quality Monitoring Volunteers. 25 p.
- Brylinsky, M.** 2003. Cornwallis Watershed Water Quality Assessment. Report prepared for the Prairie Farm Rehabilitation Administration, Agriculture and Agri-Food Canada. 162 p.
- Brylinsky, M.** 2003. An Analysis of the Relationship Between Sediment Physical-Chemical Characteristics and the Abundance of the Mud Shrimp, *Corophium volutator*. Report prepared for Environment Canada. Publication No. 70 of the Acadia Centre for Estuarine Research, Acadia University, Wolfville, Nova Scotia. 19 p.
- Willcocks-Musselman, R., **M. Brylinsky, J. Orser and P.R. Hinch** (eds.) 2003. Planning for Action in the Minas Basin Watershed. Bay of Fundy Ecosystem Partnership Technical report



- No. 1. Bay of Fundy Ecosystem Partnership, Acadia University, Wolfville, Nova Scotia. 116 p.
- Daborn, G.R., **M. Brylinsky** and D. van Proosdij. 2003. Ecological studies of the Windsor Causeway and Pesaquid Lake. Report to the Nova Scotia Department of Transportation and Public Works. Publication No. 69 of the Acadia Center for Estuarine Research, Acadia University, Wolfville, Nova Scotia. 111 p.
- Daborn, G.R., van Proosdij and **M. Brylinsky**. 2003. Environmental implications of expanding the Windsor Causeway. Report to the Nova Scotia Department of Transportation and Public Works. Publication No. 72 of the Acadia Center for Estuarine Research, Acadia University, Wolfville, Nova Scotia. 15 p.
- Brylinsky, M.** 2004. User's manual for prediction of phosphorus concentration in Nova Scotia lakes: A tool for decision making. Version 1.0. Prepared for the Nova Scotia Water Quality Objectives and Model Development Steering Committee of the Nova Scotia Department of Environment and Labour. Publication No. 74 of the Acadia Centre for Estuarine Research, Acadia University, Wolfville, Nova Scotia. 82 p.
- Brylinsky, M.** and R. Newell. 2004. Botanical Survey of Musquash Marsh. Report prepared for Ducks Unlimited Canada. ACER Publication No. 78.
- Brylinsky, M.** 2004. An analysis of factors responsible for anoxic conditions at Troy Pond, Cape Breton, Nova Scotia. Report prepared for the Nova Scotia Department of Environment and Labour. ACER Publication No. 76.
- G.R. Daborn and **M. Brylinsky**. 2004. Fish population studies of the Avon Estuary, Pesaquid Lake and Lower Avon River. Report to the Nova Scotia Department of Transportation and Public Works. Publication No. 76 of the Acadia Center for Estuarine Research, Acadia University, Wolfville, Nova Scotia. 140 p.
- G.R. Daborn, **M. Brylinsky** and D. van Proosdij. 2005. Crossing Avon: Environmental Implications of Twinning Highway 10, p. 131-134. *In*, J.A. Percy, A.J. Evans, P.G. Wells, and S.J. Rolston [eds.], *The Changing Bay of Fundy – Beyond 400 Years*. Proceedings of the 6<sup>th</sup> Bay of Fundy Workshop, Cornwallis, Nova Scotia, September 29- October 2, 2004. Environment Canada – Atlantic Region, Occasional Report No. 23, Environment Canada, Dartmouth, Nova Scotia and Sackville, New Brunswick, 480 p + xlv.
- P.G. Wells, M. Trites, I. Kaczmarska, P. Hicklin, J. Hellou, D.J. Hamilton, K.G. Doe, **M. Brylinsky** and M.A. Barbeau. 2005, p. 429. *In*, J.A. Percy, A.J. Evans, P.G. Wells, and S.J. Rolston [eds.], *The Changing Bay of Fundy – Beyond 400 Years*. Proceedings of the 6<sup>th</sup> Bay of Fundy Workshop, Cornwallis, Nova Scotia, September 29- October 2, 2004. Environment Canada – Atlantic Region, Occasional Report No. 23, Environment Canada, Dartmouth, Nova Scotia and Sackville, New Brunswick, 480 p + xlv.

**M. Brylinsky, P.R. Hinch, L. McCuaig, R. Willcocks-Musselman, B. Jones, M. TeKamp and P.G. Wells** 2005, p.397. *In*, J.A. Percy, A.J. Evans, P.G Wells, and S.J. Rolston [eds.], *The Changing Bay of Fundy – Beyond 400 Years*. Proceedings of the 6<sup>th</sup> Bay of Fundy Workshop, Cornwallis, Nova Scotia, September 29- October 2, 2004. Environment Canada – Atlantic Region, Occasional Report No. 23, Environment Canada, Dartmouth, Nova Scotia and Sackville, New Brunswick, 480 p + xlv.

### **Presentations (Since 1995):**

Amos, C.L., **M. Brylinsky**, S. Lee and D. O'Brien. 1995. Littoral mudflat stability monitoring the Humber Estuary, S. Yorkshire, England. LISPUK. Presented at the LISPUK Workshop, December, 1995, University of Wales, U.K.

**Brylinsky, M. 1996.** Monitoring water quality using community volunteers - The Clean Annapolis River Project experience. Presented at The Bras d'Or Monitoring and Research Workshop, March, 1996, Sydney, Nova Scotia.

Wells, P., L. White, J. Percy, A. Evans, **M. Brylinsky**, G. Daborn, P. Hicklin and S. Hawboldt. 1996. The Bay of Fundy --- What is changing and why? Coastal Zone Canada '96. August 1996, Rimouski, Quebec.

Wells, P., L. White, J. Percy, A. Evans, **M. Brylinsky**, G. Daborn, P. Hicklin and S. Hawboldt. 1996. The Bay of Fundy --- What is changing and why? Gulf of Maine Ecosystem Dynamics Workshop. September 1996, St. Andrews, New Brunswick.

**Brylinsky, M. 1996.** Volunteer Monitoring from a Scientists Perspective. Presented at A Workshop for Improving Environmental Quality in Nova Scotia. November, 1996, Annapolis Royal, Nova Scotia.

**Brylinsky, M. 1996.** A computer simulation model of a cultured mussel population: relevance to carrying capacity determinations. Presented at a workshop on Oceanography for Sustainable Development of Aquaculture in the Coastal Zone of Atlantic Canada. November, 1996. Bedford Institute of Oceanography, Dartmouth, Nova Scotia.

**Brylinsky, M. 1996.** Sustainable Development - Towards an Operational Definition. Presented to the Kings Community Economic Development Agency. November, 1996. Acadia University.

P.G. Wells, **M. Brylinsky**, G.R. Daborn, A. Evans, S. Hawboldt, P. Hicklin, J. Percy and L. White. 1997. Heeding the Bay's cry - the Bay of Fundy Ecosystem Project. Poster presentation. Maritime Atlantic Zone Ecozone Science Workshop, St. Andrews, New Brunswick.

**Brylinsky, M., C. Amos, D. Williams and D.L. Forbes. 1998.** An analysis of potential remediation scenarios to address the water quality and navigation problems existing in Rustico

Harbour, North Rustico, PEI. Presented to the Rustico Island Working Group, North Rustico, PEI.

**Brylinsky, M.,** G.R. Daborn, J. Percy and P. Wells. 1998. The Bay of Fundy Ecosystem Project (BOFEP). Presented at Coastal Zone Canada 1998. Victoria, B.C., Canada.

**Brylinsky, M.** 1999. Summary of Kings County Volunteer Lake Water Quality Monitoring Program. Presented to Kings County Water Quality Monitoring Program Volunteers. Kentville, Nova Scotia.

**Brylinsky, M.** and S. Pittman. 1999. The Clean Annapolis River Guardian Program: Evolution of a Volunteer Based Water Quality Monitoring Program. Presented at the 52<sup>nd</sup> Annual Conference of the Canadian Water Resources Association, Wolfville, Nova Scotia.

Allen, M., A. Nelson and **M. Brylinsky.** 1999. A survey of water quality in the Cornwallis River, Kings County, Nova Scotia. Presented at the 52<sup>nd</sup> Annual Conference of the Canadian Water Resources Association, Wolfville, Nova Scotia.

**Brylinsky, M.,** C.L. Amos and D. Williamson. 1999. Assessment of the impact of causeway removal on sediment distribution and water quality. Presented at the 1999 International Estuarine Research Federation Conference, New Orleans, Louisiana.

**Brylinsky, M.** 1999. A summary of results of the 1997-1998 Kings County Volunteer Water Quality Monitoring Program. Presented to the Planning Advisory Committee of Municipality of Kings and the Kings County Water Quality Monitoring Volunteers.

**Brylinsky, M.** 2000. A summary of results of the 1997-1998 Kings County Volunteer Water Quality Monitoring Program. Presented to the Planning Advisory Committee of Municipality of Kings and the Kings County Water Quality Monitoring Volunteers.

P.G. Wells, M. Trites, I. Kaczmarek, P. Hicklin, J. Hellou, D.J. Hamilton, K.G. Doe, **M. Brylinsky,** and M. Barbeau. 2002. Ecological and Ecotoxicological Studies on the Inter-tidal amphipod, *Corophium volutator*, in the Upper Bay of Fundy, Gulf of Maine. Poster presented at the 29<sup>th</sup> Aquatic Toxicology Workshop, Whistler, British Columbia and at the SETAC 23<sup>rd</sup> Annual Meeting, Salt Lake City, Utah.

**Brylinsky, M.** and N. Pindam. Water quality in three east flowing rivers of the Annapolis Valley, Nova Scotia. Presented at the Fifth Bay of Fundy Science Workshop, Acadia University, Wolfville, Nova Scotia.

**Brylinsky, M.** 2000. Indicators of Aquatic Ecosystem Function. Presented at the Kejimikujik Ecological Integrity Indicators Workshop, Maitland, Nova Scotia.

- Brylinsky, M.** 2003. A summary of results of the 1997-1998 Kings County Volunteer Water Quality Monitoring Program. Presented to the Planning Advisory Committee of Municipality of Kings and the Kings County Water Quality Monitoring Volunteers.
- Brylinsky, M.** 2003. Assessing Water Quality. Presentation to the Avon River Watershed Stewardship Group. Windsor, Nova Scotia.
- Daborn, G.R., **M. Brylinsky**, P.G. Wells and C.L. Amos. 2003. Responses of macrotidal estuaries to tidal restrictions in the Bay of Fundy System, Canada. 17<sup>th</sup> Biennial Estuarine Research Federation Conference, Seattle, Wash.
- Daborn, G.R. and **M. Brylinsky**. 2003. Gauging the assimilative capacity of coastal receiving environments. *In* Morry, C., M. Chadwick, S. Courtenay, and P Mallet [eds.]. Fish Plant Effluents: A Workshop on Sustainability. Can. Ind. Rep. Fish. Aquat. Sci. 271: viii + 106 p.
- Brylinsky, M.** 2004. Future of Trout in Nova Scotia. Presentation and Panel Participant. Trout Nova Scotia Annual General Meeting. Bedford, Nova Scotia.
- Brylinsky, M.**, H. Kolstee and Members of the Minas Basin Working Group. 2004. The Avon River: Implications of causeway removal. The Changing Bay of Fundy - Beyond 400 Years, 6<sup>th</sup> Bay of Fundy Workshop, Cornwallis, Nova Scotia.
- Brylinsky, M.** , P. Hinch, L. McCuaig, R. Willcocks-Musselman, B. Jones, M. TeKamp and P.G. Wells. 2004. Activities of the Minas Basin Working Group of the Bay of Fundy Ecosystem Partnership. The Changing Bay of Fundy - Beyond 400 Years, 6<sup>th</sup> Bay of Fundy Workshop, Cornwallis, Nova Scotia.
- Daborn, G.R., **M. Brylinsky** and D. van Proosdij. 2004. Crossing Avon: Environmental implications of twinning Highway 101. The Changing Bay of Fundy - Beyond 400 Years, 6<sup>th</sup> Bay of Fundy Workshop, Cornwallis, Nova Scotia.
- P.G. Wells, M. Trites, I. Kaczmarska, P. Hicklin, D.J. Hamilton, K.G. Doe, **M. Brylinsky** and M.A. Barbeau. 2004. Ecological and toxilogical studies on the intertidal amphipod, *Corophium volutator*, in the upper Bay of Fundy, Gulf of Maine. The Changing Bay of Fundy - Beyond 400 Years, 6<sup>th</sup> Bay of Fundy Workshop, Cornwallis, Nova Scotia.

## Curriculum Vitae

### Paul G. Buxton, P.Eng.

#### Education

- Brewood Grammar School, U.K., 1960
- University of Manchester, Honours Degree in Civil Engineering (Hydraulics Major), 1965

#### Professional Accreditation

- Association of Professional Engineers of Nova Scotia
- Associate of the Manchester College of Science and Technology

#### Working Groups, Committees

- Director, Nova Scotia Chamber of Mineral Resources, 2005-2006
- Member, Executive Committee of Nova Scotia Environmental Control Council 1983-1987
- Advisor to the Nova Scotia Minister of Environment on Hazardous Waste Management 1987-1989
- Chairman, Hazardous Waste Management Task Force 1987
- Executive Director, Annapolis Royal Development Commission, 1979-1987
- Executive Director, Municipality of Town of Digby Development Commission, 1990-1995
- Member, Tidal Power Liaison Committee, 1986
- Vice Chairman, Annapolis Royal Area Heritage Foundation, 1989-1990
- Director, Performing Arts Sponsors of Nova Scotia, 1980-1985
- Director, Annapolis Royal Historic Gardens, 1986-1988

## **Professional Activities**

- Principal, Paul G. Buxton, P.Eng., 1976-2006
- Principal, Delta Four Associates Inc., 1990-2006
- President, Acadia Developments Ltd., 1978-2006
- President, Eastern Canada Bioremediation Inc., 1997-1999
- Project Manager, Bilcon of Nova Scotia Corporation, 2004-2006

## **Typical Projects**

- Annapolis Basin Tourism Strategy
- Annapolis Royal Waterfront Development Plan
- Shelburne County Economic Development Plan
- Queens County Economic Development Plan
- Long Island Development Plan
- Town of Annapolis Royal Restoration
- Lunenburg Academy Conservation
- Upper Clements Theme Park
- Construction of Fish Plant, South Yemen
- The YÿARC, Yarmouth
- Recreation Study, Port Hawkesbury
- Kings Theatre, Annapolis Royal
- Carleton House, Halifax, Restoration
- Annapolis Royal Historic Gardens
- Botanical Gardens, Summerside, PEI
- Theatre, Universite Ste. Anne
- Bioremediation Demonstration Projects
- Digby Marina, Digby
- On-Site Sewage Disposal Systems
- Eco/Heritage Interpretive Centre, Annapolis Royal
- Tidal Power Interpretive Centre
- WVDA Economic Development Strategy
- Ross Creek Centre for the Arts
- River Severn Power Station
- Farmers Market, Annapolis Royal
- Waterfront Walkway, Annapolis Royal
- Sinclair Inn, Annapolis Royal

## **RESUME**

### **PERSONAL**

Name Claire Eunice Anne Carver  
Address 6 Shady Lane, Halifax, N.S. B3N 1T9  
Telephone Home: 477-5005  
Office: 462-5884  
Date of Birth October 31, 1959  
Citizenship Canadian

### **EDUCATION**

1982-1985 M.Sc. in Biological Oceanography, Dalhousie University  
1977-1981 B.Sc. in Biology with First Class Honours, Dalhousie University

### **ACADEMIC AWARDS**

1982-1984 NSERC Postgraduate Scholarship  
1982-1984 Killam Memorial Scholarship  
1981 David Durward Memorial Prize  
1980 Hugh P. Bell Scholarship  
1980 Dalhousie University Scholarship  
1979 Dalhousie Alumni Association Women's Division Prize  
1979 Ross Stewart Smith Scholarship  
1978 Dalhousie University Scholarship  
1977 Dalhousie University Entrance Scholarship

### **RESEARCH EXPERIENCE**

Jun 2004 - Dec 2004: Responsible for evaluating various methods for producing glued oysters and developing strategies to mitigate the impact of the boring sponge *Cliona celata* on the Eastern oyster. Funded by L'Etang Ruisseau Bar Inc. with support from the Industrial Research Assistance Program (IRAP).

Sep 2003 - Mar 2004: Responsible for obtaining samples and documenting the occurrence of non-indigenous phytoplankton and zooplankton taxa in ballast water originating from Chesapeake Bay; funded by the Department of Transport, Marine Safety Division.

Jun 2002 - Mar 2004: Responsible for collecting and processing samples for the purpose of evaluating the environmental impact of shellfish culture; funded by the Aquaculture Canada Research Development Program (ACRDP), Department of Fisheries and Oceans.

Feb 2002 - Mar 2002: Involved in preparation of report on risk of introducing invasive species - subcontractor to SNC-Lavalin (report title: Marine Invasive Species in Ballast Water - Canadian Naval Operations Atlantic - Marlant).

Sep 2001 - Mar 2002: Responsible for obtaining samples and documenting the occurrence of non-indigenous phytoplankton and zooplankton taxa in ship ballast water; funded by the Department of Transport, Marine Safety Division.

May 2001 - Oct 2001: Involved in project to compare uptake and depuration rates of marine biotoxins in various shellfish species; funded by the Canadian Aquaculture Industry Alliance.

- Jul 2000 - Dec 2000: Responsible for obtaining samples and documenting the occurrence of non-indigenous phytoplankton and zooplankton taxa in ship ballast water; funded by the Department of Transport, Marine Safety Division.
- Oct 1999 - Mar 2001: Responsible for investigating the life history of the fouling tunicate *Ciona intestinalis* and developing methods to minimize its impact on oyster culture; funded by Lunenburg Shellfish Inc. with support from IRAP.
- Oct 1998 - Mar 2000: Involved in project to determine the distribution of *Mytilus edulis* and *Mytilus trossulus* along the east coast of New Brunswick; funded by the New Brunswick Department of Fisheries.
- Jul 1998 - Dec 1999: Involved in project to evaluate various growout strategies for European oysters (*Ostrea edulis*); project funded by Lunenburg Shellfish Inc. and the Cooperative Agreement Program.
- May 1998 - Dec 1998: Participated in the second phase of a research program to develop protocols and evaluate nursery systems for juvenile sea scallops (*Placopecten magellanicus*) at the Pec-Nord hatchery (Que.); project funded by MAPAQ.
- Jan 1998 - Sep 1998: Responsible for evaluating protocols for storing various species and life history stages of shellfish at cold temperatures; project funded by Mallet Research Services (MRS) and the Industrial Research Assistance Program (IRAP).
- Nov 1997 - Aug 1997: Participated in a research project for the South West Shore Development Authority and the North West Oyster Growers entitled "A Plan for the 1997 Winter Storage of European Oysters"; project funded by the Human Resource Development Commission and the Cooperative Program.
- Feb 1997 - Sep 1997: Participated in a research project at Corkums Island hatchery entitled "Alternative settlement and growout strategies for European oyster juveniles". Project funded by CIHL and IRAP.
- Apr 1997 - Sep 1997: Participated in a research project for the South West Shore Development Authority and the North West Oyster Growers entitled "A feasibility study for the enhancement of an European Oyster Nursery System on the South Shore of Nova Scotia"; project funded by the Human Resource Development Commission and the Cooperative Program.
- May 1996 - Dec 1996: Participated in research program to develop hatchery protocols for producing sea scallops (*P. magellanicus*) at the Pec-Nord hatchery (Que.); project funded by IRAP.
- Mar 1996 - Apr 1996: Involved in training of employees in algal culture and bacterial monitoring techniques at the PecNord scallop hatchery (Que.); program funded by the Conseil Scolaire du Littorale.
- Aug 1995 - Jul 1996: Participated in the evaluation of various nursery systems for rearing European oyster (*O. edulis*) juveniles at Corkums Island Hatchery (N.S.); project funded under the COOP agreement.
- Apr 1995 - Dec 1995: Responsible for conducting a bacterial monitoring research program at Corkums Island Hatchery (N.S.); project funded by IRAP.
- Dec 1994 - Apr 1995: Involved in laboratory study to evaluate the effect of peat on the rate of conditioning of American oysters (*Crassostrea virginica*); project funded by the Atlantic Fisheries Adjustment Program.
- Apr 1994 - Dec 1995: Participated in field research program to evaluate the performance of sea scallops (*P. magellanicus*) in Whitehaven Harbour; project funded by Fisheries Resource Development Ltd.
- Nov 1993 - May 1994: Participated in second year of research program to improve the production of European oyster (*O. edulis*) juveniles at the Mountain Island hatchery; project funded by an IRAP grant to SFT Venture, Blandford, N.S.



- Oct 1992 - Sep 1993: Participated in research program to improve the production of European oyster (*O. edulis*) juveniles at the Mountain Island hatchery; funded by an IRAP grant to SFT Venture, Blandford, N.S.
- May 1992 - Apr 1993: Investigated the source of the "redness" and the toxicity in Ship Harbour mussels (April - August 1992); project funded by the Biological Sciences Branch of the Department of Fisheries and Oceans
- Nov 1991 - Apr 1993: Determined the distribution of *Mytilus edulis* and *Mytilus trossulus* at >30 sites in the Maritimes and compared their production profiles at one site; project funded by the Atlantic Fisheries Adjustment Program.
- Oct 1991 - present: Designed and implemented the Phytoplankton Monitoring Program for Nova Scotia; project sponsored by the Aquaculture Association of Nova Scotia with funding from the N.S. Provincial Department of Fisheries.
- Jun 1991 - Mar 1992: Assessed grow-out strategies for one-year-old quahogs (*Mercenaria mercenaria*); project funded by Little Harbour Fisheries and the N.S. Provincial Department of Fisheries.
- Nov 1990 - May 1992: Participated in program to assess sea scallop (*P. magellanicus*) productivity; funded under the OPEN project at Dalhousie University.
- Jun 1990 - Jan 1991: Evaluated nursery grow-out strategies for juvenile quahogs (*M. mercenaria*); project funded by Little Harbour Fisheries and the N.S. Provincial Department of Fisheries.
- Jan 1989 - Nov 1991: Developed carrying capacity model for mussel culture; project funded by NSERC strategic grant to Dalhousie Oceanography Department.
- Apr 1988 - Apr 1989: Evaluated mussel grow-out techniques; project funded by the N.S. Provincial Department of Fisheries.
- Jun 1987 - Sep 1988: Investigated the causes of summer mortality in the blue mussel (*M. edulis*); project funded by DS&S, Fisheries and Oceans, and the N.S. and P.E.I. Provincial Departments of Fisheries.
- Apr 1987 - Apr 1988: Documented spatial variations in bay scallop (*Argopecten irradians*) performance; project funded by the N.S. Provincial Department of Fisheries.
- Aug 1986 - Apr 1987: Documented bay scallop (*A. irradians*) growth and mortality at ten sites in Nova Scotia; project funded by the N.S. Provincial Department of Fisheries.
- Jun 1985 - Jun 1987: Compared the performance of mussel stocks transplanted to various sites around Nova Scotia; project funded by DS&S and DFO.

Activities as research associate include participation in the design and implementation of field programs, sample processing, data analysis and project write-up.

## **PUBLICATIONS**

- Mallet A.L., **C.E. Carver** and T. Landry. Impact of suspended and off-bottom Eastern oyster culture on the benthic environment in eastern Canada. Aquaculture (submitted).
- Mallet, A.L. and **C.E. Carver**. 2005. The effect of peat moss particles on the physiology of the American oyster, *Crassostrea virginica*. J. Shellfish Res. 24(1): 113-119.
- Carver, C.E.**, A. Chisholm and A.L. Mallet. 2003. Strategies to mitigate the impact of *Ciona intestinalis* (L.) biofouling on shellfish production. J. Shellfish Res. 22(3): 621-631.
- Grant, J., C.W. Emmerson, A. Mallet, and **C. Carver**. 2003. Growth advantages of ear hanging compared to cage culture for sea scallops, *Placopecten magellanicus*. Aquaculture 217: 301-323.
- Mallet, A.L. and **C.E. Carver**. 1999. Maritime distribution and commercial production performance of *Mytilus edulis* and *Mytilus trossulus*. Bull. Aquacul. Assoc. Can. 99-3: 7-13.
- Carver, C.E.**, A.L. Mallet, R. Warnock and D. Douglas. 1996. Red-coloured digestive glands in cultured mussels and scallops: implication of *Mesodinium rubrum*. J. Shellfish Res. 15: 191-201.

- Mallet, A.L. and **C.E. Carver**. 1995. Comparative growth and survival patterns of *Mytilus trossulus* and *Mytilus edulis* in Atlantic Canada. *Can. J. Fish. Aquat. Sci.* 52: 1873-1880.
- Emmerson, C.W., J. Grant, A.L. Mallet, and **C.E. Carver**. 1994. Growth and survival of sea scallops (*Placopecten magellanicus*): effects of culture depth. *Mar. Ecol. Prog. Ser.* 108: 119-132.
- Mallet, A.L. and **C.E. Carver**. 1993. Temporal production patterns in various size groups of the blue mussel. *J. Exp. Mar. Biol. Ecol.* 170: 75-89.
- Carver, C.E.** and A.L. Mallet. 1991. Summer mortality of the blue mussel in Prince Edward Island. *Bull. Aquacul. Assoc. Can.* 91-2: 30-36.
- Mallet, A.L. and **C.E.A. Carver**. 1991. An assessment of strategies for growing mussels in suspended culture. *J. Shellfish Res.* 10: 471-477.
- Mallet, A.L., **C.E.A. Carver** and K.R. Freeman. 1990. Summer mortality of the blue mussel in eastern Canada: spatial, temporal, stock and age variation. *Mar. Ecol. Prog. Ser.* 67: 35-41.
- Carver, C.E.** and A.L. Mallet. 1989. Estimating the carrying capacity of a coastal inlet for mussel culture. *Aquaculture* 88: 39-53.
- Mallet, A.L. and **C.E.A. Carver**. 1989. Growth, mortality, and secondary production in natural populations of the blue mussel, *Mytilus edulis*. *Can. J. Aquat. Sci.* 46: 1154-1159.
- Mallet, A.L., **C.E.A. Carver**, S.S. Coffen and K.R. Freeman. 1987. Mortality variations in natural populations of the blue mussel, *Mytilus edulis*. *Can. J. Aquat. Sci.* 44: 1589-1594.
- Mallet, A.L., **C.E.A. Carver**, S.S. Coffen and K.R. Freeman. 1986. Winter growth of the blue mussel, *Mytilus edulis*: Importance of stock and site. *J. Exp. Mar. Biol. Ecol.* 108: 217-228.
- Mallet, A.L. and **C.E. Carver**. 1999. Maritime distribution and commercial production performance of *Mytilus edulis* and *Mytilus trossulus*. *Bull. Aquac. Assoc. Can.* 99-3: 7-13.

#### **REPORTS AND THESES**

- A.L. Mallet and **C.E. Carver**. 2004. The environmental impact of using non-permanent gear for culturing oysters in New Brunswick and Nova Scotia. Prepared for the New Brunswick Shellfish Growers Association.
- C.E. Carver** and A.L. Mallet. 2004. Investigating potential ballast water management strategies for ships travelling from Chesapeake Bay to ports in Nova Scotia. Prepared for the Department of Transport, Marine Safety Division.
- C.E. Carver** and A.L. Mallet . 2003. A preliminary assessment of the risks of introducing non-indigenous phytoplankton and zooplankton species from South Amboy, New Jersey (Raritan Bay) into White's Point Cove, Digby Neck, Nova Scotia. Prepared for Global Quarry Inc. (Donald Kern).
- C.E. Carver** and A.L. Mallet. 2002. An assessment of the risk of ballast water-mediated introduction of non-indigenous phytoplankton and zooplankton species into Atlantic Canadian waters. Prepared for the Department of Transport, Marine Safety Division.
- Kingzett, B., D. Paltzat. and **C.E. Carver**. 2002. Comparative uptake and depuration of marine biotoxins in sentinel and commercial shellfish species. Prepared for the Canadian Aquaculture Industry Alliance.
- C.E. Carver** and A.L. Mallet. 2001. A preliminary assessment of the risks of ballast water-mediated introduction of non-indigenous phytoplankton and zooplankton species into Nova Scotian waters. Prepared for the Department of Transport, Marine Safety Division.
- C.E. Carver**, A.L. Mallet and A. Chisholm. 2001. Developing strategies for minimizing the impact of the tunicate *Ciona intestinalis* on shellfish culture in Nova Scotia. Prepared for Lunenburg Shellfish Inc.
- Mallet, A.L., and **C.E. Carver**. 1998. Overwintering of juvenile European oysters in Nova Scotia: 1997-1998. Prepared for the Northwest Atlantic Oyster Growers.

- Mallet, A.L., and **C.E. Carver**. 1997. The performance of juvenile European oysters in a field upweller system and at four production sites on the south shore of Nova Scotia. Prepared for the Northwest Atlantic Oyster Growers Association.
- Mallet, A.L., and **C.E. Carver**. 1997. The design and evaluation of nursery systems for the sea scallop (*Placopecten magellanicus*). Prepared for Pec-Nord Inc.
- Mallet, A.L., and **C.E. Carver**. 1996. The optimization of hatchery procedures for the production of sea scallop juveniles in northern Quebec. Prepared for Pec-Nord Inc.
- Mallet, A.L. and **C.E. Carver**. 1995. The effect of peat moss particles on the physiology and survival of the American oyster, *Crassostrea virginica*. Prepared for the New Brunswick Department of Fisheries.
- Carver, C.E.** 1994. Summary of results from the Phytoplankton Monitoring Program in 1993. Prepared for the Aquaculture Association of Nova Scotia and the N.S. Provincial Department of Fisheries.
- Carver, C.E.** 1993. Summary of results from the Phytoplankton Monitoring Program in 1992. Prepared for the Aquaculture Association of Nova Scotia and the N.S. Department of Fisheries.
- Carver, C.E.** and A.L. Mallet. 1993. Phytoplankton research in Ship Harbour: May to August 1992. Part B: Investigating the source of the "unknown toxin" in cultivated mussels. Prepared for DFO - Biological Sciences Branch, Halifax, N.S.
- Mallet, A.L. and **C.E. Carver**. 1993. The ecological and commercial implications of genetically-distinct Mytilids: Variation in growth and survival. Prepared for DFO - Atlantic Fisheries Adjustment Program.
- Carver, C.E.** and A.L. Mallet. 1992. Phytoplankton research in Ship Harbour: May to August 1992. Part A: The relationship between *Mesodinium rubrum* and "redness" in cultured mussels. Prepared for DFO - Biological Sciences Branch, Halifax, N.S.
- Carver, C.E.** and A.L. Mallet. 1992. The ecological and commercial implications of genetically-distinct Mytilids: Completion of the geographic survey. Prepared for DFO - Atlantic Fisheries Adjustment Program.
- Carver, C.E.** and A.L. Mallet. 1992. Assessment of field grow-out strategies for one-year-old quahogs, *Mercenaria mercenaria*, in Nova Scotia. E.R.D.A. Report IDD 106.
- Hancock, S., A.L. Mallet, **C.E. Carver** and K.R. Freeman. 1991. The ecological and commercial implications of genetically-distinct Mytilids: Preliminary geographic survey. Prepared for DFO - Atlantic Fisheries Adjustment Program.
- Carver, C.E.A.** and A.L. Mallet. 1991. Assessment of nursery grow-out strategies for juvenile quahogs, *Mercenaria mercenaria*, in Nova Scotia. E.R.D.A. Report IDD 101.
- Mallet, A.L. and **C.E.A. Carver**. 1989. A bio-economic assessment of grow-out methods for mussel culture. N.S. E.R.D.A. Report No. 15.
- Mallet, A.L. and **C.E.A. Carver**. 1988. Within and among site variation in bay scallop production. N.S. E.R.D.A. Report No. 13.
- Mallet, A.L. and **C.E.A. Carver**. 1988. Optimizing mussel production in Nova Scotia: assessment of stock performance, site performance, and carrying capacity. Prepared for Whitehead Mussel Farms.
- Mallet, A.L. and **C.E.A. Carver**. 1987. The feasibility of bay scallop culture in Nova Scotia: a preliminary study. N.S. E.R.D.A. Report No. 5
- Carver, C.E.A.** 1985. The contribution of the phototrophic picoplankton to the biomass and production of the phytoplankton: an evaluation of size-related principles. M.Sc. Thesis. Dalhousie University. Thesis supervisor: Dr. Trevor Platt.
- Carver, C.E.A.** 1981. The role of biological and environmental factors in the formation of planozygotes and the termination of a *Gonyaulax excavata* bloom. Honours Thesis. Dalhousie University. Thesis supervisor: Dr. Robert Fournier.



**JOHN CHRISTIAN**  
Aquatic/Marine Biologist  
LGL Limited

---

## **EDUCATION**

- 1995 M.Sc., Marine Biology, Memorial University of Newfoundland, St. John's, Newfoundland.
- 1987 B.Sc., Honours, Marine Biology, Memorial University of Newfoundland.

## **PROFESSIONAL EXPERIENCE**

1991-Present **Aquatic/Marine Biologist for LGL St. John's**

Contributing to EA on geohazard survey for Hibernia

Contributing to EA on Jeanne d'Arc Basin delineation/exploratory drilling program for Husky Oil

Contributing to EA on Orphan Basin Exploratory Drilling for Chevron Canada Resources, ExxonMobil Canada Limited, and Imperial Oil Resources Ventures Ltd.

Contributor to EA on 2005 geohazard survey for Husky Oil

Contributor to EA on Lewis Hill geohazard survey for Husky Oil

Contributor to update EA on Lewis Hill exploratory drilling for Husky Oil

Contributor to EA on 2005 geohazard surveys for PetroCanada

Contributor to EA on 2005 Jeanne d'Arc Basin 3-D Program for Husky Oil

Contributor to EA on 2005 Laurentian Sub-basin 3-D Program for ConocoPhillips

Contributor to EA on update (Year 2) of 2005 3-D Orphan Basin seismic program for Chevron Canada Resources, ExxonMobil Canada Limited, and Imperial Oil Resources Ventures Ltd.

Involved in tests at DFO, St. John's regarding the exposure of lobsters to seismic energy

Conducted field program associated with marine sediment sampling/bioavailability study at Botwood Harbour, NL, 2004.

Supervised thorny skate processing project

Conducted littoral zone and stream fish habitat assessment at lower end of Deer Lake, NL for Humber Valley Construction Limited.

Update report on the Marine Habitat Requirements of Invertebrates for DFO

Contributor to a comprehensive literature review on the effects of noise on marine Species at Risk for the American Petroleum Institute (API).

Study team leader on a fish habitat survey in Deer Lake NL for Humber Valley Construction.

Contributor to an EA on wellsite geohazard surveys for Husky Energy Ltd.

Contributor to the 2004 Laurentian 2-D Seismic Survey EA for ConocoPhillips.

Participated in laboratory studies of the effects of exposure to seismic on invertebrates and finfish for DFO.

Participated at a DFO National Assessment Meeting on Seismic Impact and Evaluation Framework.

Contributor to the Orphan 3-D Seismic Program, 2004-2006 EA for ChevronTexaco and ExxonMobil.

Presented at the B.C. Seafood Alliance Oil and Gas Workshop on the effects of seismic on invertebrates and fish.

Contributor to an EA on wellsite geohazard surveys for Petro-Canada.

Participated in snow crab exposure experiment conducted during seismic survey for Corridor Resources off western Cape Breton.

Contributor to the Orphan Basin Strategic Environmental Assessment for Canada-Newfoundland Offshore Petroleum Board.

Conducted a literature review of the potential effects of blasting at White Cove Quarry, NS on American lobster occurring in nearby waters.

Contributor to an environmental assessment of Vertical Seismic Profiling at White Rose for Husky Energy.

Contributor to the environmental assessment for South Whale exploratory drilling for Husky Energy.

Contributor to the development of a coastal marine and estuarine fish habitat classification system for Newfoundland and Labrador.

Contributor to the Husky Jeanne d'Arc Basin exploration drilling program description and environmental assessment.

Contributor to the analysis of the distributions of juvenile American plaice, Juvenile yellowtail flounder and quahaugs on the Grand Bank of Newfoundland for DFO and Clearwater Fine Foods.

Coordinator of a study on the chronic effects of seismic energy on snow crab.

Study team leader for field studies of the behavioural, physical and physiological impacts of seismic energy on snow crab for ESRF.

Study team leader for a laboratory pilot project to investigate the physical and physiological impacts of seismic energy on snow crab and lobster for DFO.

Member of study team investigating drilling mud degradation in the marine environment for DFO.

Participant in an independent review of the snow crab fishery in Newfoundland and Labrador for DFO.

Contributor to environmental assessment of a proposed seismic survey in the southeastern Gulf of St. Lawrence for Corridor Resources Inc.

Contributor to biophysical overviews of prospective Marine Protected Areas at Leading Ticks, Notre Dame Bay, and Eastport, Bonavista Bay, Newfoundland.

Study team leader for fish and fish habitat study at Wabush Lake and Shabogamo Lake, Labrador, for DFO.

Study team leader for mercury monitoring study at Cat Arm, Newfoundland, for Newfoundland and Labrador Hydro.

Contributor to White Rose Oil Field Environmental Impact Statement for Husky Oil.

Author of report to DFO detailing marine habitat requirements of 50+ invertebrate species found in inshore and offshore waters of Newfoundland and Labrador.

Participant in study to develop a non-lethal lumpfish roe harvesting method.

Study team leader for waterway and wetland delineation using dGPS for City of St. John's.

Conducted brook trout spawning surveys by snorkeling at Atikonak Lake region, Labrador, in association with Naturam for LHP.

Field biologist during second year of baseline information collection for Churchill River Power Project (LHP).

Conducted literature review and fisheries data analyses on American eel in Newfoundland and its relationship with hydroelectric facilities for Newfoundland Power.

Contributor to Gisborne Lake Water Export Project EIS for McCurdy Group.

Contributor to EA of seismic explorations on the Scotian Shelf for Mobil Oil.

Study team leader for the sediment and water quality component of the Atikonak Lake Ecosystem Study conducted during the first year of baseline information collection for the Churchill River Power Project (Labrador Hydro Project).

Project leader for two studies to characterize the thermal plume produced by the Newfoundland Hydro's Holyrood Thermal Generating Station, Seal Cove. Studies involved extensive measurements of temperature and salinity and monitoring of contaminants in sediments and biota.

Contributor to development of 'user's manual' for Canadian Navy with which to optimally time and locate naval exercises in eastern Canadian marine areas with minimal impact on other nearshore marine activities.

Field leader/diver for the six year marine environmental effects monitoring program of sediments, mussels, and flounder for the Hibernia GBS Construction Site at Bull Arm, Newfoundland.

Conducted chemical and physical surveys of fish offal dumpsites at four marine locations in insular Newfoundland for Environment Canada.

Involved in a seaweed biomass assessment of the Southern Avalon for the Department of Fisheries and Aquaculture.

Developed a series of factsheets describing nearshore/coastal marine plant and animal species and their associated habitats, for Fisheries and Oceans (DFO).

Primary contributor to description of biological setting for seismic surveys in waters offshore of St. Pierre and Miquelon and southern Newfoundland for Gulf Canada Resources Limited.

Contributor to Terra Nova Oil Field Environmental Impact Statement prepared for Petro-Canada.

Contributor to Environmental Assessment of exploratory drilling on the Scotian Shelf, Laurentian Channel and NAFO Division 3Ps for Mobil Oil.

Field leader in survey of fish waste dump site at Harbour Main and Bay Bulls, Newfoundland, for Fisheries and Oceans (DFO).

Reviewed East Coast information for Marine Regions Environmental Quality Study (MEQ) for Environment Canada.

Field leader for collection of fish in a mercury monitoring study at Hinds Lake and Eclipse Pond, Newfoundland for Newfoundland and Labrador Hydro.

Involved in fish sampling for mercury analysis in the Long Pond Reservoir, Bay d'Espoir, for Newfoundland and Labrador Hydro. Involved in salmonid baseline studies in Rose Blanche Brook for Newfoundland Power.

Involved in a two-year monitoring study of fish passage through existing culvert systems on the Avalon Peninsula, Newfoundland, for Fisheries and Oceans.

Field leader for collection of fish in a disease profile study associated with fisheries component study at Northwest Arm Brook, proposed small hydro site.

Involved in stream habitat and fish assessment at Moose Pond, Newfoundland for Newfoundland Power.

Involved in stream habitat and fish assessment at Port Rexton, Newfoundland for Newfoundland Power.

Involved, for two years, in trout population estimate project using mark-recapture at Stephenson's Pond, Southwestern Newfoundland, for DFO.

Conducted electrofishing and habitat survey work for study of wetlands and waterways of St. John's, Newfoundland, for the City Planning Department.

Compiled fish and fisheries data for the 'Rails to Trails' study for Northland Associates.

Data compilation/analysis and map production in development of strategy for the recreational fisheries in Newfoundland for federal-provincial agreement (CASEC).

1990-91 **First year biology laboratory instructor, Memorial University.** Responsible for the supervision of five laboratory sessions per week.

1988-90 Conducted M.Sc.-level lobster research at St. Phillip's, Newfoundland. Fine scale movement was studied through use of biotelemetry. Lobster movement was related directly to a bottom map compiled through an extensive diving operation. Aspects such as homing, territoriality, movement goals and temporal/spatial variation were investigated.

Collected lumpfish data at Broad Cove, Newfoundland for Dr. J.M. Green, Memorial University. Through use of snorkelling and SCUBA, nests were marked upon the arrival of male fish and monitored until hatching of eggs. Data including nest depth and position, egg mass size, male fish size and date of hatching were collected. Nest positions were mapped using biotelemetry.

Demonstrated first year biology, Memorial University.

1989 **Research assistant and third year invertebrate biology laboratory demonstrator, Memorial University**

Collected invertebrates for the Biology Department at Memorial University. SCUBA was used as collection method.

1989 Assisted whale researcher at St. Phillip's, Newfoundland. Provided diving assistance for installation and maintenance of hydrophone.

1988 Provided diving assistance to researcher studying fine scale cod movement. St. Phillip's, Newfoundland.

Assisted Dr. J. M. Green, Memorial University in SCUBA diving to collect fish on Nuvuk Island (sub Arctic region). Handnet collection and species identification were performed.

1987 **Research assistant for the federal Department of Fisheries and Oceans.** Duties included

- monitoring of Atlantic salmon trap/fence
- measuring and recording particular physical parameters
- fry and juvenile fish sampling
- scale mounting
- water sampling

Research assistant for Dr. J. M. Green, Memorial University. Conducted literature search to investigate last 25 years of ice conditions in Nuvuk Islands region of Hudson Bay.

1986-87 Honour's research. Memorial University. Fish community study of various species found in Nuvuk Island region of Hudson Bay. Work included stomach content analysis and taxonomic classification of fish species and prey species.



**REPORTS AND PUBLICATIONS**

- 2005 Buchanan, R.A., J. Christian, V. Moulton, and B. Mactavish. Orphan 3-D seismic program, 2004-2006 environmental assessment. 2004.
- 2005 Moulton, V.D., J. Christian, R.D. Pitt, B.D. Mactavish, and R.A. Buchanan. 2005. Orphan Basin 3-D seismic program, environmental assessment update, 2005. LGL report in association with Canning & Pitt Associates for Chevron Canada Resources, ExxonMobil Canada Ltd, and Imperial Oil Resources Ventures Limited.
- 2005 Jeanne d'Arc Basin geohazard surveys environmental assessment. 2005. LGL report in association with Canning & Pitt Associates for Husky Oil Operations Limited.
2005. Husky Lewis Hill Prospect exploration drilling program. LGL report for Husky Oil Operations Limited.
- 2005 Christian, J., V.D. Moulton, R.D. Pitt, B.D. Mactavish, and R.A. Buchanan. 2005. Laurentian Sub-basin 3-D Seismic Program, Environmental Assessment Update, 2005. LGL report in association with Canning & Pitt Associates for ConocoPhillips Canada Resources Corporation. 274 p.83 p. + App.
- 2004 Christian, J.R. and R.A. Buchanan. 2004. Marine sediment sampling/bioavailability study at Botwwood harbour, NL, 2004: Field program report. LGL report for Transport Canada, Moncton, NB.
2004. Christian, J.R. 2004. Littoral zone and stream fish habitat assessment at the lower end of Deer Lake. LGL report for Humber Valley Construction Limited, Humber Valley, NL.
- 2004 2004 Laurentian 2-D Seismic Survey Environmental Assessment. LGL report in association with Canning & Pitt Associates for ConocoPhillips Canada Resources Corporation. 274 p.
- 2004 Buchanan, R.A., J. Christian, V. Moulton, and B. Mactavish. Orphan 3-D seismic program, 2004-2006 environmental assessment. 2004. LGL report for Chevron Canada Resources and ExxonMobil Exploration Company. 209 p. + App.
- 2004 Christian, J.R., A. Mathieu, and R.A. Buchanan. Chronic effects of seismic energy on snow crabs (*Chionoecetes opilio*). Draft report by LGL Limited to Environmental Studies Research Fund (ESRF), Calgary, AB. 18 p. + App.
- 2003 Orphan Basin Strategic Environmental Assessment. LGL report for Canada-Newfoundland Offshore Petroleum Board.
- 2003 Christian, J.R. Habitat requirements of marine invertebrate species of Newfoundland and Labrador. Rep. by LGL Limited for the Department of Fisheries and Oceans, St. John's, Newfoundland.
- 2003 Elliot, R.E. and J. Christian. 2003. Analysis of the distribution of juvenile American plaice, juvenile yellowtail flounder and quahaug on the Grand Bank of Newfoundland. LGL report for Fisheries and Oceans Canada, St. John's, NL, and Clearwater Fine Foods Inc., Bedford, NS. 112 p.
- 2003 Christian, J.R., A. Mathieu, D.H. Thomson, D. White, and R.A. Buchanan. Effect of seismic energy on snow crab (*Chionoecetes opilio*). Report by LGL Limited to Environmental Studies Research Fund (ESRF), Calgary, AB. 56 p. + App.

- 2002 Moulton, V.D., J.R. Christian, A.L. Lang, M.W. Fitzgerald, and R.A. Davis. Environmental screening for the Gas Atlantic Study (Phase One). LGL report for TransCanada Pipelines Limited, Calgary, Alberta. 18 p.
- 2002 Thomson, D.H., J.R. Christian, M. Holst, A.L. Lang, A. Serrano, and M.W. Fitzgerald. Draft environmental assessment of Canadian East Coast Navy activities.
- 2002 Christian, J.R., E.M. Lee, and R.A. Buchanan. Coastal marine and estuarine fish habitat classification system (Draft report). LGL report for DFO, St. John's, NF.
- 2002 Husky Jeanne d'Arc Basin exploration drilling program description and environmental assessment. LGL Report in association with Oceans Limited, PAL and S.L. Ross prepared for Husky Oil. 188 p.
- 2002 Independent review of the snow crab fishery in Newfoundland and Labrador. LGL Report in association with Canning and Pitt, W.J. Gazey Research, and Gardner Pinfold Consulting prepared for DFO, St. John's, NF.
- 2002 Lee, E.M. and J.R. Christian. Alternative harvesting strategies for lumpfish: Non-lethal extraction of lumpfish roe, Year II. Rep. by LGL Limited to Fisheries Diversification Program, Department of Fisheries and Aquaculture, Newfoundland and Labrador. 45 p.
- 2001 Thomson, D.H., R.A. Davis, J. Christian, V.D. Moulton, and A. Serrano. Environmental assessment of a proposed 2D seismic survey in the southeastern Gulf of St. Lawrence, NS. Rep. by LGL Limited for Corridor Resources Inc., Halifax, Nova Scotia.
- 2001 Buchanan, R.A., J. Christian, S. Grant, E. Lee, B. Mactavish, and V. Moulton. A biophysical overview of Eastport, Bonavista Bay. Rep. by LGL Ltd. for Department of Fisheries and Oceans, St. John's, NF.
- 2001 Buchanan, R.A., J. Christian, S. Grant, E. Lee, V. Moulton and B. Mactavish. A biophysical overview of Leading Tickles, Notre Dame Bay. Draft Rep. by LGL Limited for the Department of Fisheries and Oceans, St. John's, Newfoundland.
- 2000 Thomson, D.H., R.A. Davis, R. Belore, E. Gonzalez, J. Christian, V.D. Moulton, and R.E. Harris. Environmental assessment of exploration drilling off Nova Scotia. Rep. by LGL Limited, S.L. Ross Environmental Research Ltd., and Coastal Ocean Associates for Canada/Nova Scotia Offshore Petroleum Board and Mobil Oil Canada Properties, Shell Canada Ltd., Imperial Oil Resources, Gulf Canada Resources Ltd., Chevron Canada Resources, PanCanadian Petroleum Ltd., Murphy Oil Company Ltd., and Norsk Hydro Canada Oil & Gas Inc.
- 2000 Christian, J.R., R.A. Buchanan and R. Tamasi. Southwest Development Area Sanitary Trunk Sewer Waterways and Wetland Delineation. Rep. by LGL Limited for City of St. John's.
- 2000 Christian, J.R. Cat Arm Reservoir Fish Sampling Study (1999). Rep. by LGL Limited for Newfoundland and Labrador Hydro.
- 2000 Churchill River power project Atikonak Lake ecosystem study: fish and fish habitat of tributaries. LGL Report prepared for Labrador Hydro Project, St. John's, NF. 42 p. + App.
- 2000 Grant, S.M., E.M. Lee, J.R. Christian, and R.A. Buchanan. Occurrence of logperch (*Percina caprodes*) in tributaries of Atikonak Lake, Labrador: a northeast range extension in Canada. Canadian Field Naturalist.

- 1999 Christian, J.R. Characterization of the thermal plume at the Holyrood Thermal Generating Station, Seal Cove, Newfoundland, during February 1998 to March 1999. Rep. by LGL Limited for Newfoundland and Labrador Hydro.
- 1999 Buchanan, R.A. and J.R. Christian. Addendum Gisborne Lake Water Bottling and Export Project: fish and fish habitat component study. Rep. by LGL Limited for McCurdy Group of Companies.
- 1999 Buchanan, R. A. and J. Christian. Marine habitat classification - literature review. Rep. by LGL Limited for Fisheries and Oceans.
- 1999 Churchill River power project, Atikonak Lake ecosystem study: Sediment and water quality. LGL Report for Labrador Hydro Project, St. John's, NF.
- 1999 LGL Limited. Coastal zone plant species profile series. Information sheets for the DFO.
- 1998 LGL Limited. Environmental Impact Statement and Comprehensive Study Report, Gisborne Lake Water Bottling and Export Project. Rep. for McCurdy Group of Companies.
- 1998 Selnø, J. and J. R. Christian. Gisborne Lake water bottling and export project: Avifauna component study. Rep. by LGL Limited for McCurdy Group of Companies.
- 1998 Christian, J. R. and E. Lee. Nickel smelter/refinery environmental baseline study, marine environment, 1998. Rep. by LGL Limited for Voisey's bay Nickel Company Limited.
- 1998 Christian, J. R. and R. A. Buchanan. The Hibernia GBS Platform Construction Site Marine Environmental Effects Monitoring Program, August 1991 - November 1997. Rep. by LGL Limited for Hibernia Management and Development Company Limited.
- 1998 Christian, J.R., R. A. Buchanan, B. D. Mactavish, D. H. Thomson, and R. A. Davis. Biological setting and potential effects of geophysical surveys, offshore St. Pierre and Miquelon, and southern Newfoundland. Rep. by LGL Limited for Gulf Canada Resources Limited.
- 1998 Lee, E. M., J. R. Christian, and R. A. Buchanan. A seaweed biomass assessment of the Southern Avalon. Rep. by LGL Limited for Department of Fisheries and Aquaculture.
- 1997 Buchanan, R. A., E. Lee, and J. R. Christian. Baseline surveys of salmonids in Rose Blanche Brook, September - October 1997. Rep. by LGL Limited for Newfoundland Power.
- 1997 Christian, J.R. Monitoring physical and chemical conditions at four fish offal disposal sites in the coastal waters of insular Newfoundland, November 1996. Rep. by LGL Limited for Environment Canada.
- 1997 Christian, J. R. and R. A. Buchanan. The Hibernia GBS Platform Construction Site Marine Environmental Effects Monitoring Program, Year Five, June 1995 - June 1996. LGL Limited Rep. to Hibernia Management and Development Company Limited.
- 1996 LGL Limited. Coastal zone animal species profile series. Information sheets for the Department of Fisheries and Oceans.
- 1996 Buchanan, R. A., E. Lee, and J. R. Christian. Fish and fish habitat surveys for the proposed Moose Pond diversion dyke, Pitman's Pond hydroelectric development. Rep. by LGL Limited for Newfoundland Power.

- 1996 Buchanan, R. A., J.R. Christian, and E.M. Lee. Fish and fish habitat in the Northwest Arm Brook system. Rep. by LGL Limited for Northland Associates Ltd. and Emery Construction Co. Ltd.
- 1996 Christian, J. R. and R. A. Buchanan. The Hibernia GBS Platform Construction Site Marine Environmental Effects Monitoring Program, Year Four, July 1994-June 1995. LGL Limited Rep. to Hibernia Management and Development Company Limited.
- 1996 Christian, J. R. Hinds Lake Reservoir Mercury Monitoring Program 1995. LGL Limited Rep. to Newfoundland and Labrador Hydro.
- 1995 Christian, J. R. Patterns of diel activity and movements of the American lobster, *Homarus americanus*, as determined by ultrasonic telemetry. Master of Science Thesis to Memorial University of Newfoundland.
- 1995 Lee, E. M., J. R. Christian, and R. A. Buchanan. Stream Habitat Surveys on Kelligrews River to Sandy Pond, Lower Gullies River to Black Mountain Pond, Colliers River to Colliers Big Pond, and Goulds Brook and Tributaries to Golden Gullies.
- 1995 Christian, J. R., R. A. Buchanan, and E. M. Lee. The Hibernia GBS Platform Construction Site Marine Environmental Effects Monitoring Program, Year Three, July 1993-July 1994. LGL Limited Rep. to Hibernia Management and Development Company Limited.
- 1995 Christian, J. R. And R. A. Buchanan. Bioavailability of contaminants from the fish offal dumpsite at Bay Bulls, Newfoundland, October - November 1994. Rep. By LGL Limited for Department of Fisheries and Oceans.
- 1994 Christian, J. R. Monitoring physical and chemical conditions at two fish offal disposal sites in the coastal waters of insular Newfoundland. Rep. By LGL Limited for Department of Fisheries and Oceans.
- 1994 Buchanan, R. A., T. A. Pinfold, L. S. Carter, J. Baird, and J. Christian. 1994. Strategy for the development of recreational fisheries in Newfoundland and Labrador. Rep. by LGL Limited, Gardner Pinfold Consulting Economists Ltd., The Venture Group, and Baird Planning Associates for The Canada-Newfoundland Cooperation Agreement for Salmonid Enhancement/Conservation. 162 p. + App.
- 1994 Christian, J. R., R. A. Buchanan, and E. M. Lee. The Hibernia GBS platform construction site marine environmental effects monitoring program, year two. Rep. by LGL Limited for Hibernia Management and Development Company Ltd.
- 1993 Buchanan, R. A., G. N. Gaspard, and J. R. Christian. Fish and fish habitat in the Torrent River system. Rep. by LGL Limited for Northland Associates Ltd. and Paris & Associates Development Corporation.
- 1993 Christian, J.R. A geophysical and biological monitoring program related to emissions from the Holyrood thermal generating station at Seal Cove, Newfoundland. Rep. by LGL Limited for Newfoundland and Labrador Hydro.
- 1993 Christian, J. R., R. A. Buchanan, and E. M. Lee. The Hibernia GBS platform construction site marine environmental effects monitoring program, year one. Rep. by LGL Limited for Hibernia Management and Development Company Ltd.
- 1993 Harper, J., J. R. Christian, W. E. Cross, R. Frith, G. Searing, and D. Thomson. Canadian marine region status and trends monitoring network. Rep. by Coastal & Ocean Resources Inc. for Environment Canada.

**John Christian**

Page 10

---

1993 Contributor to 'Canadian Marine Region Status and Trends Monitoring Network, Phase II'. Rep. by LGL Limited for Environment Canada.

1993 Contributor to 'The Newfoundland T'Railway'. Rep. by Northland Associates Ltd. for the Newfoundland & Labrador Rural Development Council.

**CERTIFICATIONS**

- MED A-1
- WHMIS
- Standard First Aid
- CPR

*20 April 2005*

**VOLUME I**  
**APPENDICES**

**WHITES POINT QUARRY & MARINE TERMINAL**

**ENVIRONMENTAL**  
**IMPACT**  
**STATEMENT**



## EIS Contributors

**Amirault, John, M.Eng., P.Eng.**

**Buxton, Paul G., P.Eng.**

**Kern, David, B.Sc.**

**Ross, James**

**Sherk, Susan - AMEC**

## Reference Document Contributors

**Alliston, W. George, PhD.**, “*Faunal Analysis of the Proposed Whites Point Quarry Site, Digby Neck, Digby County, Nova Scotia*”. August 2002 revised 13 January 2004 and Supplemental Report – “2004 Breeding Bird Surveys of the Proposed Whites Point Quarry Site, Digby Neck, Nova Scotia”. December 2004.

**Alliston, W. George, PhD.**, “*Wintering Harlequin Ducks in the Digby Neck / Long Island Area, Digby County, Nova Scotia – 2005*”. 20 May 2005

**Alliston, W. George, PhD.**, “*Use by Wintering Waterbirds of Digby Neck and Adjacent Coastal Waters of Southwestern Nova Scotia*”. 7 June 2005

**Brunelle, Paul-Michael** “*Odonata Survey 2005 – (Damselflies and Dragonflies) Whites Point Property, Digby County, Nova Scotia*”. August 2005

**Brylinsky, Michael, PhD.**, “*Interpretation of a Sublittoral Benthic Survey Along the Shoreline of Whites Point, Digby Neck, Nova Scotia*”. 28 February 2004

**Brylinsky, Michael, PhD.**, “*Results of a Sediment Survey in the Near Offshore Waters of the Proposed Quarry Site in the Vicinity of Whites Cove, Digby Neck, Nova Scotia*”. September 2005.

**Brylinsky, Michael, PhD.**, “*Results of a Survey of the Intertidal Marine Habitats and Communities at a Proposed Quarry Site Located in the Vicinity of Whites Cove, Digby Neck, Nova Scotia*”. 30 June 2002. 7

**Brylinsky, Michael, PhD.**, “*Results of a Survey of the Plankton Communities Located Offshore of a Proposed Quarry Site at Whites Cove, Digby Neck, Nova Scotia*”. April 2005.

**Carver, C.E., M.Sc., and Mallet, A.L.,** M.Sc, Mallet Research Services Ltd., “*A Preliminary Assessment of the Risks of Introducing Non-Indigenous Phytoplankton, Zooplankton Species or Pathogens/Parasites from South Amboy, New Jersey (Raritan Bay) into Whites Point, Digby Neck, Nova Scotia*”. 6 October 2003

**Christian, John,** M.Sc., LGL Limited, “*Whites Cove Quarry Blasting: Potential Impacts on American Lobster*”. 8 October 2003

**Dadswell, M.J.,** “*Migration of Inner Bay of Fundy Atlantic Salmon in Relation to the Proposed Quarry in the Digby Neck Region of Nova Scotia*”. November 2004.

**Fader, Gordon B.,** Atlantic Marine Geological Consulting Ltd. “*Marine Archaeology offshore Digby Neck, Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005

**Fader, Gordon B.,** Atlantic Marine Geological Consulting Ltd. “*Physiography, Geography and Bathymetry of the Digby Neck Area, Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005.

**Fader, Gordon B.** Atlantic Marine Geological Consulting Ltd. “*Bedrock and Surficial Geology, Digby Neck, Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005.

**Fader, Gordon B.** Atlantic Marine Geological Consulting Ltd. “*Glacial, Post Glacial, Present and Projected Sea Levels: Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005

**Fader, Gordon B.** Atlantic Marine Geological Consulting Ltd. “*Seismic Hazard, Faults and Earthquakes: Digby Neck, Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005.

**Fader, Gordon B.** Atlantic Marine Geological Consulting Ltd. “*Erosion, Suspended Sediment and Sediment Transport: Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005.

**Fader, Gordon B.** Atlantic Marine Geological Consulting Ltd. “*Sidescan Sonar Interpretation, Evaluation and Regional Integration: Offshore Digby Neck, Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005

**Fraser, Robert,** Gardner Pinfold, “*Digby Neck / Islands Economic Profile*”. October 2005

**Gareau, Pierre L.,** XY GeoInformatics Services. “*Whites Point Quarry Project GeoSpatial Data Comparison & Compilation*”. April 2005.

**Hannay, David E.,** M.Sc., JASCO Research Ltd., and **Thompson, Denis M.Sc.,** LGL Limited, “*Peak Pressure and Ground Vibration Study for Whites Cove Quarry Blasting Plan*” August 2003



**Herron, Kristy**, BSc. M.Ed, Elgin Consulting and Research, “*Digby Neck and Islands Community/ Business Consultation Report*”. June 2005.

**Herron, Kristy**, BSc. M.Ed, Elgin Consulting and Research, “*Digby Neck and Islands Individual Business Consultation Report*”. August 2005

**Herron, Kristy**, BSc. M.Ed, Elgin Consulting and Research, “*Digby Neck and Islands Traditional Knowledge Consultation Report*”. July 2005

**Hogg, Dwayne**, M.Sc, P.Eng., Jacques Whitford Environmental Ltd., and **MacFarlane, David**, M.Sc., P.Geo., Jacques Whitford Environmental Ltd., “*Preliminary Hydrogeological Assessment, Proposed Quarry, Whites Cove, Digby Neck, Nova Scotia*” December 2002.

**Lizak, John**, M.Sc, P.Geo., Mineral Valuation and Capital, Inc., “*Geological Assessment of the Whites Cove Site*” December 2002.

**Moody, Barry**, PhD., “*Whites Point Quarry Property Historical Background, Digby Neck, Nova Scotia*”. July 2002.

**Neil, Ken**, “*Adult Butterfly Habitat and Larval Host Plant Survey of Whites Point, Digby Co., NS*” August 2005

**Newell, Ruth E.**, M.Sc., “*Plant Survey of Whites Cove Property, Digby Neck, Digby County, Nova Scotia*” . July 2002

*Addendum to report entitled “Plant Survey of Whites Cove Property, Digby Neck, Nova Scotia”*. August 2002.

**Proulx, Gini**, “*A Report on a Botanical Survey, Bilcon Property, Whites Cove, Little River, Digby County, Nova Scotia*” November 2005

**Sherk, Susan**, and **David, Jacinthe**, AMEC, “*Human Health and Community Wellness*” / Public Consultation December 2005

**Strajt, David**, Conestoga-Rovers & Associates, “*Whites Point Hydrologic Budget Analysis Whites Point Quarry Digby Neck, Nova Scotia*”. September 2005

**Walker, John**, Jacques Whitford Environmental Ltd., “*Noise and Air Quality Study at Whites Point Quarry*”. 26 October 2005

**Watrall, Charles R.**, PhD. “*Category C Archaeological Assessment Whites Point/Whites Cove Quarry Project, Digby Neck, Digby County, Nova Scotia Heritage Research Permit Number: A 2002 NS 36*”. May 2003.

**VOLUME I**  
**APPENDICES**

**WHITES POINT QUARRY & MARINE TERMINAL**

**ENVIRONMENTAL**  
**IMPACT**  
**STATEMENT**



## Contributors to Reference Documents

**Alliston, W. George, PhD.**, “*Faunal Analysis of the Proposed Whites Point Quarry Site, Digby Neck, Digby County, Nova Scotia*”. August 2002 revised 13 January 2004

Supplemental Report – “2004 Breeding Bird Surveys of the Proposed Whites Point Quarry Site, Digby Neck, Nova Scotia”. December 2004.

**Alliston, W. George, PhD.**, “*Wintering Harlequin Ducks in the Digby Neck / Long Island Area, Digby County, Nova Scotia – 2005*”. 20 May 2005

**Alliston, W. George, PhD.**, “*Use by Wintering Waterbirds of Digby Neck and Adjacent Coastal Waters of Southwestern Nova Scotia*”. 7 June 2005

**Brunelle, Paul-Michael** “*Odonata Survey 2005 – (Damselflies and Dragonflies) Whites Point Property, Digby County, Nova Scotia*”. August 2005

**Brylinsky, Michael, PhD.**, “*Interpretation of a Sublittoral Benthic Survey Along the Shoreline of Whites Point, Digby Neck, Nova Scotia*”. 28 February 2004

**Brylinsky, Michael, PhD.**, “*Results of a Sediment Survey in the Near Offshore Waters of the Proposed Quarry Site in the Vicinity of Whites Cove, Digby Neck, Nova Scotia*”. September 2005.

**Brylinsky, Michael, PhD.**, “*Results of a Survey of the Intertidal Marine Habitats and Communities at a Proposed Quarry Site Located in the Vicinity of Whites Cove, Digby Neck, Nova Scotia*”. 30 June 2002. 7

**Brylinsky, Michael, PhD.**, “*Results of a Survey of the Plankton Communities Located Offshore of a Proposed Quarry Site at Whites Cove, Digby Neck, Nova Scotia*”. April 2005.

**Brylinsky, Michael, PhD.**, “*Results of a Suspended Solids Survey at the Whites Point Quarry, Little River, Digby County, Nova Scotia*, June 2003

**Carver, C.E., M.Sc., and Mallet, A.L., M.Sc.**, Mallet Research Services Ltd., “*A Preliminary Assessment of the Risks of Introducing Non-Indigenous Phytoplankton, Zooplankton Species or Pathogens/Parasites from South Amboy, New Jersey (Raritan Bay) into Whites Point, Digby Neck, Nova Scotia*”. 6 October 2003

**Christian, John, M.Sc.**, LGL Limited, “*Whites Cove Quarry Blasting: Potential Impacts on American Lobster*”. 8 October 2003

**Dadswell, M.J.**, “*Migration of Inner Bay of Fundy Atlantic Salmon in Relation to the Proposed Quarry in the Digby Neck Region of Nova Scotia*”. November 2004.

**Fader, Gordon B.**, Atlantic Marine Geological Consulting Ltd. “*Marine Archaeology offshore Digby Neck, Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005

**Fader, Gordon B.**, Atlantic Marine Geological Consulting Ltd. “*Physiography, Geography and Bathymetry of the Digby Neck Area, Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005.

**Fader, Gordon B.** Atlantic Marine Geological Consulting Ltd. “*Bedrock and Surficial Geology, Digby Neck, Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005.

**Fader, Gordon B.** Atlantic Marine Geological Consulting Ltd. “*Glacial, Post Glacial, Present and Projected Sea Levels: Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005

**Fader, Gordon B.** Atlantic Marine Geological Consulting Ltd. “*Seismic Hazard, Faults and Earthquakes: Digby Neck, Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005.

**Fader, Gordon B.** Atlantic Marine Geological Consulting Ltd. “*Erosion, Suspended Sediment and Sediment Transport: Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005.

**Fader, Gordon B.** Atlantic Marine Geological Consulting Ltd. “*Sidescan Sonar Interpretation, Evaluation and Regional Integration: Offshore Digby Neck, Bay of Fundy Report for the Proposed Quarry and Marine Terminal at Whites Point, Digby Neck, Nova Scotia*”. March 2005

**Fraser, Robert**, Gardner Pinfold, “*Digby Neck / Islands Economic Profile*”. October 2005

**Gareau, Pierre L.**, XY GeoInformatics Services. “*Whites Point Quarry Project GeoSpatial Data Comparison & Compilation*”. April 2005.

**Hannay, David E.**, M.Sc., JASCO Research Ltd., and **Thompson, Denis M.Sc.**, LGL Limited, “*Peak Pressure and Ground Vibration Study for Whites Cove Quarry Blasting Plan*” August 2003

**Herron, Kristy**, BSc. M.Ed, Elgin Consulting and Research, “*Digby Neck and Islands Community/ Business Consultation Report*”. June 2005.

**Herron, Kristy**, BSc. M.Ed, Elgin Consulting and Research, “*Digby Neck and Islands Individual Business Consultation Report*”. August 2005

**Herron, Kristy**, BSc. M.Ed, Elgin Consulting and Research, “*Digby Neck and Islands Traditional Knowledge Consultation Report*”. July 2005

**Hogg, Dwayne**, M.Sc, P.Eng., Jacques Whitford Environmental Ltd., and **MacFarlane, David**, M.Sc., P.Geo., Jacques Whitford Environmental Ltd., “*Preliminary Hydrogeological Assessment, Proposed Quarry, Whites Cove, Digby Neck, Nova Scotia*” December 2002.

**Lizak, John**, M.Sc, P.Geo., Mineral Valuation and Capital, Inc., “*Geological Assessment of the Whites Cove Site*” December 2002.

**Moody, Barry**, PhD., “*Whites Point Quarry Property Historical Background, Digby Neck, Nova Scotia*”. July 2002.

**Neil, Ken**, “*Adult Butterfly Habitat and Larval Host Plant Survey of Whites Point, Digby Co., NS*” August 2005

**Newell, Ruth E.**, M.Sc., “*Plant Survey of Whites Cove Property, Digby Neck, Digby County, Nova Scotia*” . July 2002

*Addendum to report entitled “Plant Survey of Whites Cove Property, Digby Neck, Nova Scotia”*. August 2002.

**Proulx, Gini**, “*A Report on a Botanical Survey, Bilcon Property, Whites Cove, Little River, Digby County, Nova Scotia*” November 2005

**Sherk, Susan**, and **David, Jacinthe**, AMEC, “*Human Health and Community Wellness*” / Public Consultation December 2005

**Strajt, David**, Conestoga-Rovers & Associates, “*Whites Point Hydrologic Budget Analysis Whites Point Quarry Digby Neck, Nova Scotia*”. September 2005

**Walker, John**, Jacques Whitford Environmental Ltd., “*Noise and Air Quality Study at Whites Point Quarry*”. 26 October 2005

**Watrall, Charles R.**, PhD. “*Category C Archaeological Assessment Whites Point/Whites Cove Quarry Project, Digby Neck, Digby County, Nova Scotia Heritage Research Permit Number: A 2002 NS 36*”. May 2003.

## Contributors to EIS

**Amirault, John**, M.Eng., P.Eng.

**Buxton, Paul G.**, P.Eng.

**Kern, David**, B.Sc.

**Ross, James**

CURRICULUM VITAE  
May 2005

Personal Information

*Name:* Michael John Dadswell

*Address:* Department of Biology, Acadia University, Wolfville, NS B4P 2R6

*Date of Birth:* 7 December 1944

*Place of Birth:* Dafoe, Saskatchewan, Canada

Professional Positions

1995 ÿ Present: Professor of Biology, Acadia University, Wolfville, NS  
Teach undergraduate and graduate course, supervise graduate students and conduct research.

1987-1995: Associate Professor of Biology, Acadia University, Wolfville, NS  
Teach undergraduate and graduate courses, supervise graduate students and conduct research.

1983-1987: Research Scientist (SE-RES 2)  
Dept. Fisheries and Oceans, Biological Station, St. Andrews, NB.  
Five-year assignment to Invertebrate and Marine Plant Division to conduct scallop ecology research (*Placopecten magellanicus*).

1978-1983: Research Scientist (SE-RES 2)  
Dept. Fisheries and Oceans, Biological Station, St. Andrews, NB  
Responsible for fisheries research and management of Atlantic Reference Collection. Research duties for Fundy Tidal Power development.

1975-1978: Research Scientist (SE-RES 1)  
Head, Identification Centre. On scientific exchange from the Huntsman Marine Laboratory to Dept. of Fisheries and Environment, Biological Station, St. Andrews, NB. Responsible for management of Atlantic Reference Collection, curation of fish and crustacean collections, supervision of two additional curators, and conducting environmental research.

1973-1975: Research Scientist.  
The Huntsman Marine Laboratory, St. Andrews, NB. Responsible for fish and fisheries resource inventory investigations in the Saint John River Estuary, NB.

### Awards

#### Scholarships:

- 1967            NSERC Graduate Scholarship (declined to travel to South Pacific)
- 1968-72        Four years National Research Council (NSERC) of Canada Scholarship
- 1972-73        Government of Ontario Graduate Scholarship
- 1972-73        Carleton University Graduate Scholarship

#### Awards:

- Nominated for APICS Young Scientist Award, 1982 and 1983
- The Royal Society of Arts, Honorable Mention, 1985 Silver Medal Competition

### Professional Associateships

- 1978-           Research Associate, University of New Brunswick, Fredericton, NB
- 1981-87        Research Associate, Acadia University, Wolfville, NS
- 1987            Ben and Levi Fohrman, Visiting Lectureship, Technion University, Haifa, Israel.  
(May-June)
- 1988-           Associate Faculty, Dept. of Graduate Studies, University of Guelph, ON

Teach undergraduate and graduate courses and conduct research.

### Academic Training

#### Undergraduate Studies:

Carleton University, Ottawa, ON. 1<sup>st</sup> Class Hons. B.Sc., Biology major, Chemistry minor (1963-1967)

#### Honours Thesis:

Dadswell, M.J. 1967. Micro-and macro-habitat in three Newfoundland lakes, Terra Nova National Park. Hons. B.Sc. Thesis. Dept. Biology, Carleton University, Ottawa, 53 pp.

Awards:

V. A. Ewing Memorial Prize in Biology (1966)  
Elizabeth White Memorial Prize for Zoological Collection (1969)

Graduate Studies:

Carleton University, Ottawa, ON. Ph.D. 1968-1973

Thesis supervisors: Dr. H. F. Howden, Dr. E. L. Bousfield

Ph. D. Thesis:

Dadswell, M. J. 1973. The distribution, ecology, and post-glacial dispersal of certain crustaceans and fishes in eastern North America. Ph.D. Thesis, Carleton University, Ottawa, ON. 172 pp.

Research Grants Held

- National Museum of Canada Research Grants. For four years, each of 1969, 1970, 1971 and 1972
- Ontario Federation of Anglers and Hunters Research Grants. 1969 and 1970.
- Canadian Sportmen's Show Research Grants. 1971 and 1972
- Parks Canada Research Contract. 1978. For striped bass investigations, Kougibouquac Park, NB.
- Hudson River Foundation. 1985. For study of ocean migration of Hudson River American shad.
- NSERC General Grant, Acadia University. 1987, 1988, 1989, 1990, 1991, 1993. Studies on Mesopelagic Crustaceans. Nova Scotia Slope region, Scallop Aquaculture.
- AUFA, Acadia, 1990, 1991, 1992, 1993 - Scallop Aquaculture.
- AUFA, Acadia, 1995 - Dogfish Fishery.
- Dept. Fisheries and Oceans. Subvention Grants 1988, 1989, 1990, 1991, 1992, 1993. Studies on giant scallop recruitment and juvenile mortality.
- ERDA Grant 1988, Nova Scotia Fisheries Department. Studies on scallop aquaculture.



- IRAP-M Grant. 1990. Studies on scallop aquaculture.
- IRAP-H Grant. 1991. Scallop spat settlement off Nova Scotia.
- IRAP-H Grant. 1992. Sea scallop grow-out survival.
- IRAP-M Grant. 1995. Scallop hatchery research.
- CIDA Grant through M.Sc. student, Alex Tewfik to examine conch fishery on Pedro Bank, Jamaica. 1993-1995.
- NSERC Operating Research Grant. 1993-1996
- Nova Scotia Department of Sustainable Development and Natural Resources. 1993-1996. Stormcast seaweed research.
- NSERC Operating Research Grant. 1996-2000.
- AUFA Research Grant. 1997-1998 Scallop aquaculture
- AUFA Research Grant 2001-2002 *Codium* distribution in Maritimes
- AUFA Research Grant 2003-2004 Atlantic salmon ocean migration
- New Brunswick Wildlife Trust 2003 joint with M.Sc. student Aaron Spares. Ocean migration of Atlantic salmon
- NB Wildlife Trust 2004 joint with M.Sc. student Jeff Reader. Ocean migration of Atlantic salmon
- NB Wildlife Trust 2004 joint with M.Sc. student Aaron Spares. Ocean migration of Atlantic salmon, Cesium-137 levels.
- Canadian National Sportsman Show 2004, Joint with A. Spares

*Professional Commitments and Offices Held*

- Program Chairman, Canadian Society of Environmental Biologists Annual Meeting 1977, Fredericton, NB
- Program Chairman, New England Estuarine Research Society meeting, May 1979, St. Andrews, NB
- Member NOAA United States National Marine Service, Recovery Team for shortnose sturgeon. 1978-1981, prepared Recovery Plan for *Acipenser brevirostrum*.

- Maritime Representative, Canadian Committee for Endangered Wildlife, Fish Subcommittee. 1981-present.
- Secretary, APICS Fundy Environmental Studies Committee, 1980-1984.
- Editor, Bay of Fundy Flora and Fauna Technical Report Series, Department of Fisheries and Oceans. 1977-1984.
- Chairman, Northeast American Fisheries Society. Special Projects Committee. Responsible for International Symposium on 'Common Strategies of Anadromous and Catadromous Fishes,' Boston, MA, March 9-13, 1986. Editor of Symposium Proceedings, American Fisheries Society Symposium 1.
- Editor, Canadian Tec. Rep. Fisheries and Oceans. 'Update on Marine Environmental Consequences of Tidal Power Development in the Upper Bay of Fundy.'
- Local Arrangements Chairman. New England Estuarine Research Society meeting, May 1991, Yarmouth, NS.
- Local Arrangements Chairman. New England Estuarine Research Society meeting, May 1999, Western Shore, NS.
- Associate Editor, 2003-2004. Northeastern Naturalist
- Local Arrangements Chairman. American Fisheries Society Symposium on Anadromous and Catadromous Fishes, for Halifax Meeting 2007.

#### Professional Memberships

- Canadian Society of Zoology, 1966-1991, 1993-
- American Fisheries Society, 1971-
- Ottawa Field Naturalists Club, 1965-
- Blomidon Naturalists Society, 1988-
- National Shellfish Association, 1991-

#### Service Contribution

I have been involved with numerous fisheries and environmental groups in the Maritimes and the United States acting in the role of director and/or scientific advisor and teacher/guide. Often these organizations are searching for an alternate opinion to those given by various government departments.

- Expert witness for USA National Marine Fisheries Service on shortnose sturgeon in the Hudson River, 1978. Hudson River Power Plant Hearings, New York, NY.

- Marine Biology advisor to the Northumberland Strait Fixed Link Committee of the Federal Environmental Assessment Review Office, 1989-1992. Provided brief to House of Commons Committee examining Fixed Link, Ottawa, March, 1992.
- Advisor on Scallop Aquaculture, Chester Economic Development Council, Chester, NS.
- Marine Biology leader for Elderhostel, Mountain Gap Inn, Smith's Cove, NS. 1990-present, 6-10 weeks/year.
- Lobster Lecture, Elderhostel, Blomidon Inn, Wolfville, NS 1995-present
- Director. Aquaculture Association of Nova Scotia. 1992-1995. Provide advice to Executive on Scallop Aquaculture.
- Director. LaHave River Watershed Enhancement Foundation. 1994-present. Provide advice on Morgan Falls turbine project and aquatic biology of LaHave River
- Salmon advisor, 1993-present. Cobequid Salmon Association, Truro, NS.
- Member. Rivers Committee, Annapolis Valley Board of Trade. 1991-1995.

My most recent major commitment to these groups in research, time and presence at executive and general meetings has been to provide an opinion concerning the continued decline in Atlantic Salmon runs in rivers of the US northeast and the Bay of Fundy region of the Maritimes. I also provide considerable time and information, at no charge, to private persons wishing to initiate scallop aquaculture operations. Many of these are fishers displaced by the continuing decline of our marine fisheries resources.

#### National and International Consultations

Recognized as expert on sturgeon, Atlantic salmon, American shad and other anadromous fishes, tidal turbine impact on fish, and scallop biology and aquaculture.

1. Canadian Wildlife Service. 1969. Limnological Survey. Gros Morne National Park.
2. Canadian Wildlife Service. 1971. Limnological Survey. La Maurice National Park.
3. Northeast Utilities Service Inc., Hartford, CT. Shortnose sturgeon bypass of proposed Nuclear Power Plant. 1975.
4. La Grande River Indian Band. 1973. Fisheries Survey La Grande R. Estuary.
5. Stone and Webster, Boston, MA. Shortnose sturgeon biology. 1975.
6. Montreal Engineering. Fredericton, NB. Analysis of stream benthos samples for environmental impact of mines and pulp and paper mills. 1975-1985.

7. Montreal Engineering. 1976. Limnological Survey. Lac Mistassini Region, Northern Quebec.
8. Currie & Buchanan. Fredericton, NB. 1985-present. Stream benthos analysis.
9. NOAA, NMFS, Washington, DC. Expert witness, Hudson River Hearings for pumped storage effects on fish. 1979.
10. NOAA, NMFS, Bangor, ME. Dredging at Bath Iron Works, ME. Effects on shortnose sturgeon. 1980.
11. Union Camp Inc. 1980. Shortnose Sturgeon Biology, Wateree R., South Carolina. Pulp Mill Fish Bypass System.
12. Hudson River Foundation, New York, NY. Ocean American shad biology. 1983.
13. Tidal Power Corporation, Halifax, NS. Downstream passage of American shad adults through Annapolis Royal Tidal Turbine, 1985, 1986.
14. Tidal Power Corporation, Halifax, NS 1986, 1987. Downstream Passage of Juvenile Alosids. Annapolis Tidal Turbine, Annapolis Royal, NS.
15. British Electricity Authority, London, UK. Fish mortality in tidal turbines. 1987.
16. Nova Scotia Power Corporation, Halifax, NS. Assessment of American shad population in the Annapolis River, 1989 and 1990, spawning runs.
17. FEARO Environmental Panel on Fixed Crossing to Prince Edward Island, Ottawa, Canada. Marine Fisheries expert to panel. 1989-1990.
18. Department of Fisheries and Oceans, Halifax, NS. Upper Bay of Fundy Atlantic Salmon Assessment, 1989.
19. Chamber of Commerce, Savannah, GA. Savannah Harbor assessment. Effects on migratory fishes. 1992.
20. Northeast Utilities, Shortnose sturgeon spawning and tar deposits in the Connecticut River 1994.
21. Nova Scotia Department of Natural Resources. 1993-1996. Survey of stormcast seaweed, east coast of Nova Scotia.
22. NOAA, NMFS, Boston. Technical expert to Shortnose Sturgeon Recovery team 1994.
23. Kennebec Coalition, Maine. 1995-1996. Anadromous fish expert. Edwards Dam Removal Project.
24. Massachusetts Scallop Aquaculture Working Group. Hyannis, MA. Sea scallop aquaculture. 1996-1997.

25. La Have River Watershed Enhancement 1995. Expert Witness Court Hearing on Dredging.
26. Bath Iron Works, Maine 1998. Drydock construction and shortnose sturgeon biology.
27. Gardner-Pinfold Consultants, Halifax, NS. 1998. Economics of suspended sea scallop aquaculture.
28. Friends of the Presumpscot River, Maine. Fisheries expert. Intervener on licensing of 5 Hydroelectric projects on the Presumpscot River, and Possible Dam removal. 2000-2003
29. Nova Scotia Association of Indians. Expert witness St. Mary's Bay Native Lobster Fishery 2003
30. AMEC International, Fisheries expert, Peticodiac River Causeway Environmental Impact Analysis 2003.
31. Digby Neck White Point Quarry. Atlantic salmon migration expert for iBoF stocks, 2004

Teaching Responsibilities

1980-87	Biol 5223 Biol 5224	Fisheries Biology. in alternate years with Ichthyology. Taught as special lecturer while working for Canadian Department of Fisheries and Oceans.
1987-88	Biol 2106 Biol 3106 Biol 5223	Comparative Chordate Anatomy. Full course. Invertebrate Zoology. Full course (co-taught with S. Boates) Fisheries Biology.
1988-89	Biol 2113 Biol 2123 Biol 3833  Biol 3843 Biol 4113	Chordate Diversity. Comparative Chordate Anatomy. Arthropod Biology. ½ course (co-taught with G. Daborn, T. Herman) Invertebrate Biology. ½ course (co-taught with S. Boates) Ichthyology and Herpetology. ½ course (co-taught with J. Wolford)
1989-90 (Fall)	Biol 2113 Biol 3833	Chordate Diversity. Arthropod Biology. ½ course (co-taught with R. Fisher)
1989-90 (Winter)	Biol 2123 Biol 3843 Biol 5223	Comparative Chordate Anatomy. Invertebrate Zoology. ½ course (co-taught with S. Boates) Fisheries Biology. (Graduate course)
1990-91 (Fall)	Biol 3113 Biol 3843	Chordate Diversity. Invertebrate Zoology. ½ course (co-taught with S. Boates)
1990-91 (Winter)	Biol 2123 Biol 3833 Biol 3843 Biol 4113	Comparative Chordate Anatomy. Arthropods and Allies. ½ course (co-taught with R. Fisher) Invertebrate Zoology. ½ course (co-taught with S. Boates) Ichthyology.
1991-92	Sabbatical Leave	
1992-93 (Fall)	Biol 3843 Biol 3113 Biol 4113	Invertebrate Zoology. ½ course (taught with S. Boates) Chordate Diversity. Ichthyology.
1992-93 (Winter)	Biol 2123 Biol 3833	Comparative Chordate Anatomy. Arthropods and Allies. ½ course. (co-taught with R. Fisher)
1993-94 (Fall)	Biol 3843 Biol 3113	Invertebrate Zoology. Chordate Diversity.
1993-94 (Winter)	Biol 2123 Biol 3833 Biol 4113	Comparative Chordate Anatomy. Arthropods and Allies. Ichthyology.

1994-95 (Fall)	Biol 3843 Biol 3113 Biol 5223	Invertebrate Zoology. Chordate Diversity. Tutorial in Fisheries Biology (Grad course)
1994-95 (Winter)	Biol 2123 Biol 3833 Biol 5223	Comparative Chordate Anatomy. Arthropods and Allies. Tutorial in Fisheries Biology (Grad course)
1995-96 (Fall)	Biol 2123 Biol 3843	Comparative Chordate Anatomy. Invertebrate Zoology.
1995-96 (Winter)	Biol 3113 Biol 3833 Biol 4113	Chordate Diversity. Arthropods and Allies. Ichthyology.
1996 (Summer)	Biol 3013	Natural History and Field Biology (one module)
1996-97 (Fall)	Biol 2123 Biol 3843 Biol5223	Comparative Chordate Anatomy. Invertebrate Zoology. Tutorial in Fisheries Biology & Aquaculture (Grad course)
1996-97 (Winter)	Biol 3113 Biol 3833  Biol 4113 Biol 4464 Biol 5224	Chordate Diversity. Arthropods and Allies.  Ichthyology. Evolution. Contributed lectures. Tutorial in Fisheries Modelling & Management (Grad course)
1997-98 (Fall)	Biol 2123 Biol 3843 Biol 5223	Comparative Chordate Anatomy. Invertebrate Zoology. Tutorial in Fisheries Biology and Aquaculture (Grad course)
1997-98 (Winter)	Biol 3113 Biol 3833 Biol 4113 Biol 4463	Chordate Diversity. Arthropods and Allies. Ichthyology. Evolution. Contributed lectures.
1998-99	Full year sabbatical	
1999	Biol 3013	Natural History and Field Biology (1 module)
1999-2000 (Fall)	Biol 3113 Biol 3843	Chordate Diversity. Invertebrate Zoology.
1999-2000 (Winter)	Biol 1123 Biol 4113	Biodiversity of Animals. Ichthyology.

2000(summer) Biol 3013 Natural History and Field Biology (1 module)

2000-2001 Biol 3843 Marine Invertebrate Zoology  
(fall) Biol 3113 Chordate Diversity  
Biol 5223 Tutorial in Fisheries Biology and Aquaculture

2000-2001 Biol 1123 Biodiversity of Animals  
(winter) Biol 4113 Ichthyology  
Biol 5224 Tutorial in Fisheries Modeling and Management

2001(summer) Biol 3013 Natural History and Field Biology (one module)

2001-2002 Biol 3843 Marine Invertebrate Zoology  
(fall) Biol 4113 Ichthyology

2001-2002 Biol 1823 Biodiversity of Animals  
(winter) Biol 3113 Vertebrate Diversity

2002(summer) Biol 3013 Natural History and Field Biology (one Module)

2002-2003 Biol 3843 Marine Invertebrate Zoology  
(fall) Biol 4113 Ichthyology  
Biol 5223 Tutorial in Fisheries Biology and Aquaculture

2002-2003 Biol 1823 Human Biology  
(winter) Biol 3113 Vertebrate Diversity  
Biol 5224 Tutorial in Fisheries Modeling and Management

2003(summer) Biol 3013 Natural History and Field Biology (one module)

2003-2004 Biol 3843 Marine Invertebrate Zoology  
(fall) Biol 4113 Ichthyology

2003-2004 Biol 1823 Human Biology  
(winter) Biol 3113 Vertebrate Diversity

2004(summer) Biol 3013 Natural History and Field Biology (one Module)

2004-2005 Biol 3843 Marine Invertebrate Zoology  
(fall) Biol 3113 Vertebrate Diversity

2004-2005 Biol 1823 Human Biology  
(winter) Biol 4113 Ichthyology



## Student Supervision

### **Honours Theses:**

Joan Manuel, 1988-89  
Christine Howse, 1989-90  
Patty Burt, 1990-91  
Suzanne Keizer, 1990-91  
Loralei Levy, 1994-95  
Beverly Olsen, 1994-96  
Tina Moore, 1994-95  
Jan Locke, 1994-95  
Aaron Spares, 1996-97  
Angeline Marshall, 1997-98  
Nicole Humble, 1997-98  
Amy Jewiss 2002-2003  
Sara Mercer 2004-2005  
Sierra Wehrall 2004-2005

### **Masters Theses:**

Linda Clarke, Mount Allison University, 1976-78  
P. James Williams, Acadia University, 1982-85 (co-supervision with G. Daborn)  
G. Jay Parsons, Acadia University, 1983-86 (co-supervision with G. Daborn)  
Kevin Gouldie, University of Waterloo, 1983-85 (co-supervision with J. Carter)  
Brenda Bradford (nee Blanchard), Acadia University, 1982-89 (co-supervision with G. Daborn)  
Daphne E. Themelis, Acadia University, 1984-86  
Kevin D. E. Stokesbury, Acadia University, 1985-87  
Joan Manuel, Acadia University, 1989-91  
Andi Assir, Acadia University, 1990-92  
Trevor Avery, Acadia University, 1992-95  
Steven Russell, East Carolina University, 1992-96  
Alex Tewfik, Acadia University, 1992-96  
Susan Myers, Acadia University, 1993-96  
John MacMillan, Acadia University, 1994-98  
Tina Moore, Acadia University, 1995-1998  
Michael Stokesbury, Acadia University, 1998-2000  
Dan Hasselman, Acadia University, 2000-2003  
Jelena Kusakina, Acadia University 2001- 2004  
Aaron Spares, Acadia University 2002-  
Jeffrey Reader, Acadia University 2002-

### **Ph.D. Theses:**

Gary D. Melvin, University of New Brunswick, 1980-84 (co-supervision with J. McKenzie)  
G. Jay Parsons, University of Guelph, 1987-94 (co-supervision with J. Roff)  
Katherine Fuller, Dalhousie University, 1986-91 (served on her committee)

### **External Reader:**

Gary Melvin, M. Sc. Thesis. Acadia University, 1978.  
Paul McCurdy, M. Sc. Thesis. Acadia University, 1980.  
John Brown, M. Sc. Thesis. Acadia University, 1984.  
Patrick J. Harris, M. Sc. Thesis. East Carolina University, Greenville, NC, 1991.  
Thomas Hurlburt, M. Sc. Thesis. Mount Allison University, Sackville, NB, 1991  
Katherine A. Tull, M. Sc. Thesis. East Carolina University, Greenville, NC, 1997.

### **Theses Conferred:**

**Clarke, L.** 1978. A community analysis of the benthos of Baie Verte, Northumberland Strait. M. Sc. Thesis, Mount Allison University, Sackville, NB. 27 September 1978.

**Melvin, G. D.** 1984. Usefulness of meristic and morphometric characters in discriminating populations of American shad *Alosa sapidissima* inhabiting Cumberland Basin, New Brunswick. Ph.D. Thesis, University of New Brunswick, Fredericton, NB. 25 September 1984.

**Williams, P. J.** 1985. Use of otoliths for stock differentiation of American shad *Alosa sapidissima* Wilson. M. Sc. Thesis. Acadia University, Wolfville, NS. March 1985.

**Parsons, G. J.** 1986. Floating algal rafts and their associated fauna in Passamaquoddy Bay, New Brunswick. M. Sc. Thesis, Acadia University, Wolfville, NS. 22 April 1986.

**Themelis, D. E.** 1986. Feeding ecology of American shad, *Alosa sapidissima*, in the upper and lower Bay of Fundy, Canada. M. Sc. Thesis, Acadia University, Wolfville, NS. 9 December 1986.

**Stokesbury, K. D. E.** 1987. Downstream migration of juvenile alosids and an estimate of mortality caused by passage through the STRAFLO low-head turbine at Annapolis Royal, Nova Scotia. M.Sc. Thesis, Acadia University, Wolfville, NS. 12 November 1987.

**Bradford, B.C.** 1989. A demonstration of possible links for a detrital pathway from intertidal macro-algae in the Bay of Fundy. M. Sc. Thesis, Acadia University, Wolfville, NS. 27 September 1989.

**Manuel, J.** 1991. The effect of size and hydrodynamics on the ability of juvenile scallops (*Placopecten magellanicus*) to use jet propulsion for swimming. M. Sc. Thesis, Acadia University, Wolfville, NS. 15 December 1991.

**Assir, A.** 1992. Differential growth characteristics of sea scallop, *Placopecten magellanicus* (Gmelin, 1791) in suspended culture. M.Sc. Thesis, Acadia University, Wolfville, NS. 26 November 1992.

**Parsons, G. J.** 1994. Reproduction and recruitment of the giant scallop (*Placopecten magellanicus*) and its relationship to environmental variables. Ph.D. Thesis, University of Guelph, Guelph, ON. 25 May 1994.

**Avery, T.** 1995. Forces associated with the hydrodynamics of swimming in the sea scallop, *Placopecten magellanicus* (Gmelin, 1791). M. Sc. Thesis, Acadia University, Wolfville, NS. May 1995.

**Myers, S.** 1996. Seasonal accumulation, species representation and fate of storm cast seaweed at three beaches on the Atlantic coast of southwestern Nova Scotia. M. Sc. Thesis, Acadia University, Wolfville, NS. 12 September 1996.

**Tewfik, A.** 1996. An assessment of the biological characteristics, abundance, and potential yield of the Queen Conch (*Strombus gigas* L.) fishery on the Pedro Bank of Jamaica. M. Sc. Thesis, Acadia University, Wolfville, NS. 11 December 1996.

**Moore, T.M.** 1998. Population characteristics of the spiny dogfish, *Squalus acanthius* Linnaeus, 1758, from geographically distinct locations in Atlantic Canada during the summer and fall of 1996. M.Sc. Thesis, Acadia University, 12 September, 1998.

**MacMillan, J.** 1998. Thermal effects of freshwater impoundments on salmonids: behavioural strategies of brook trout (*Salvelinus fontinalis*) and Atlantic salmon (*Salmo salar*) and possible impacts associated with warm water conditions. M. Sc. Thesis, Acadia University, Wolfville, NS. October 1998.

**Stokesbury, M.** 2000. Determination of the relative abundance of farmed Atlantic salmon (*Salmo salar* L., 1758) juveniles in wild samples from three southwestern New Brunswick rivers. M. Sc. Thesis, Acadia University, Wolfville, NS. 18 Jan. 2000.

**Hasselman, D. J.** 2003. Discrimination of coregonid fishes in Maritime Canada. M. Sc. Thesis, Acadia University, Wolfville, NS. 30 May, 2003.

**Kusakina, L.** 2004. Morphological and molecular variation in *Codium fragile*, an invasive green macroalga in Atlantic Canada. M. Sc. Thesis, Acadia University, Wolfville, NS, 12 August. 2004.

### Record of Student Achievement

- L. Clarke completed Ph.D. at University of New Brunswick, 1985.
- G. Melvin completed Ph.D. at University of New Brunswick 1984; now Research Scientist with Department of Fisheries and Oceans.
- P. J. Williams completed Ph.D. at Memorial, 1995 (Professor, St. F. X.)
- G. J. Parsons completed Ph.D. at Guelph, 1994. (Professor, MUN)
- D. Themelis completed Ph.D. at Dalhousie University, 1996 (Lecturer MSV)
- K. Stokesbury completed Ph.D. program at Laval, 1995 (Professor UMass.)
- B. Bradford, Biologist with Department of Fisheries and Oceans.
- J. Manuel completed Ph.D. at Dalhousie University, 1996, (Research Associate at Horn Point Lab, Maryland)
- A. Assir, University faculty, Indonesia
- T. Avery, completed Ph.D. at Memorial University, 2002, CLT Acadia
- C. Howse completed M.Sc. at Memorial
- A. Tewfik, completed Ph.D. McGill, Post-Doc, University of South Florida
- L. Levy, completed M.Sc. at Memorial, (Biologist with DFO)
- J. Locke, completed M. Sc. At Toronto.
- Tina Moore with North Carolina Fisheries Department
- Michael Stokesbury completed Ph.D. Dalhousie U 2005. NSERC Post-Doc
- Dan Hasselman. Accepted in Ph.D. Program Dalhousie University
- J. MacMillan. Fisheries Biologist. NS Dept of Agriculture and Fisheries
- Angeline Marshall, accepted to M.Sc. program, UBC
- A. Spares, accepted M.Sc. program at Acadia University
- A. Jewiss, accepted Veterinary School, Guelph.

Refereed Primary Publications

- Dadswell, M. J.** 1972. Postglacial dispersal of four deepwater fishes on the basis of new distribution records in eastern Ontario and western Quebec. *J. Fish. Res. Board Can.* 29: 545-553.
- Dadswell, M. J.** 1972. Some new distribution records of freshwater fishes from northwestern insular Newfoundland. *Can. Field-Nat.* 86: 289-291.
- Dadswell, M. J.** 1974. A physical and biological survey of La Grand River estuary, James Bay, Quebec. *Can. Field-Nat.* 88: 477-480.
- Dadswell, M. J.** 1974. Distribution, ecology and postglacial dispersal of certain crustaceans and fishes in eastern North America. *Nat'l. Mus. Can. Publ. Zool.* 11: 110 pp.
- Dadswell, M. J.** 1975. Some notes on shoaling behaviour and growth of *Mysis gaspensis* (Mysidacea) in a small Newfoundland estuary. *Can. J. Zool.* 53: 374-377.
- Dadswell, M. J.** 1975. Further new locality records of deepwater fishes in eastern Ontario and western Quebec. *Can. Field-Nat.* 89: 447-450.
- Dadswell, M. J.** 1975. A small-boat otter trawl for limnological studies. *J. Fish. Res. Board Can.* 32: 2535-2538.
- Appy, R. G. and **M. J. Dadswell.** 1978. Parasites of *Acipenser brevirostrum* LeSueur and *Acipenser oxyrinchus* Mitchell (Osteichthyes:Acipenseridae) in the Saint John River estuary, N.B., with a description of *Cabelleronema pseudoargumentosus* sp. N (Nematoda:Spirurida). *Can. J. Zool.* 56: 1382-1391.
- Dadswell, M. J.** 1979. Biology and population characteristics of the shortnose sturgeon, *Acipenser brevirostrum* LeSueur 1818 (Osteichthyes:Acipenseridae), in the Saint John River estuary, New Brunswick, Canada. *Can. J. Zool.* 57: 2186-2210.
- Burbanck, M. P., W. D. Burbanck, **M. J. Dadswell,** and G. F. Gillis. 1979. Occurrence and biology of *Cyathura polita* (Stimpson) (Isopoda, Anthuridae) in Canada. *Crustaceana* 37: 31-38.
- Taubert, B. D., and **M. J. Dadswell.** 1980. Descriptions of some larval shortnose sturgeon *Acipenser brevirostrum* from the Holyoke Pool, Connecticut River, Massachusetts, USA, and the Saint John River, New Brunswick, Canada. *Can. J. Zool.* 58: 1125-1128.
- Carter, J. C. H., **M. J. Dadswell,** J. C. Roff, and W. G. Sprules. 1980. Distribution and zoogeography of planktonic crustaceans and dipterans in glaciated eastern North America. *Can. J. Zool.* 58: 1355-1387.
- Appy, R. G. and **M. J. Dadswell.** 1981. Marine and estuarine piscicolid leeches (Hirundinea) of the Bay of Fundy and adjacent waters with a key to species. *Can. J. Zool.* 59: 183-192.

Roff, J. C., W. G. Sprules, J. C. H. Carter, and **M. J. Dadswell**. 1981. The structure of crustacean zooplankton communities in glaciated eastern North America. *Can. J. Fish. Aquat. Sci.* 38: 1428-1437.

Carter, J. C. H. and **M. J. Dadswell**. 1983. Seasonal and spatial distribution of planktonic crustacea in the lower Saint John River, a multi-basin estuary in New Brunswick, Canada. *Estuaries* 6: 142-153.

**Dadswell, M. J.**, G. D. Melvin, and P. J. Williams. 1983. Effects of turbidity on the temporal and spatial utilization of the inner Bay of Fundy by American shad *Alosa sapidissima* (Pisces:Clupeidae) and its relationship to local fisheries. *Can. J. Fish. Aquat. Sci.* 40 (Supp. 1): 322-330.

Carter, J. C. H., W. G. Sprules, **M. J. Dadswell**, and J. C. Ross. 1983. Factors governing geographical variation in body size of *Diaptomus minutus* (Copepoda, Calanoida). *Can. J. Fish. Aquat. Sci.* 40: 1303-1307.

Appy, R. G., and **M. J. Dadswell**. 1983. Transmission and development of *Capillospirura pseudoargentosus* (Appy and Dadswell, 1978) (Nematoda: Cystidicolidae). *Can. J. Zool.* 61: 848-859.

Daborn, G. R., G. C. Baker, and **M. J. Dadswell**. 1984. Environmental consequences and ameliorative measures for the Annapolis tidal power project. *Wat. Sci. Tech.* 16: 297-306.

Carter, J. C. H., **M. J. Dadswell**, and K. Gouldie. 1984. Univoltine and bivoltine life cycles of *Senecella calanoides* (Copepoda:Pseudocalanidae) in lakes of glaciated eastern Northern America. *Can. Fish. Aquat. Sci.* 41: 1167-1175.

**Dadswell, M. J.** 1984. Status of shortnose sturgeon, *Acipenser brevirostrum*, in Canada. *Can. Field Nat.* 98: 75-79.

MacDonald, J. S., **M. J. Dadswell**, R. G. Appy, G. D. Melvin, and D. A. Methven. 1984. Fishes, fish assemblages, and their seasonal movements in the lower Bay of Fundy and Passamaquoddy Bay, Canada. *Fish Bull.* 82: 121-139.

Wildish, D. J. and **M. J. Dadswell**. 1985. Sublittoral Gammaridean amphipods of soft sediments in the Bay of Fundy. *Proc. N. S. Insti. Sci.* 35: 1-15.

Hogans, W. E., and **M. J. Dadswell**. 1985. Copepod parasites of the white shark *Carcharodon carcharius* (L.) from the Bay of Fundy. *Can. J. Zool.* 63: 740-741.

Hogans, W. E., and **M. J. Dadswell**. 1985. Redescription of *Lophoura gracilis* Wilson, 1919 (Copepoda:Sphyriidae) from *Synaphobranchus kaupi* in the Northwest Atlantic Ocean. *Can. J. Zool.* 63: 2940-2943.

**Dadswell, M. J.** 1985. Status of blueback herring, *Alosa aestivalis*, in Canada. *Can. Field-Nat.* 99: 409-412.

- Melvin, G. D., **M. J. Dadswell**, and J. D. Martin. 1986. Fidelity of American shad *Alosa sapidissima* (Osteichthyes:Clupeidae) to its river of previous spawning. *Can. J. Fish. Aquat. Sci.* 43: 640-646.
- Rulifson, R. A., **M. J. Dadswell**, and G. K. Mahoney. 1986. Tidal power development and estuarine and marine environments. Policy statement of the American Fisheries Society. *Fisheries* 11: 36-39.
- Dadswell, M. J.**, R. A. Rulifson, and G. R. Daborn. 1986. Potential impact of large-scale tidal power developments in the upper Bay of Fundy on fisheries resources of the Northwest Atlantic. *Fisheries* 11: 26-35.
- Dadswell, M. J.**, G. D. Melvin, P. J. Williams, and D. E. Themelis. 1987. Influence of origin, life history and chance on the Atlantic coast migration of American shad. 313-330, *In*: Common strategies of anadromous and catadromous fishes. Ed. by **M. J. Dadswell**, R. J. Klauda, C. M. Moffitt, R. L. Saunders and R. A. Rulifson. *Am. Fish. Soc. Spec. Symp.* 1.
- Markle, D. F., **M. J. Dadswell**, and R. G. Halliday. 1988. demersal fish and decapod crustacean fauna of the upper continental slope of Nova Scotia from LaHave to St. Pierre Bank. *Can. J. Zool.* 66: 1952-1960.
- Stokesbury, K. D. E., and **M. J. Dadswell**. 1989. Seaward migration of juvenile alosids from an estuary in Atlantic Canada. *Can. Field-Nat.* 103 (3): 338-393.
- Dadswell, M. J.** and D. Weihs. 1990. Size related hydrodynamic characteristics of the giant scallop *Placopecten magellanicus* (Bivalvia: Pectinidae). *Can. J. Zool.* 68: 778-785.
- Dadswell, M. J.** and G. J. Parsons. 1991. Potential for aquaculture of sea scallop, *Placopecten magellanicus* (Gmelin 1791), in the Canadian Maritimes using naturally produced spat. *World Aquaculture Workshops* 1: 300-307.
- Stokesbury, K. D. E. and **M. J. Dadswell**. 1991. Mortality of juvenile clupeids during passage through a tidal, low-head hydroelectric turbine at Annapolis Royal, Nova Scotia. *North American Journal of Fisheries Management* 11: 149-154.
- Manuel, J. and **M. J. Dadswell**. 1991. Swimming behavior of juvenile giant scallop, *Placopecten magellanicus*, in relation to size and temperature. *Can. J. Zool.* 69: 2250-2254.
- Melvin, G. D., **M. J. Dadswell**, and J. A. McKenzie. 1992. The usefulness of meristic and morphometric characters in discriminating populations of American shad, *Alosa sapidissima* (Osteichthys:Clupeidae) inhabiting a marine environment. *Can. J. Fish Aquat. Sci.* 49: 266-280.
- Parsons, G. J. and **M. J. Dadswell**. 1992. Effects of stocking density on growth, production and survival of the giant scallop, *Placopecten magellanicus* held in intermediate culture in Passamaquoddy Bay, New Brunswick. *Aquaculture* 103: 291-309.

Parsons, G. J., S. M. C. Robinson, R. C. Chandler, L. A. Davidson, M. Lanteigne and **M. J. Dadswell**. 1992. Short-and long-term temporal and spatial patterns in the reproductive cycle of the giant scallop, *Placopecten magellanicus* (Pectinidae:Bivalvia) from Passamaquoddy Bay, New Brunswick, Canada. *Prog. Marine Ecology* 80: 203-214.

Zouros, E., G. H. Pogson, D. I. Cook, and **M. J. Dadswell**. 1992. Apparent selective neutrality of mitochondrial DNA size variation: a test in the deep-sea scallop, *Placopecten magellanicus*. *Evolution* 46: 1466-1476.

Parsons, G. J., C. R. Warren-Perry, and **M. J. Dadswell**. 1992. Movements of juvenile sea scallops, *Placopecten magellanicus* (Gmelin, 1791), in Passamaquoddy Bay, New Brunswick. *J. Shellfish Res.* 11: 295-297.

**Dadswell, M. J.** and G. J. Parsons. 1992. Exploiting life-history characteristics of the sea scallop, *Placopecten magellanicus* (Gmelin, 1791) from different geographical locations in the Canadian Maritimes to enhance suspended culture grow-out. *J. Shellfish Res.* 11: 299-305.

Parsons, G. J., S. M. C. Robinson, J. C. Roff and **M. J. Dadswell**. 1993. Daily growth ridges and rates in postlarval giant scallops, *Placopecten magellanicus* (Bivalvia: Pectinidae). *Can. J. Fish. Aquat. Sci.* 50: 456-464.

Hogans, W. E., **M. J. Dadswell**, L. S. Uhazy, and R. G. Appy. 1993. Parasites of American shad, *Alosa sapidissima* (Osteichthyes: Clupeidae), from rivers of the North American Atlantic Coast and the Bay of Fundy, Canada. *Can. J. Zool.* 71: 941-946.

Bird, C., **M. J. Dadswell**, and D. W. Grund. 1993. First record of the potential nuisance alga *Codium fragile* ssp. *Tomentosoides* (Chlorophyta, Caulerpales) in Atlantic Canada. *N.S. Inst. Sci.* 40: 11-17.

Manuel, J. L. and **M. J. Dadswell**. 1993. Swimming of juvenile sea scallops, *Placopecten magellanicus* (Gmelin): a minimum size for effective swimming. *J. Exp. Mar. Biol. Ecol.* 174: 137-175.

Parsons, G. J., **M. J. Dadswell**, and J. C. Roff. 1993. Influence of biofilm on settlement of sea scallop, *Placopecten magellanicus* (Gmelin, 1791), in Passamaquoddy Bay, New Brunswick, Canada. *J. Shellfish Res.* 12: 279-283.

**Dadswell, M. J.** and R. A. Rulifson. 1994. Macrotidal estuaries: a region of collision between migratory marine animals and tidal power development. *Bio. J. Linn. Soc.* 51: 93-113.

Rulifson, R. A. and **M. J. Dadswell**. 1995. Population characteristics of striped bass in Atlantic Canada. *Trans. Amer. Fish Soc.* 124: 477-507.

Spares, A.D. and **M. J. Dadswell**. 2000. Goat Lake, a warm water, estuarine refugia for mollusks on the south shore of Nova Scotia. *Proc. N.S. Acad. Sci.* 41: 134-148.



Stokesbury, M.J., G. Lacroix, **M.J. Dadswell**, E. L. Price, D. Knox . 2001. Identification by scale analysis of farmed Atlantic salmon juveniles in S.W. New Brunswick rivers. *Trans. Amer. Fish. Soc.* 130: 815-822.

**Dadswell, M. J.**, 2001. A review of the status of sea scallop aquaculture in Atlantic Canada in the year 2000. *Aqua. Assoc. Can. Spec. Publ.* 4: 70-74.

**Dadswell, M. J.** 2005. A review of the status of Atlantic Sturgeon, *Acipenser oxyrinchus* Mitchill, 1814, in Canada, with comparisons to Europe and the United States. *Can. Field Nat.* (submitted).

### Books and Book Chapters

**Dadswell, M. J.** 1974. Postglacial geological history. In *The Fishes of Canada's National Capital Region* by D. E. McAllister and B. W. Coad. *Env. Can. Misc. Spec. Publ.* 24: 12-16.

**Dadswell, M. J.**, R. J. Klauda, C. M. Moffitt, R. L. Saunders, R. A. Rulifson and J. E. Cooper. (Eds.) 1987. *Common Strategies of Anadromous and Catadromous Fishes.* *Amer. Fish. Soc. Symp.* 1, 561 p.

Daborn, G. R., and **M. J. Dadswell.** 1988. Natural and anthropogenic changes in the Bay of Fundy-Gulf of Maine-Georges Bank system. In *Natural and Man-Made Hazards*, Rimouski, Quebec. M. I. El-Sabh and T. S. Murty (eds.) 547-560. D. Reidel Publ. (Invited).

Parsons, G. J., **M. J. Dadswell**, and E. M. Rodstrom. 1991. Scandinavia. P. 763-775. In *Scallops: Biology, ecology and aquaculture.* (Ed.) S. E. Shumway, *Developments in aquaculture and fisheries science.* 21. Elsevier, Amsterdam.

### Refereed Technical Reports

Metcalf, C. D., **M. J. Dadswell**, G. F. Gillis, and M. L. H. Thomas. 1976. Physical, chemical, and biological parameters of the Saint John River estuary, New Brunswick, Canada. *Fish. Mar. Serv. Dept. Fish. Env. Canada, Tech. Rep.* 686, 42 p.

Caddy, J. F., T. Amaratunga, **M. J. Dadswell**, T. Edelstein, L. E. Linkletter, B. R. McMullin, A. B. Stasko, and H. W. Van de Poll. 1977. 1975 Northumberland Strait Project. Part I. Benthic fauna, flora, demersal fish, and sedimentary data. *Fish. Mar. Serv. Dept. Fish. Env. Canada MS Rep.* 1431, 45 p.

**Dadswell, M. J.** 1979. The Canso Causeway and its possible effects on regional inshore and its possible effects on regional inshore fisheries – an overview. In *Canso Marine Environment Workshop.* Part 2 of 4 parts. An overview. Ed. by F. D. McCracken. *Fish Mar. Serv. Fish Env. Canada Tec. Rep.* 834: 1-13.

**Dadswell, M. J.** 1979. A bibliography of the environment and fisheries of the St. Georges Bay-Chedabucto Bay-Canso Strait Region. In Canso Marine Environment Workshop. An overview. Ed. by F. D. McCracken. Fish. Mar. Serv. Fish. Env. Canada Tech. Rep. 834: 30-55.

**Dadswell, M. J.** 1979. A review of the decline in lobster *Homarus americanus* landings in Chedabucto Bay between 1956 and 1977 with an hypothesis for a possible effect by the Canso Causeway on the recruitment mechanism of eastern Nova Scotia lobster stocks. In Canso Marine Environment Workshop. Part 3 of 4 parts. Fishery impacts. Ed. by F. D. McCracken. Fish. Mar. Serv. Fish. Env. Canada Tech. Rep. 834: 113-144.

Appy, T. D., L. E. Linkletter, and **M. J. Dadswell.** 1980. A guide to the marine flora and fauna of the Bay of Fundy: Annelida:Polychaeta. Fish. Mar. Serv. Fish. Env. Canada. Tech. Rep. 920, 124 p.

Peer, D., D. J. Wildish, A. J. Wilson, J. Hines, and **M. J. Dadswell.** 1980. Sublittoral macro-infauna of the lower Bay of Fundy. Can. Tech. Rep. Fish. Aquat. Sci. 981: 74 p.

Martin, J. D., and **M. J. Dadswell.** 1983. Records of coho salmon *Oncorhynchus kisutch* (Walbaum, 1792) in the Bay of Fundy and its tributary drainage. Can. Tech. Rep. Fish. Aquat. Sci. 1204, 6 p.

**Dadswell, M. J.** 1983. Commercial fisheries of the Saint John Harbour, 1875-1983: Estuarine fishes. In: Lindsay, G., and A. McIver (Eds.). Report on the Saint John Harbour Environs. Env. Protection Serv., Surv. Rep. EPS-5-AR-83-8: 98-117.

Wildish, D. J., D. L. Peer, A. J. Wilson, J. Hines, L. Linkletter, and **M. J. Dadswell.** 1983. Sublittoral macro-infauna of the upper Bay of Fundy. Can. Tech. Rep. Fish. Aquat. Sci. 1194, 64 p.

**Dadswell, M. J.,** G. D. Melvin, P. J. Williams, and G. S. Brown. 1984. Possible impact of large-scale tidal power developments in the upper Bay of Fundy on certain migratory fish stocks of the Northwest Atlantic. In: D. C. Gordon, Jr., and **M. J. Dadswell** (Eds.). Update on Marine environmental consequences of tidal power development in the upper reaches of the Bay of Fundy. Can. Tech. Rep. Fish. Aquat. Sci. 1256: 577-599.

Melvin, G. D., and **M. J. Dadswell.** 1984. Possible impact of tidal power development on the spawning population of American shad *Alosa sapidissima* in the Annapolis River, Nova Scotia. In: D. C. Gordon, Jr., **M. J. Dadswell** (Eds.). Update on marine environmental consequences of tidal power development in the upper reaches of the Bay of Fundy. Can. Tech. Rep. Fish. Aquat. Sci. 1256: 543-549.

**Dadswell, M. J.,** R. Bradford, A. H. Leim, G. D. Melvin, R. G. Appy, and D. J. Scarratt. 1984. A review of fish and fisheries research in the Bay of Fundy between 1976 and 1983. In: D. C. Gordon, Jr., and **M. J. Dadswell** (Eds.). Update on marine environmental consequences of tidal power development in the upper reaches of the Bay of Fundy. Can. Tech. Rep. Fish. Aquat. Sci. 1256: 163-294.

**Dadswell, M. J.,** B. D. Taubert, T. S. Squeirs, D. Marchette, and J. Buckley. 1984. Synopsis of biological data on the shortnose sturgeon, *Acipenser brevirostrum* LeSueur 1818. NOAA, NMFS Tec. Rept. 14, FAO fish. Synop. 140, 45 p.

Roff, J. C., K. G. Davidson, G. Pohle, and **M. J. Dadswell.** 1984. A guide to the marine flora and fauna of the Bay of Fundy and Scotian Shelf: Larval Decapoda-Brachyura. Can. Tech. Rep. Fish. Aquat. Sci. 1322: iv + 57 p.

Melvin, G. D., **M. J. Dadswell,** and J. D. Martin. 1985. Impact of lowhead hydroelectric tidal power development on fisheries. I. A pre-operation study of the spawning population of American shad, *Alosa sapadissima* (Pisces:Clupeidae), in the Annapolis River, Nova Scotia, Canada. Can. Tech. Rep. Fish. Aquat. Sci. 1340: iv + 33p.

Chandler, R. A., G. J. Parsons, and **M. J. Dadswell.** 1989. Upper and northern Bay of Fundy scallop surveys, 1986-87. Can. Tech. Rep. Fish. Aquat. Sci. 1665: iii + 37 p.

**Dadswell, M. J.** 1989. Potential for giant scallop (*Placopecten magellanicus*) aquaculture in Atlantic Canada. Bull. Aqua. Assoc. Canada. 89:1: 19-22.

Parsons, G. J., and **M. J. Dadswell.** 1991. Stocking density effects on growth and survival of the giant scallop, *Placopecten magellanicus*, held in intermediate culture. Bull. Aqua. Assoc. Canada 91-3: 94-96.

**Dadswell, M. J.,** and G. J. Parsons. 1992. Suspended culture grow-out strategies exploiting the life history characteristics of two populations of the sea scallop, *Placopecten magellanicus*. Bull. Aqua. Assoc. Canada 92-4: 38-44.

Manuel, J. L., and **M. J. Dadswell.** 1994. Scale and hydrodynamics change the swimming behavior of juvenile sea scallops (*Placopecten magellanicus*). Can. Fish Aquat. Sci. Tech. 1994: 59-65.

Parsons, G. J., and **M. J. Dadswell.** 1994. Evaluation of intermediate culture techniques and growth and survival of giant scallop, (*Placopecten magellanicus*), in Passamaquoddy Bay, New Brunswick. Can. Fish. Aquat. Sci. Tec. Rep. 2012.

Parsons, G. J., and **M. J. Dadswell.** Aquaculture of sea scallop. In Synopsis of biological data on the sea scallop, *Placopecten magellanicus*. Ed. S. E. Shumway. FAO Fisheries Synopsis. NOAA Tech. Rept. (In Press).

#### Non-refereed Interpretive Scientific Publications

**Dadswell, M. J.,** and E. L. Bousfield. 1970. The opossum shrimp of the Ottawa region. Trail and Landscape 4: 6-11.

**Dadswell, M. J.** 1971. *Pontoporeia affinis* ÿ fish food or pollution indicator. Trail and Landscape. 5: 87-92.

Brinkhurst, R. O., L. E. Linkletter, E. I. Lord, S. A. Connors, and **M. J. Dadswell**. 1976. A preliminary guide to the littoral and sublittoral marine invertebrates of Passamaquoddy Bay. Barnes-Hopkins, Saint John, N.B. 166 p.

Linkletter, L. E., E. I. Lord, and **M. J. Dadswell**. 1977. Checklist and catalogue of the marine fauna and flora of the lower Bay of Fundy shore of New Brunswick. Huntsman Mar. Lab. Publ., Pritikin Press, St. Stephen, N.B., 68 p.

**Dadswell, M. J.** 1986. The American shad. Dept. of Fisheries and Oceans, Ottawa. Underwater World 49, 8 p.

**Dadswell, M. J.** and G. J. Parsons. 1989. Potential for giant scallop (*Placopecten magellanicus*) aquaculture in Nova Scotia. Aquanotes. Aquaculture Association of Nova Scotia 11: 17-21.

**Dadswell, M. J.** 1991. The benefits of scallop aquaculture for the Nova Scotia community. Aquanotes. Aquaculture Association of Nova Scotia 16: 22-24.

**Dadswell, M. J.** 1993. Potential impact of the proposed bridge on the marine environment and fisheries of the southern Gulf of St. Lawrence. P. 103-111. In Begley, L. (Ed.) Crossing that bridge. A critical look at the PEI Fixed Link. Ragweed Press. Charlottetown, PEI.

**Dadswell, M. J.** 1994. Where have all the salmon gone? Cobequid Salmon Association Newsletter, Spring, 1994 and Nova Scotia Salmon Association Newsletter, Fall, 1994.

**Dadswell, M. J.** 1999. Fish can swim: some stories of fish migration. Blomidon Naturalists Newsletter. 26:

**Dadswell, M. J.** 2000. The dynamic ocean. Blomidon Naturalists Society Newsletter 27: 25-27.

**Dadswell, M. J.** 2000. Where have all the salmon gone? Halifax Sunday Herald. June.

**Dadswell, M. J.** 2000. Where have all the salmon gone, II? Nova Outdoors 9:17-20.

#### Non-Refereed Technical Reports

**Dadswell, M. J.** 1968. Atlantic salmon, *Salmo salar*, investigation in the Pointe Wolfe and Upper Salmon Rivers, Fundy National Park. Manuscript Rept., Limnology Section, Canadian Wildlife Service.

**Dadswell, M. J.** 1968. Observations on Atlantic salmon in the Upper Salmon (Alma) River, Fundy National Park. Manuscript Rept., Limnology Section, Canadian Wildlife Service.

Cuerrier, J. P., and **M. J. Dadswell**. 1969. Limnology and experimental fisheries management studies in Gatineau Park, during 1968. Manuscript Rept., Limnology Section, Canadian Wildlife Service, 107 p.

**Dadswell, M. J.** 1970. A physical and biological survey of the aquatic environment (freshwater) of the proposed Gros Morne National Park, Newfoundland. Manuscript Rept., Limnology Section, Canadian Wildlife Service, 76 p.

**Dadswell, M. J.** 1972. Preliminary limnological survey of La Maurice National Park. Manuscript Rept., Limnology Section, Canadian Wildlife Service, 42 p.

Metcalf, C. D., **M. J. Dadswell**, G. F. Gillis, and M. L. H. Thomas. 1976. Selected chemical and physical parameters in the Saint John River estuary, New Brunswick, Canada. In Baseline survey and living resource potential study of the Saint John River estuary, New Brunswick. Vol. I. Physics and Chemistry. The Huntsman Marine Laboratory, St. Andrews, N.B., 66 p.

Gillis, G., **M. J. Dadswell**, and C. D. Metcalfe. 1976. Chlorophyll A and phytoplankton of the Saint John estuary, New Brunswick, In Baseline survey and living resource potential study of the Saint John River estuary. Vol. II. Plankton and Benthos. The Huntsman Marine Laboratory, St. Andrews, N.B., 8 p.

**Dadswell, M. J.** 1976. Biology of the shortnose sturgeon *Acipenser brevirostrum* in the Saint John River estuary, New Brunswick, Canada. In Baseline survey and living resource potential study of the Saint John River estuary. Vol. III. Fish and Fisheries. The Huntsman Marine Laboratory, St. Andrews, N.B., 75 p.

**Dadswell, M. J.** 1976. Notes on the biology and resource potential of striped bass in the Saint John estuary. In Baseline survey and living resource potential study of the Saint John River estuary. Vol. III. Fish and Fisheries. The Huntsman Marine Laboratory, St. Andrews, N.B., 20 p.

**Dadswell, M. J.** 1976. Notes on the biology and resource potential of whitefish in the Saint John estuary. In Baseline survey and living resource potential study of the Saint John River estuary. Vol. III. Fish and Fisheries. The Huntsman Marine Laboratory, St. Andrews, N.B., 10 p.

**Dadswell, M. J.** 1980. Status report on blueback herring *Alosa aestivalis*, (Mitchill) (1815) to the national committee on the status of endangered wildlife. COSEWIC Status Rep. Fish Subcommittee, 10 p.

**Dadswell, M. J.** 1980. Status report on shortnose sturgeon *Acipenser brevirostrum* LeSueur 1818 to the national committee on the status of endangered wildlife. COSEWIC Status Fish Subcommittee, 10 p.

**Dadswell, M. J.**, J. G. Hoff, J. F. McClain, S. A. Testaverde, R. T. Whittaker, and B. H. Young. 1980. Recovery plan for the shortnose sturgeon *Acipenser brevirostrum*. United States National Marine Fisheries Service, 80 p.

Knox, D., and **M. J. Dadswell**. 1982. Investigation of invertebrates from the Westfield River study area, N.S., and their relationship with the fish. Workshop on Acid Rain, St. Andrews, N.B., March 2, 1982. Westfield River, N.S., Project Repts. 1981-82: 42-60.

**Dadswell, M. J.,** R. Chandler, G. Robert, and R. Mohn. 1984. Southwest New Brunswick and Grand Manan scallop stock assessment 1983. CAFSAC Res. Doc. 84/28, 21 p.

Melvin, G. D., **M. J. Dadswell** and R. A. Chandler. 1985. Movement of scallops *Placopecten magellanicus* (Gmelin, 1791) Mollusca:Pectinidae on Georges Bank. CAFSAC Res. Doc. 85/81, 29 p.

Parsons, G. J., **M. J. Dadswell**, and R. A. Chandler. 1987. Comparison of selectivity and efficiency of lined and unlined Digby drags and a #35 Yankee trawl for scallops (*Placopecten magellanicus*). CAFSAC Res. Doc. 87/36: 25 p.

**Dadswell, M. J.** and P. Crawford-Kellock. 1989. Growth of giant scallop juveniles (*Placopecten magellanicus*) at four sites on the Atlantic coast of Nova Scotia. Nova Scotia Department of Fisheries. E.R.D.A. Report 18: 51 p.

Amirault, D. L., P. A. Comeau, and **M. J. Dadswell**. 1989. An identification of possible causes for the downturn of salmon stocks of the inner Bay of Fundy. Acadia Centre for Estuarine Research. Publ. 10, 188 p.

**Dadswell, M. J.,** and B. C. Bradford. 1991. A biological and economic assessment of earhanging grow-out for giant scallop (*Placopecten magellanicus*) in Mahone Bay, Nova Scotia. Final Report, IRAP-M Project #0-1001-M-12, 58 p.

**Dadswell, M. J.** 1992. Assessment of information concerning the population of shortnose sturgeon (*Acipenser brevirostrum*) in the Savannah River and recommendations for further directed studies. Rept. to city of Savannah Chamber of Commerce.

**Dadswell, M. J.,** and G. J. Parsons. 1992. Evaluation of intermediate culture techniques for the giant scallop, *Placopecten magellanicus*, in Passamaquoddy Bay, New Brunswick. AFAP Project Dept. of Fisheries and Oceans. A91-NR033.

**Dadswell, M. J.** 1996. The removal of Edwards Dam, Kennebec River, Maine: its effect on restoration of anadromous fishes. Prepared for Kennebec Coalition, Augusta, Maine.

Brylinsky, M., G. R. Daborn, D. J. Wildish, **M. J. Dadswell**, P. W. Hicklin, C. D. Duncan, W. T. Stobo, M. W. Brown, and S. D. Kraus. 1997. The biological environment of the bay of Fundy. 63-101. In Bay of Fundy Issues: a scientific overview. Ed. by J. A. Percy, P. G. Wells and A. J. Evans. Environment Canada-Atlantic Region. Occasional Report 8.

**Dadswell, M. J.** 1999. Ecology of the Atlantic salmon, *Salmo salar* L., 1758, and review of NASCO protocols for introduction and transfer of salmonids. Prepared for Canadian Aquaculture Industrial Alliance, Ottawa.

**Dadswell, M. J.** 2000. The status of the Atlantic sturgeon, *Acipenser oxyrinchus* (Mitchill, 1814), in Canada. MS Report, World Wildlife Fund.

**Dadswell, M. J.** 2001. Fisheries resources: past, present and potential. The Presumpscot River, Maine. Prepared for Friends of the Presumpscot River, Windham, Maine.

**Dadswell, M. J.** 2001. Fishery impacts from relicensing five hydroelectric projects on the Presumpscot River, Maine. Prepared for the Friends of the Presumpscot River, Windham, ME.

**Dadswell, M.J.** 2004. Migration of Atlantic salmon in the Bay of Fundy. Prepared for White Point Quarry Environmental Impact Statement. Digby, NS

*Conference Proceedings and Invited Presentations*

**Dadswell, M. J.** 1976. The biology of the shortnose sturgeon, *Acipenser brevirostrum* LeSueur, in the Saint John River estuary, New Brunswick. Trans. Can. Soc. Env. Biol. 1975 Atl. Chap. Annu. Mtg.: 20-72.

**Dadswell, M. J.** 1976. Mercury, DDT and PCB content of certain fishes from the Saint John estuary, New Brunswick. Trans. Can. Soc. Env. Biol. 1975 Annu. Meg.: 133-146.

**Dadswell, M. J.** Postglacial dispersal of freshwater fishes in Quebec. Ann. Conf. Archeol. Soc. Canada. Quebec, Quebec (1980). (Invited).

**Dadswell, M. J.** Zoogeography of aquatic organisms in glaciated eastern North America. Can. Soc. Zool. Annu. Conf. Waterloo, Ontario. (1980). (Invited).

**Dadswell, M. J.** Some new aspects of the biology of *Mysis relicta*: an opportunistic estuarine mysid invading freshwater. Symposium on *γ*The Ecology of Mysidacea. Ann. Mtg. Am. Soc. Limno. Ocean. Milwaukee, Wisconsin. (1981). (Invited).

**Dadswell, M. J.** Effect of turbidity on the temporal and spatial utilization of the inner Bay of Fundy by American shad *Alosa sapidissima* (Pisces:Clupeidae) and its relationship to local fisheries. *γ*The Dynamics of Turbid Coastal Environments Symposium. Dartmouth, N.S. (1981). (Invited).

**Dadswell, M. J.** Feeding migrations of fishes in the Bay of Fundy. Symposium on feeding Migrations. Can. Soc. Zool. Annu. Conf. Wolfville, N.S. (1984). (Invited).

**Dadswell, M. J.,** and G. R. Daborn. 1985. Potential environmental effects of large-scale tidal power development in the upper Bay of Fundy, Canada. In Strategies for environmentally sound development in the mining and energy industries. Chania, Crete, 1984. Proc. On Strategies for Environmentally Sound Development in the Energy and Mining Industries: 97-105.

Daborn, G. R., and **M. J. Dadswell.** 1985. Evolution of a strategy for environmental impact assessment of tidal power proposals in Canada. . In Strategies for environmentally sound development in the mining and energy industries. Chania, Crete, 1984. Proc. On Strategies for Environmentally Sound Development in the Energy and Mining Industries: 89-96.

**Dadswell, M. J.,** and R. A. Rulifson. 1986. Sea level change and ocean climate: Its effect of fisheries resources in the Bay of Fundy and Gulf of Maine. In Effects of changes in sea level and

tidal range on the Gulf of Maine-Bay of Fundy system. Ed. G. R. Daborn. Acadia Centre for Estuarine Research 1: 109-121. (Invited).

Rulifson, R. A., **M. J. Dadswell**, and G. C. Baker. 1987. Potential impact of tidal power development on estuarine environments in the southeastern USA. In K. Mahadevan, R. Evans, P. Behrens, and T. Biffar (Eds.). Proc. Southeastern Workshop on Aquatic Ecological Effects of Power Generation, Mote Marine Laboratory, Sarasota, FL, USA, December 3-5, 1986. (Invited).

Rulifson, R. A., and **M. J. Dadswell**, 1987. Mortality of fish passing through tidal, low-head hydropower turbines and possible mitigation strategies. Proceedings of Oceans 87: The oceans, an International workplace 3:944-949. Marine Tech. Soc. And IEEE Ocean Engineering Society, Halifax, N.S., Sept. 28-Oct 1, 1987. (Invited).

**Dadswell, M. J.** 1987. Mortality of fishes passing through a tidal driven STRAFLO turbine. Workshop on fish mortalities induced by bulb turbines. Carlestown, WV, Dec. 8-9, 1987. (Invited).

**Dadswell, M. J.**, G. S. Parsons, and C. Warren-Perry. 1987. Hydrodynamics and swimming of the giant scallop, *Placopecten magellanicus*, and their potential role in long distance movement. Can. Soc. Zool. Anna. Conf. yJet Setü Symp., Halifax, May, 1988. (Invited).

Daborn, G. R., and **M. J. Dadswell**. 1988. Natural and anthropogenic changes in the Bay of Fundy-Gulf of Maine-Georges Bank system. In Natural and Man-Made Hazards, Rimouski, Quebec. M. I. El-Sabh and T. S. Murty (Eds.) 547-560. D. Reidel Publ. (Invited).

**Dadswell, M. J.**, R. A. Chandler, and G. J. Parsons. 1988. Spat settlement and early growth of *Placopecten magellanicus* in Passamaquoddy Bay, Canada. J. Shellfish Res. (Abstract) 7: 153-154.

**Dadswell, M. J.** 1988. The special case of migratory fish. DFO Habitat Use Workshop. Wolfville, N.S., June 28, 1988. (Invited).

**Dadswell, M. J.** 1988. Diadromous fishes in estuaries. An overview. British Fisheries Society Ann. Meeting. Southampton, U. K. July 12, 1988. (Invited).

**Dadswell, M. J.** Tidal power. The dream and the reality. ECU Chapter Sigma XI, East Carolina University, Greenville, NC. November 1988. (Invited).

**Dadswell, M. J.** Swimming and hydrodynamics of the giant scallop, *Placopecten magellanicus*. Seminar, Zoology Dept., University of Guelph, March 1989. (Invited).

**Dadswell, M. J.** Aquaculture of the giant scallop, *Placopecten magellanicus*. Aquaculture Association of Nova Scotia Annual Meeting, Halifax, N.S. April 1989.

**Dadswell, M. J.** and M. Sinclair 1989. Mariculture of the giant scallop, *Placopecten magellanicus*, in the Canadian Maritimes: its use as an experimental tool to investigate recruitment and growth. ICES 1989 EMEM/No. 63. Ecology and Management Aspects of Extensive Aquaculture. Nantes, France, June 1989.



**Dadswell, M. J.** An identification of possible causes for the downturn of salmon stocks of the inner Bay of Fundy. Cobequid Salmon Association, Truro, Nov. 1989 (Invited)

Parsons, G. J., **M. J. Dadswell**, and J. C. Ross. 1990. Influence of environmental factors on the maximization of spat settlement in the giant scallop, *Placopecten magellanicus*. *Journal of Shellfish Research* 8: 458 (Abstract).

Parsons, G. J., S. M. C. Robinson, R. A. Chandler, L. A. Davidson, M. Lanteigne, and **M. J. Dadswell**. 1991. Short-and long-term temporal patterns in the reproductive cycle of the sea scallop, *Placopecten magellanicus*, from Passamaquoddy Bay, N.B., Canada. *J. Shellfish Res.* 10: 272. (Abstract).

**Dadswell, M. J.** 1992. Suspended culture grow-out strategies exploiting the life history characteristics of two populations of the sea scallop, *Placopecten magellanicus*. (Invited). New Species Symposium. Aquaculture Association of Canada Annual Meeting, Vancouver, B.C. May 1992. (Invited).

**Dadswell, M. J.** 1994. Where have all the salmon gone? Cobequid Salmon Association Annual Meeting. Truro, N.S., March 1994. (Invited) and Atlantic Salmon Federation, St. Andrews, N.B., April 1994. (Invited).

Myers, S. J., and **M. J. Dadswell**. 1996. Final report to the committee for sustainable economic development on the fate of beachwrack on the southshore of Nova Scotia.

**Dadswell, M. J.** 1996. The removal of Edwards Dan, Kennebec River, Maine: Its effect on the restoration of anadromous fishes. Prepared for Kennebec Coalition, Augusta, Maine. Report Proceedings For Conservation Coalition of Maine and American Rivers.

**Dadswell, M. J.** 1998. Husbandry of Sea Scallops in suspended culture. Scallop Symposium. World Aquaculture Association. Las Vegas, USA. Feb. 1998 (Invited).

**Dadswell, M. J.** 1998. Tunicate biology, Aquaculture Association of Nova Scotia. Annual Meeting. Halifax, N.S. January 1998. (Invited).

**Dadswell, M. J.** 1999. A review of the ecology of Atlantic Salmon and possible new NASCO introductions and transfer guidelines. Canadian Aquaculture Industrial Alliance. Halifax, August, 1999.

Daborn, G. and **M. Dadswell**. 2000. Tidal power development-environmental issues and constraints. Pp. 47. (In) Opportunities and challenges for protecting, restoring and enhancing coastal habitats in the Bay of Fundy. (Eds.) T. Chopin and P.G. Wells. Proc. 4<sup>th</sup> Bay of Fundy Science Workshop. Environment Canada-Atlantic Region. Occasional Report 17. (Invited)

**Dadswell, M. J.** 2000. A review of scallop aquaculture in Atlantic Canada. Aquaculture Association of Canada Annual Meeting. Moncton, NB. May 2000. (Invited).

**Dadswell, M.J.** and M.J. Stokesbury. 2002. Where are the Bay of Fundy salmon going? 5<sup>th</sup> Bay of Fundy Science Workshop. Wolfville, NS. May 2002.

**Dadswell, M.J.** 2002. Ocean migration of Atlantic salmon. Seminar, Dept. of Biology, Memorial University, St. John's, Feb. 2002.

**Dadswell, M.J.** and D. Bates. 2003. Farming the sea scallop, *Placopecten magellanicus*, in Atlantic Canada: the necessity for time and patience on the farm, not just research. Pp 7-8. 14<sup>th</sup> International Pectinid Workshop. St. Petersburg, FL (Abstract)

**Dadswell, M.J.** and A. Spares. 2003. Ocean migration of Atlantic salmon and its relationship to population declines. Marine Institute, Furnace Loch, Ireland. June 2003. (Invited).

**Dadswell, M.J.** 2004. Great Maritime Scallop Trading Company. In. Scallop Workshop Proceedings. Aquaculture Association of Nova Scotia. Halifax, NS. Jan 2004. (Invited).

**Dadswell, M.J.** 2004. Ocean migration of Atlantic Salmon. Seminar, Dept. of Biology, UNB, Fredericton, Oct. 2004.

**Dadswell, M.J.**, A. Spares, J. Reader, T. Avery and M.J. Stocksby. 2005. Ocean Migration of Atlantic salmon: Knowns, Unknowns and Its Relationship to the Decline of Salmon Populations. New Brunswick Wildlife Federation, Annual Meeting. Moncton, NB. April 2005 (Invited).

**Dadswell, M.J.**, A. Spares, J. Reader, T. Avery and M.J. Stocksby. 2005. The ocean migration of Atlantic salmon and its relation to the decline of returns of wild and hatchery adults: the conundrum of a desired species. Seminar. Dept. of Biology, Acadia University, Wolfville, NS. April 2005.

# Jacinthe David, M.Sc.

Environmental Scientist

## Professional Summary

Jacinthe David has over three years impact and risk assessment experience with Health Canada. Her expertise encompasses the identification, assessment, management and communication of environmental and human health impacts and risks associated with development projects and contaminated sites. She has also been involved in projects and program management and has dealt with numerous stakeholders ranging from governmental organizations representatives to proponents, consultants and the public.

## Education

B.Sc. Environmental Geography, University of Montreal, Montreal, Quebec, Canada, 2001

M.Sc. Geography, University of Montreal, Montreal, Quebec, Canada, 2002

## Memberships

Society for Risk Analysis

International Association for Impact Assessment

## Languages

Fluent in both French and English

## Location

St. John's, Newfoundland, Canada.

## Summary of Core Skills

### Impact assessment

Through studies and work practice, Ms. David has specialized in the field of impact assessment and its underlying components, such as risk assessment, community health assessment and socio-economic assessment. She has provided advice on environmental and human health issues, coordinated the peer-review of environmental assessment conducted under the *Canadian Environmental Assessment Act* and undertaken impact assessments.

She has also initiated the development of a guidance document on the assessment of health impacts associated with remedial technologies.

#### **Risk assessment**

Ms. David is using risk assessment to quantify impacts in environmental assessment. For the past three years, she has provided advice to federal departments on health risks and impacts associated with contaminated sites and development projects. She is knowledgeable of provincial, national and international contaminated risk assessment approaches. These include the Health Canada preliminary quantitative risk assessment guidance, probabilistic risk assessment, Atlantic Risk-based Corrective Approach (ARBCA), Environment Canada's ecological risk assessment approaches, European CARACAS, Canadian Council of the Ministers of the Environment National Classification Systems, Canada Wide Standards and soil quality guidelines, and the Federal Contaminated Sites Action Plan (FCSAP) risk ranking requirements. Ms. David has also delivered introductory training on risk assessment. She also recently took a graduate course on environmental chemistry and toxicology.

#### **Risk and impact management for contaminated sites and development projects**

Ms. David has been involved in risk and impact management activities ranging from the identification of potential risks to their assessment and mitigation. Most of her recent work has been focused on contaminated sites, including mining sites, related issues and development projects. She has a good understanding of federal, provincial and territorial contaminated sites risk assessment and management approaches. She represented Health Canada on interdepartmental and federal/provincial/territorial working groups related to contaminated sites management. In addition, because of the sensitive nature of risk and impact management projects, she also has training on interest-based negotiation in environmental assessment.

#### **Socio-economic assessment**

Ms. David has conducted socio-economic assessments as part of her graduate research and through work with Parks Canada on cultural diversity in isolated or remote areas. At Health Canada, she participated and developed abilities in socio-economic assessment (and other determinants of health) of development projects.

#### **Public and Stakeholders Outreach**

Ms. David has experience dealing with communities. She spent two months on the North Coast of Quebec interviewing individuals as part of her graduated studies. She also has skills in risk communication and media relations and has experience in making presentations to various stakeholders. She acquired training on interest-based negotiation in environmental assessment and has answered to public inquiries, access to information requests and wrote project specific media lines. She has initiated and supervised the development of a Website and annual plans intended for the public and stakeholders. In addition, she promoted public outreach/involvement and risk communication as an essential component of risk management for federal contaminated sites.

*Canadian Environmental Assessment Act (CEA Act)*

Ms. David is competent in the elaboration and peer-review of environmental assessments under the CEA Act. She also has a good knowledge of provincial environmental assessment processes and their requirements for proponents and has been involved in joint (federal/provincial) assessments.

**Strategic Environmental Assessment**

Ms. David is knowledgeable of considerations that need to be addressed in the strategic environmental assessment of plans, policies and programs.

**Other environmental initiatives**

Ms. David has also been involved in other environmental initiatives in Canada and abroad. She was involved in the development of a methodology to support the selection of sustainable development indicators for water management in Tianjin, China. She was also involved in protected areas issues analysis through her graduated studies.

**Program management**

Ms. David has been active in government affairs, participating in the development and management of a contaminated sites program at Health Canada. Furthermore, she managed numerous related projects ranging from the development of terms of references for scientific contracts to the supervision of contractors and development of funding requests.

**Employment History**

2005 - Present: *Environmental Scientist*, AMEC Earth & Environmental, Inc., St. John's, Newfoundland, Canada.

2004 - 2005: *A/CEAA and Contaminated Sites Remediation Senior Advisor*, Health Canada, Ottawa, Ontario, Canada.

2002-2004: *Environmental Health Assessment Officer*, Health Canada, Ottawa, Ontario, Canada.

2000-2002: *Research Scientist and Lab Instructor*, University of Montreal, Montreal, Canada

## Detailed Skills by Representative Project

### IMPACT and RISK ASSESSMENT

*A few impact assessments (screenings, comprehensive studies, panels review) for which Ms. David has provided advice on environmental and human health issues, including risk assessments, through peer-reviews and meetings with responsible authorities.*

EASTMAIN-RUPERT hydroelectric project / GENTILLY 2, nuclear project / NIOCAN Inc., Mining proposal / LAC DORE, Vanadium mine / KENOGAMI, Quebec / MANOUANE River derivation/ BAIE 103 contaminated sediments / Projet de centrale a cycle combiné SUROIT/ Promenade SAMUEL DE CHAMPLAIN/ WEMOTACI and MANAWAN nursing station on First Nations Lands / BELLEDUNE, New-Brunswick, SYDNEY TAR PONDS remediation project.

*Federal Contaminated Sites Action Plan (FCSAP):* Participation in the review of over 150 contaminated sites risk assessments (from various federal departments) and health risk ranking of these high priority sites for funding purposes.

*Human health-based soil quality guideline for zinc:* Development of a draft zinc human health-based soil quality guidelines for Health Canada, as a screening-level risk assessment tool. Duties performed included a scientific literature review and compilation of information.

*Geological Survey of Canada Compilation of Soil and Till Geochemical Metadata for Canada:* Management of a scientific contract to quantify natural background of metals in Canada for inclusion in supporting documents for human health-based soil quality guidelines, as a screening-level risk assessment tool.

## **RISK AND IMPACT MANAGEMENT**

*Participation and presentations to working groups such as:* Canadian Council of the Ministers of the Environment Soil Quality Guideline Task Group; Warfare Agent Disposal Working Group; Northern and Orphaned Abandoned Mines Initiative; Federal Contaminated Sites Management Working Group and its regional subgroups.

*An epidemiological perspective on federal contaminated sites:* Initiation and supervision of a contract on the proximity of populations to contaminated sites and to consider associated epidemiological issues. Collaboration with Statistics Canada to produce associated maps.

*Environmental assessments:* As part of environmental assessments, Ms. David has provided advice on risk and impact management plans. Proposed mitigation measures to attenuate risks and impacts and protect both the environment and human health.

## **SOCIO-ECONOMIC IMPACT ASSESSMENT**

*Mingan Archipelago National Park Reserve of Canada:* Socio-economic assessment of four local communities, including two Indian reserves, through study of local dynamic (actors' interactions) and perceptions. Also spent three months with Parks Canada in Ottawa to better understand the organization and how they were dealing with the local communities in general.

*Cultural diversity in isolated or remote areas:* Collection and analysis of socio-economic data for Parks Canada, as well as the presentation of findings to decision-makers.

*Participation in environmental assessment's socio-economic assessments:* Advice and peer-review of socio-economic components, including other determinants of health, for development projects and contaminated sites' environmental assessments.

*Psychosocial impact of contaminated sites:* Developed terms of reference and supervise contractor to create a guidance document for risk managers to identify and resolve situations where the presence of a contaminated site could affect communities.

*Industry localization:* Using Geographical Information Systems and industries postal codes, mapped various type of industries location in the Montreal metropolitan area. This work also included an analysis of geographic factors influencing their localization.

## **PUBLIC AND STAKEHOLDER OUTREACH**

*Mingan Archipelago National Park Reserve of Canada:* Consultation, over five months, with local communities and national park authorities (local, regional and national level) to gather information for a socio-economic assessment.

*Contaminated Sites:* Promotion of the public involvement component of the Contaminated Sites Programme at Health Canada. Supervised the development of a Website and wrote annual plans to share information with public and stakeholders.

## **OTHER ENVIRONMENTAL INITIATIVES**

*Tianjin, China:* As part of an internship overseas, Ms. David has initiated the development a methodology to support the selection of sustainable development indicators for water management.

*Protected areas:* As part of her graduated studies, Ms. David has conducted in-depth research on the status of protected areas in Canada.

## **PROGRAM MANAGEMENT**

*Contaminated Sites Program at Health Canada:* Establishment of strategic priorities and activities, participation in interdepartmental meetings, advice to regional staff, development of annual plan and monitoring of progress, briefings to higher management, communication with regional managers, staff hiring and supervision, development of funding requests and budget projections

### **Presentations / Publications**

David, J (2004), *An approach to identify and mitigate potential health impacts associated with contaminated sites remediation technologies*, Society for Risk Analysis, Palm Springs, California.

Richardson, M., S. Petrovic, J. David (2004), *The harmonization of risk assessment approaches for federal contaminated sites*, International Association for Impact Assessment, Vancouver, Canada, International Association for Impact Assessment

David, C and J. David (2002), *L'harmonisation de l'évaluation du risque toxicologique sur la santé humaine au Canada : le cas des lieux contaminés*, International Association for Impact Assessment, The Hague, Netherlands.



## RÉSUMÉ

### **GORDON BRIAN JOHN FADER**

**June, 2005**

\*\*\*\*\*

**Born:** September 17, 1947, Halifax, Nova Scotia, Canada

**Education:** B.Sc. (1969) - Geology, St. Mary's University, Halifax, Nova Scotia (first St. Mary's University geology graduate)  
1971-73 Graduate Studies (M. Sc.) - Marine Geology, Dalhousie University, Halifax, Nova Scotia  
1973 Graduate Studies - Environmental Geology, Technical University of Nova Scotia

#### **Professional Accreditation and Memberships:**

- Professional Geologist, Province of Nova Scotia
- Fellow of Geological Association of Canada
- Member of the Geological Society of America
- Past President of the Marine Geosciences Division of the Geological Association of Canada
- Member of the Atlantic Geoscience Society
- Founding member of the Nova Scotia Quaternary Association
- Past Member of the Canadian Quaternary Association
- Member of the Halifax Harbour Video Committee of the Atlantic Geoscience Society
- Associate Editor of Atlantic Geology
- Former member of the Halifax Harbour Task Force
- Former member of the Halifax Harbour Solutions Advisory Committee
- Canadian Representative on the ICES Working group on the Effects of Extraction of Minerals on Seabed Ecosystems

**Working Groups, Committees, Delegations:**

- |                |                                                                                                                                      |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 2001-2004      | Member of the Federal Gully Marine Protected Area Advisory Committee                                                                 |
| 1992 -2005     | Canadian Representative on the International ICES WGEXT, Working Group of the Effects of Extraction of Minerals on Marine Ecosystems |
| 1999 to 2002   | Member of the NRCan departmental Oceans Working Group                                                                                |
| 1998 -2002     | Member of the NRCan, Ministers Advisory Committee on Marine Mining                                                                   |
| 1997 -1999     | Member of the Halifax Harbour Solutions Advisory Committee to the HRM                                                                |
| 1993 - 1997    | Co-ordinator for the Canada-Nova Scotia Co-operation Agreement on Mineral Development Offshore Mineral Assessment Program            |
| 1992 - 1994    | Co-chairman of the Geological Survey of Canada Environmental Assessment Committee for Halifax Harbour Cleanup.                       |
| 1992 - 1993    | Publicity Chairman for the Atlantic Geoscience Society.                                                                              |
| 1992 - Present | Member of the Canadian Advisory Committee on Names for Undersea and Maritime Features (ACNUMF).                                      |
| 1992 - 1993    | Program Committee Member for the Halifax Explosion Commemorative Conference.                                                         |
| 1990 - 1994    | Canadian Representative on the National Science Foundation program to study the glacial and recent history of the Gulf of Maine.     |
| 1989 - 1991    | Member of the Halifax Harbour Task Force on the Environmental Cleanup of Halifax Harbour.                                            |
| 1989 - 1992    | Member of an international working group on shallow gas in sediments.                                                                |
| 1988 - 1990    | Chairman of the Geological Survey of Canada Assessment Committee for the Fixed-Link Crossing to Prince Edward Island.                |
| 1988 - 1990    | Member of the Department of the Environment Working Group on Fixed Link to Prince Edward Island Environmental Assessment.            |
| 1985 - 1991    | South-eastern Canadian Margin Studies Group, Group Head, Atlantic Geoscience Centre, Geological Survey of Canada.                    |

**Working Groups, Committees, and Delegations (Cont'd):**

- 1979 - 1989 Member of the Departmental Committee on Ocean Mining for the Dept. of Energy, Mines and Resources, Member of the Subcommittee on Resource Planning for Offshore Mining Prince Edward Island.
- 1988 - 1989 Advisor to Nova Scotia Power Corporation on the Bluenose Project to transmit electrical power by cable under the Gulf of Maine.
- 1987 - 1989 Member of Geological Highway Map Committee of Nova Scotia Museum.
- 1987 - 1990 Member NATO Advanced Studies Institute on Late Quaternary Sea-Level Correlation and Applications.
- 1985 - 1987 Scientific Advisor to development of "Supertech" digital data processing system.
- 1985 - 1987 Co-chairman, Hibernia Environmental Impact Statement Assessment Committee for Geological Survey of Canada.
- 1981 - 1987 Member of the Hibernia Sediment Study Group.
- 1983 - 1986 Chairman of Sable Island, Mobil Oil Venture Project, Environmental Impact Statement Assessment Committee for Geological Survey of Canada.
- 1983 - 1985 Member of the Steering Committee on Environmental Assessment of the Seabed at Drilling Sites, Interdepartmental Government Advisory Group.
- 1981 - 1985 Scientific Advisor, Seabed II Project, a Deep Ocean Mapping System, Geological Survey of Canada.
- 1981 - 1983 Scientific Authority for the Mosaics Project, Dept. of Energy, Mines and Resources.
- 1981 - 1983 Scientific Authority for the Canadian-American Border Dispute, Georges Bank Geological and Geophysical Study for the Geological Survey of Canada.
- 1977 - 1983 Member of the International Working Study Group on Pockmarks at the Seabed.
- 1975 - 1979 Member of the Bedford Institute Curation Committee.
- 1978 Member of a delegation to Houston, U.S.A., to the American Geophysical Union Meeting, representing the Seabed I Project.

**Work History:**

Dec. 2004 -	President of Atlantic Marine Geological Consulting Ltd.
Nov. 2004 to 2004	Geological Survey of Canada, BIO, Emeritus Scientist, retired Nov. 2004
2002 to 2004	Senior Regional Marine Geologist, Geological Survey of Canada
1998 to 2002	Seconded as Senior Science Advisor to an NRCan departmental initiative on an offshore mining regime for Canada, known as OMMI.
1971 - 1998	Physical Scientist (Regional Marine Geologist), Geological Survey of Canada (Atlantic), Natural Resources Canada, Bedford Institute of Oceanography.
Oct. 1969 - 71	Scientific Officer, Marine Science Branch, Dept. of Energy, Mines and Resources, Bedford Institute of Oceanography.

**Areas of Speciality:**

Marine Geology & Geophysics, Geological & Geophysical Field Techniques

Geological Mapping, Marine Surveying and Seabed Processes

Public Speaking, Scientific Presentations

Environmental Assessment of Megaprojects, Effects of Bottom Fishing

Continental Shelf Geology (Scotian Shelf, Gulf of Maine, Bay of Fundy, Northumberland Strait and Grand Banks of Newfoundland)

High-Resolution Seismic Reflection and Sidescan Sonogram Interpretation

Glacial Geology, Quaternary Sedimentation, Offshore Minerals and Aggregates

Halifax Harbour Geology, Cleanup and Engineering

Seabed Gas Related Features

Seabed Mapping and Search and Recovery Methods

**Projects**

Seabed Drug Interdiction

Undersea Mine Warfare

Halifax Harbour Cleanup

Fixed Link to Prince Edward Island

Seafloor Minerals and Aggregates off Atlantic Canada

Project Bluenose Power Cable Routing to U.S.A.

Environmental Impact Assessment for: Hibernia and Venture Hydrocarbon Projects, Fixed Link to P.E.I., Halifax Harbour Cleanup.

Bedrock Mapping of Scotian Shelf - Grand Banks of Newfoundland

Glacial History of Gulf of Maine

Development and Testing of Huntec Seabed I and II Ocean Mapping Systems

Geological-Biological Correlation, Habitat Classification

Seafloor Acoustics and Military Applications

Manganese Nodules - Deep Ocean Seamounts

Surficial Geological Mapping - Bay of Fundy, Northumberland Strait, Gulf of Maine, Scotian Shelf, Grand Banks of Newfoundland, Laurentian Channel, Halifax Harbour

Marine Pipelines p Hibernia, Sable Island, El Paso Blue Atlantic Pipeline to Manhattan

Electrical Cable Crossing - Cabot Strait, Strait of Belle Isle, Gulf of Maine, Inner Scotian Shelf, Bay of Fundy

Channel Dredging for Super tankers - Canso Strait

Geotechnical Survey of Placentia Bay, Newfoundland

Iceberg Scours at the Seabed

Glaciation of the Continental Shelf off Eastern Canada

Swissair Flight 111 search and recovery

Effects of clam dredging and trawling on the seabed

Habitat mapping

Multibeam Bathymetric Mapping and Interpretation

\*\*\*\*\*

He has participated on over 100 marine geological and geophysical surveys of the Geological Survey of Canada and industry on research ships and submersibles, and acted as chief scientist during 70 of these cruises.

**Awards:**

An award termed the "Gordon Fader Award" is presented annually at St. Mary's University to the Graduating Student who contributed most to the geology department during their undergraduate years at the University. Gordon Fader was the first geology graduate from St. Mary's University in 1969 and the award is established in his honour.

As the 1990-91 Atlantic Provinces Council on the Sciences' (APICS) Distinguished Lecturer, he toured the Maritimes and presented a series of lectures on the geology of Halifax Harbour as well as the release of gas from the seabed.

He received a Department of Energy, Mines and Resources "Merit Award" in 1992 for his research on the sediments of Halifax Harbour and his role on the Halifax Harbour Task Force in designing a sewage treatment facility for the surrounding communities.

As part of the Halifax Harbour Task Force, he received a "Community Planning Award" for the blueprint document on the Cleanup of Halifax Harbour.

He received the Geological Association of Canada "Volunteer Award" in 1994 for his support as Chairman of the Marine Geosciences Division.

He shared the 1999 E. B. Burwell Jr. Award from the Geological Society of America for co-authoring a publication on the Urban Geology of Halifax, Geological Association of Canada Special Paper 42. The Burwell Award is presented annually to the authors of a published work of distinction that advances our knowledge concerning the principles or practice of engineering geology.

In 2004 he shared an award from Fisheries and Oceans Canada for the best scientific paper in the Department called the yTempleman Awardü for a paper on a study of the effects of clam fishing on the seabed of Banquereau, Scotian Shelf.

In 2005 he received a Bravo Zulu commendation from Marlan of the Department of National Defence, Canada, for his contributions, research and assistance to the Navy's underwater mine warfare program.

### **Publications, Presentations:**

He has published over 280 geological and geophysical scientific publications, maps and articles on the surficial and bedrock geology of the southeastern Canadian Continental Shelf. Has contributed chapters to 7 published books on marine geology, provided numerous interviews with the media on many aspects of offshore geology and has recently been profiled several times in Canadian Geographic, Saltscapes, and on the CBC broadcast "Morningside". He has discovered many shipwrecks on the continental shelf and has been featured in numerous industry film productions. He is a popular speaker in Atlantic Canada to a wide variety of university, school and other public and private institutions, particularly concerned with environmental assessment of offshore projects, the discovery of shipwrecks and seabed hazards, and geological aspects of the seabed. He has given over 800 presentations on aspects of the marine geology of the Canadian offshore to schools, public and private institutions. As a member of the ICES, International Centre for Exploration of the Seas working group, he provided advice to European activities on marine mining and habitat mapping. Advice has also been given to the USGS in designing the future of their marine geology program. He provided scientific advice to the 1997 Titanic movie on seabed conditions and starred as an extra. In 1998 and 1999 he provided advice, guidance and participated with the Transport Safety Board in the location and recovery of Swissair Flight 111 that crashed in the Atlantic off Nova Scotia. Most recently he authored a chapter in a new book on the urban archaeology of Halifax published by Nimbus Publishing in June of 2005.

# RÉSUMÉ

## ROBERT FRASER, B.A. (ECONOMICS)

---

### BIOGRAPHY

Mr. Fraser is a Vice President of Gardner Pinfold. He has been with the firm since 1981. His formal university education specialized in economics, business administration and math. Since he graduated from university, he has completed a number of graduate level courses in economics at Dalhousie University. Through his professional career, he has developed and applied his analytical skills to numerous consulting assignments.

Since joining Gardner Pinfold, he has been an analyst on over 100 of the firm's studies. His project work has taken him across Canada and to eight other countries. In this work, Mr. Fraser has been responsible for virtually all aspects of project implementation from data collection, interviewing and quantitative and qualitative analysis, and report writing, to project management.

### EDUCATION

Bachelor of Arts degree (Economics), Acadia University, Wolfville, 1978

### EMPLOYMENT HISTORY

1981-Present                      Vice President, Gardner Pinfold Consulting Economists Limited  
1331 Brenton Street, Halifax, Nova Scotia, Canada, B3J 2K5  
Telephone: (902) 421-1720, Extension 15    Fax: (902) 422-5343  
e-mail: rfraser@gardnerpinfold.ca

1979-1981                      Economist, Nova Scotia Department of Mines and Energy

### AREAS OF EXPERTISE

#### Techniques

Project/Program Evaluation  
Project Appraisal  
Benefit-Cost Analysis  
Economic Impact Analysis  
Applied Economic Analysis  
Strategic Planning  
Market Analysis  
Business Planning

#### Fields

Forestry Management  
Fisheries Development and Management  
Agriculture Development  
Sustainable Development  
Offshore Petroleum Development  
Rural Development  
Economic Development

### CONSULTANCY ASSIGNMENTS

The assignments below represent a partial list intended to provide an indication of the type of work and range of experience. Clients include industry, federal and provincial departments, and international agencies. A complete list of projects and clients is available upon request.

### ECONOMIC IMPACT ANALYSIS

An Economic Impact Assessment of Snowmobiling and Snowmobile Tourism in Nova Scotia

Socio-Economic Impact Study of the Factory Freezer Trawler: The Cape North

Economic and Social Benefits of the Offshore Scallop Fishery

Economic Impact Assessment of the Hibernia Oil Development Project

---



## Economic Impact Analysis (Continued)

Economic Impact Assessment Related to the Proposed Fortress of Louisbourg Visitor Centre	Major Construction Projects in Atlantic Canada: A Frame of Reference for Understanding Offshore Oil and Gas Development
An Economic Impact Study of the Salmon Fishway at Grand Falls	A Study on the Economic Impact of the Mineral Industry in Nova Scotia
Cape Chignecto Park Socio-Economic Impact Study	

## ENVIRONMENTAL IMPACT

The Environmental Impacts of Economic Activity in the Atlantic Economy	Hibernia Oil Development Labour Requirements and Capability Analysis
The Economic Implications of Loss of Well Control on the Georges Bank	Venture Natural Gas Development Labour Requirements and Capability Analysis

## ECONOMIC ANALYSIS

Determine the Feasibility of A New Discovery Centre Facility and Develop a Business Plan	Feasibility of Generating Electricity Using Wood Fuel
Examine Economic Potential of HRM and Halifax Harbour	Queen's County Pilot Project for Rural Nova Scotia
A Study of Sustainable Tourism Communities	Business Case for the Canso Canal
Development of a Strategic Plan for Enterprise Cape Breton Corporation – Sector Profiles for the Economy in Cape Breton	A Study of the Effects of an Increase in the Minimum Legal Carapace Size of Lobsters in the Southern Gulf of St. Lawrence
A Feasibility Study into the Marketing of Processed and Specialty Egg Products from Eggs Produced in Atlantic Canada	Analysis of Groundfish Management and the Regulatory Regime Governing Inshore and Offshore Fisheries in Atlantic Canada
A Market Assessment for Whey-Based Dairy Concentrates	Analysis of Resource Allocation and the Economic Performance of the Inshore and Offshore Fisheries in Atlantic Canada
A Salt Market Study for the Province of NB	Economic Impact Analysis of Wood Chip Harvesting and Use
Assessment of the Economic Value of Water and its Contribution to the Economy of Newfoundland	An Analysis of Fish Price Formation in Port Markets in Atlantic Canada
Non-Timber Benefits for Private Woodlots in Prince Edward Island	Nova Scotia Sheep Enterprises: A Study of 1984 Costs, Returns and Production Information
Grains Elevators in Atlantic Canada - Grains 2000 Elevator Study	Financial and Economic Analysis in the Area of the Proposed Labrador Commercial Caribou Hunt
An Economic Statement on Developing the Atlantic Salmon Resource in NL and Labrador	Economic Valuation of Recreational and Commercial Salmon Fisheries of Nova Scotia
An Economic Statement and a Visit Profile of Atlantic Region National Parks and National Historic Sites	The Economics of the Georges Bank Fishery
Assessment of the Economic Value of Water in the Atlantic Provinces	Development of a Cost of Production Model for Pork Production in Nova Scotia

## Economic Analysis (Continued)

Costs and Returns of the Lobster Fishery in the Scotia-Fundy Region, 1978-87

Analysis of Wood and Wood Waste as Potential Energy Sources

An Assessment of the Economic Dependence of Southwest Nova Scotia on the Georges Bank Fishery

Overview and Sectoral Analysis of the Newfoundland Economy

Analysis of Resource Allocation and the Economic Performance of the Inshore and Offshore Fisheries in Atlantic Canada

## POLICY & PLANNING

Scotia Fundy Professionalization Conference

A Business Plan for R & J Trading

Socio-Economic Strategy for the Lake Abitibi Model Forest

An Assessment of the Need for an Atlantic Agricultural Leadership Program

Nova Scotia Business and Technology Incubation Strategy

A Background Study for the Development of a Transportation Strategy for Nova Scotia

Fisheries Professionalization Conference

An Analysis of Policy Issues in the Trapnet Fishery in the Scotia Fundy Sector

Terra Nova Project Labour Supply and Requirements Study

Action Plan on the Implementation of a Training Program for the Canadian Horticultural Council

A Study of Seasonal/Harvest Labour Issues in the Nova Scotia Agriculture Sector

Technology Development and Transfer in the Forestry Development Program - An Expert's Panel

## REVIEW AND EVALUATION

### Canadian

Sustainable Tourism Communities Screening Program

Sustainable Tourism Community Workshop in Lucasville and Upper Hammonds Plains (L-UHP)

Result-based Management and Accountability Framework Logic Model for the ACAP

A Study on Milk Quota Prices and Transfer Mechanisms

A Review of the Telecom Applications Research Alliance (TARA)

Review of Labour Market Information

Review of Human Resource Requirements for the Harvesting, Processing and Aquaculture Sectors of the Fishing Industry in N.S.

Final Evaluation of the Canada/New Brunswick Cooperation Agreement on Forestry Development

Evaluate Economic Impact of Minerals Sector in Nova Scotia

Evaluation of the Northern Cod Adjustment and Recovery Program (NCARP)

Evaluation of Aboriginal Fisheries Strategy (AFS) Pilot Sale Arrangements

Evaluation of the Black Business Initiative

Final Evaluation of the Cooperation Agreement on Fisheries and Aquaculture Development

Evaluation of the Lake Abitibi Model Forest

Evaluation of the Fundy Model Forest

Evaluation of the Canadian Model Forest Program

Evaluation of the Canada/Nova Scotia Agri-Food Development Agreement 1988-93

Evaluation of the Problem Gambling Help Line

## Review and Evaluation (Continued)

An Evaluation of the Discovery Centre, Halifax

Evaluation and Accountability Framework for the Science Impacts and Adaptation Block and the Public Education and Outreach Block of the CCAF

Mineral Development Agreements Evaluation for Nova Scotia, New Brunswick and Newfoundland

Evaluation of Third-Party Delivery of Canada/Prince Edward Island Cooperation Agreement

An Evaluation of the Canada/Nova Scotia Cooperation Agreement for Forestry Development

Final Evaluation of the National Forest Strategy

Evaluation of the Canada/PEI Forest Resource Development Agreement, 1983-1987

An Evaluation of Forestry Canada's Regional Development Program

## International

Evaluation of the Fisheries Sector Program of the Canadian International Development Agency

An Evaluation of the Eastern Caribbean Fisheries Program for the International Centre for Ocean Development

## ENVIRONMENTAL IMPACT

The Environmental Impacts of Economic Activity in the Atlantic Economy

The Economic Implications of Loss of Well Control on the Georges Bank

## POLICY & PLANNING

Facilitation Services - Training and Certification Workshops in Relation to Transport Canada Requirements

A Business Plan for R & J Trading

Socio-Economic Strategy for the Lake Abitibi Model Forest

An Assessment of the Need for an Atlantic Agricultural Leadership Program

Nova Scotia Business and Technology Incubation Strategy

A Background Study for the Development of a Transportation Strategy for Nova Scotia

Technology Development and Transfer in the Forestry Development Program - An Expert's Panel

Development of a Leadership Program for the Fishing Industry

Hibernia Oil Development Labour Requirements and Capability Analysis

Venture Natural Gas Development Labour Requirements and Capability Analysis

An Analysis of Policy Issues in the Trapnet Fishery in the Scotia Fundy Sector

Terra Nova Project Labour Supply and Requirements Study

Action Plan on the Implementation of a Training Program for the Canadian Horticultural Council

A Study of Seasonal/Harvest Labour Issues in the Nova Scotia Agriculture Sector

## BENEFIT-COST ANALYSIS

Assessment of Cost-Benefit of Protecting Drinking Water Sources in Newfoundland

Analysis of Proposed Shelburne Harbour Development

Benefit-Cost Analysis of Soil and Water Conservation Projects in Prince Edward Island

Benefit-Cost Analysis of Projects Funded Under the Canada/Nova Scotia Agriculture Resource Development Agreement, 1982-1987

Benefit-Cost Analysis and Impact Assessment of Projects Funded Under the Canada/Newfoundland Agreement on Agriculture, 1977-82

# PIERRE L. GAREAU

28 Crichton Park Road  
Dartmouth, Nova Scotia  
B3A 2N8 Canada

Tel: (902) 422-5005  
pgareau@hotmail.com

---

## PROFILE

Several years work experience in the field of geomatics (GIS & RS) and information management (IM) with a focus on the marine environment, specifically ocean mapping for scientific and hydrographic purposes. My education has provided me a strong technical and theoretical background in geomatics and my work experience has helped develop my skills. Because much of my work experience has been related to the marine environment, I believe I have a good understanding of the issues related to working with marine data. During my employment with Helical, my experience and knowledge of geomatics and IM was applied to the development and marketing of software applications focused on the management of very large multidimensional data sets (Multibeam and LIDAR). As Director of the Geospatial Division, I advanced my management, communication, and technical skills through the successful completion of projects.

Prior to Helical, I spent four years as a GIS and Image Processing Specialist with the Geological Survey of Canada. In this position, I was key in providing geoinformatics support to the division through the application of various GIS and digital data processing softwares and techniques. I was required to assess the needs, develop, implement, and maintain non-routine procedures to meet the specific requirements of a scientific projects. My involvement in these projects helped to improved the effectiveness of the science which the researchers where developing.

## EMPLOYMENT HISTORY

XY GeoInformatics Services

Aug. 2004 - Present

### **President, Consulting - GIS, Image Processing, and IM Specialist**

- Data compilation and spatial comparison of ocean mapping data and thematic information in support of the Whites Point Quarry project. Primary data sets consisted of GeoTiff imagery and PDF map files which required conversion to image format for registration within a GIS environment. Client Bilcon of Nova Scotia Incorporated.
- Data compilation of desperate data sets in multiple formats (AutoCad, various ESRI formats, raster ȳ grids & GeoTiffs, tabular) in support the GSCA-DRDR Scotian Shelf Geoclutter project. Data delivered to clients on CD and visualized via an ArcExplorer (freeware) project. Clients Geological Survey of Canada Atlantic (GSCA) and Defence Research Department Canada (DRDC)
- Data processing and management of a variety of data sets (including: LIDAR, multibeam bathymetry, imagery, vector, and gridded data) for the purposes of publication release. Contract deliverables include completion of metadata for all datasets, adhering to international metadata standards (FGDC compliant). Client GSCA.
- GIS and IM support helping to facilitate analysis of impacts and hazards resulting from sea-level-rise, storm-surge flooding, coastal erosion, nearshore sediment movement, and coastal habitat change. Client GSCA.

Geological Survey of Canada

Feb. - Aug. 2004

### **Physical Scientist ȳ GIS, Image Processing, and IM Specialist**

- Acting as information management (IM) specialist to a number of scientific staff, helping them align their research projects to department wide IM plan.

## **PIERRE L. GAREAU**

28 Crichton Park Road  
Dartmouth, Nova Scotia  
B3A 2N8 Canada

Tel: (902) 422-5005  
pgareau@hotmail.com

---

- Working as a member of IM policy and development group to create and implement structured policies and protocols to address department wide IM issues, such as development of a metadata profile for use with all digital data generated by organization.
- Providing scientific staff with GIS and image processing technical support in the form of advice and guidance to contractors as well as hands on support.

Helical Systems Incorporated

2001-2004

### **Applications Specialist (2001-2003)**

- Provided fast and efficient technical support externally to clients to resolve issues encountering with the software.
- Conceptualized, created, and facilitated training programs to help increase client knowledge of software as well as generate new revenues for company.
- Developed and administered client license database to facilitate more efficient administration of client licensing activities, such as generation of revenues from annual support renewals.

### **Director of Geospatial Division (2003-2004)**

- Provided internal support to development and sales teams, regarding the technical and theoretical aspects of geospatial data and processes, to advance development of new products and increase sales of old products.
- Responsible for project management of the development of a DEM Manager using high resolution LIDAR data. Oversaw internal development design and progress while communicating and coordinating with other project partners to successfully meet project deliverables.
- Designed and created software marketing tools to promote company's product resulting in successful sales.

Geological Survey of Canada

1997-2001

### **GIS & Image Processing Specialist**

- Developed and maintained digital geospatial data sets in support of scientific research.
- Developed technical procedures using various GIS and image processing methods in support of on-going scientific research.
- Provided scientific staff with GIS and image processing technical support to help further research efforts, facilitated through the use of off-the-shelf tools as well as using AML to customize existing software (ArcInfo).

Parks Canada

1997

### **GIS Specialist**

- Developed digital surficial geology geodatabase for Kejimikujik Park.
- Performed quality control analysis on digitized surficial geology maps.
- Digitized surficial geology maps.

## **PIERRE L. GAREAU**

28 Crichton Park Road  
Dartmouth, Nova Scotia  
B3A 2N8 Canada

Tel: (902) 422-5005  
pgareau@hotmail.com

---

### **SOFTWARE**

**GIS & Image Processing:** ArcInfo, ArcView, ArcGIS, MapInfo, GRASS, PCI, Helical Systems

**Office Tools:** MS Word, MS Power Point, MS Outlook, MS Excel, MS Access, Corel Draw,  
Word Perfect

**Operating Systems:** NT, UNIX, DOS

**Programming Languages:** Arc Macro Language, Avenue, Visual Basic

### **EDUCATION**

**Coastal Multibeam Sonar Training Course** 2002

University of New Hampshire & University of New Brunswick

**Advanced Diploma in Remote Sensing/GIS** 1997

Center for Geographic Sciences, Lawrencetown, Nova Scotia

**Bachelor of Design in Environmental Planning** 1994

Nova Scotia College of Art & Design, Halifax, Nova Scotia

**Enrolled in BA program** 1989

Completed 1st and 2nd year courses towards a major in history.

Dalhousie University, Halifax, Nova Scotia

### **OTHER**

**Member of Geomatics Association of Nova Scotia (GANS)** 2005

**Treasurer Canadian Coastal Conference 2005** 2005

**Treasurer and Conference Coordinator** 2001

The 4th International Symposium on Computer Mapping and GIS Coastal  
Zone Management, Saint Mary's University, Halifax, Nova Scotia

**Member of local senior men's rugby football club** 1995-2004

Positions held: Vice President (1999), Treasurer (2003), U-19 Coach (1999)  
Club Manager (1998-2000), tournament organizer (1999-2002).

Valid Nova Scotia Driver's License ÿ Expiry Date 25/12/2006

## DAVID E. HANNAY – Senior Acoustics Specialist

### EDUCATION

M.Sc. / Physics – Underwater Acoustics	University of Victoria	1995
B.Sc. / Physics	University of Victoria	1988

### PROFESSIONAL POSITION

Senior Research Scientist	JASCO Research Ltd	1989 – present
---------------------------	--------------------	----------------

#### Areas of Specialty:

- Noise issues in environmental impact assessments.
- Modeling and measurement of sound and vibration from impulsive events including blasting, gunfire, and geophysical sources.
- Field and project manager for acoustic monitoring and modeling programs.
- Computation of energy density and peak pressure levels in the vicinity of a variety of underwater explosive charge types for estimating impacts on marine mammals and fish. Developed and implemented specialized Parabolic Equation finite-difference and ray tracing computer codes for this purpose. See JASA paper January 1999.
- Measurement of pressure wave source levels from land-based and shallow underwater explosions for validating the Canadian Impulse Noise Model.
- Development of atmospheric and underwater sound propagation models for blast and impulsive pressure wave and noise predictions.
- Development of models for predicting impacts of industrial noise on surrounding neighbourhoods.
- Development of models for predicting underwater noise production and extent of ensonification resulting from shipping and offshore construction activities.

### PUBLICATIONS

A. MacGillivray and D.E. Hannay, Assessment of Industrial sounds and vibrations produced by remediation activities and received in artificially constructed polar bear dens, Flaxman Island, Alaska. Contractor report for Exxon Mobil and the US Fish and Wildlife service.

A. MacGillivray, D.E. Hannay and S. Carr, Acoustic monitoring 2001, p.3-1 to 3-51 in Marine mammal and acoustical monitoring of Anderson Exploration Ltd.'s open water seismic program in the southeastern Beaufort Sea. Final Report by LGL Ltd., King City, ON., and JASCO Research Ltd., Victoria, B.C. for Devon Canada Corporation, Calgary AB. 199p., G.W. Miller and R.A. Davis (eds.), 2002.

D.E. Hannay, R. Racca and S. Carr, Impulse Noise Measurements for Impulse Noise Propagation Model Validation. Contractor report prepared for Environment Management Group, National Defence Headquarters, Canada. January 2000.

D.E. Hannay, S. Carr and R. Racca, San Clemente Island modeling of blast parameters to Estimate noise effects on fish, sea turtles and marine mammals, for U.S. Navy, April 2000.

D.E. Hannay and R. Racca, Modelling of Blast Parameters, San Clemente Mine Clearance environmental assessment to determine effects on Marine Mammals, for U.S. Navy, September 1999.

D. E. Hannay, N. R. Chapman, "Source Levels for underwater sound charges," Journal of the Acoustical Society of America, Vol. 105, 260-263, January, 1999

R. Walia, D. E. Hannay, "Source and receiver geometry corrections for deep towed multichannel seismic data,"

Geophysical Research Letters, Vol. 26, No. 13, 1993-1996, July 1, 1999

D.E. Hannay, S. Carr, and Roberto Racca, "Acoustic Modelling for blast noise from Ordnance Disposal at Rocky Point, and from Underwater Demolition Exercises in Whirl Bay," Report for LGL Ltd., Sidney, B.C., March, 1998.

D.E. Hannay, S. Carr, and Roberto Racca, "Acoustic Propagation Modelling for Noise Sources from Military Training Exercises," Report for LGL Ltd., Sidney, B.C., January, 1998.

D. E. Hannay, "Development of Genetic Algorithm Inversion Software, and Application to Acoustic Transmission Loss Data from the Western Bank and Emerald Basin," D.R.E.A. Contractor report, July, 1997.

S. Carr, D.E. Hannay, "Genetic Algorithm Inversions of 1997 MFP Workshop Data," Proceedings of 1997 MFP Workshop, 27 June, 1997

D. E. Hannay, "Broadband Matched Field Processing for Geoacoustic Parameter Estimation," D.R.E.A. Contractor report DREA/CR/96/402SPK, March 1996

D. E. Hannay, "Estimation of Geoacoustic parameters of the Ocean Bottom by Inversion of Reflection Loss Data," Masters Thesis, Department of Physics and Astronomy, University of Victoria, 1995

N. R. Chapman and D.E. Hannay, "Seismic velocities of upper oceanic crust," Geophysical Research Letters (American Geophysical Union), Vol. 21, No. 21, p.2315 - 2318, Oct. 1994.

N. G. Henson, D. E. Hannay, P. Scrimger, and S. E. Dosso, "Efficient Acoustic Field Computation for Estimating Geoacoustic Bottom Parameters using Matched Field Inversion," in Full Field Inversion Methods in Ocean and Seismic Acoustics, Ed. P. Gerstoft and O. Diachok, NATO conference series, 1994

P. Gerstoft, D. E. Hannay, and D. Gingras, "Matched Field Inversion of Multifrequency Data," Journal of the Acoustical Society of America., Vol. 96, 3234(A), 1994

D. E. Hannay, "Acoustic Bottom Reflection Loss Processing of the Pacific Echo IV Experiment Data", Defence Research Establishment Pacific contractor report number 94-52, May 1994.

D. E. Hannay, and N.R. Chapman, "Inversion of geoacoustic profiles in thin-sediment environments from ocean bottom reflection loss data, in IEEE Oceans 93, Vol. III, p.381-386, 1993.

D. E. Hannay, "Correction of Bottom Loss Measurements from Pacific Echo Data using Coherent Summation of Multipath Energy," Defence Research Establishment Pacific contractor report number 93-51, August 1993.

D. E. Hannay, "Bottom Loss Processing of the Pacific Echo III Experiment Data", Defence Research Establishment Pacific contractor report number 93-32, May 1993.

D. E. Hannay, "Depth Scaling of Source Levels from 0.82 kg SUS Charges", Canadian Acoustical Association Symposium, October 1992

D. E. Hannay, "Estimation of the Geoacoustic Properties of the Upper Oceanic Crust from Bottom Reflection Loss Measurements," Journal of the Acoustical Society of America., Vol. 92, 2303(A), October 1992.

D. E. Hannay, "Bottom Loss Processing of the Pacific Echo II Experiment Data", Defence Research Establishment Pacific contractor report number 92-31, September 1992.

D. E. Hannay, "Propagation Losses from Shallow Sources," Defence Research Establishment Pacific contractor report number 91-17, March 1991

D. E. Hannay, "Manual for program PLOT, and acoustic bottom loss database", D.R.E.P. Contractor report number 90-10, June 1990.

D. E. Hannay, "Methodology for Processing Acoustic Time Series Data to Determine Propagation and Bottom Losses", D.R.E.P. contractor report. October 1989.



## **KRISTY ELLA HERRON**

5862 Highway #217, Mink Cove, NS, B0V 1E0

902-834-2204/902-245-8879 (cell)

### **EMPLOYMENT**

#### **August 2003 to Present**

##### **Elgin Consulting and Research** (self-employed Consultant)

Elgin Consulting and Research is based in Mink Cove, Digby Neck, Nova Scotia. Kristy Herron is currently the principal consultant. Ms. Herron holds a B.Sc. (Psychology) and an M.Ed. (Counselling) from Acadia University. Prior to establishing Elgin Consulting and Research, she was employed extensively in the public sector in the Departments of Health and Community Services. Further, Ms. Herron was the Ministerial Assistant to The Honourable Gordon Balser from March 1998 to August 2003. As the Minister's Assistant, she worked with the Departments of Transportation & Public Works, Economic Development, Energy, Technology and Science Secretariat and the Public Service Commission.

#### **March 1998 to November 2003**

##### **Ministerial Assistant**

The Honourable Gordon Balser, MLA

P. O. Box 1827

Digby, NS, B0V 1A0

First employed as the Constituency Assistant, Ms. Herron became a Ministerial Assistant in August 1999. Duties have included liaison with officials in all three levels of Government, public policy development, research, public relations, presentation development, public speaking and clerical functions. This position required that you develop effective communication strategies for many unique and challenging situations. From August 2003 to November 2003, Ms. Herron continued to provide constituency support on an as needed basis.

#### **July 1995 to November 1997**

##### **Care Coordinator**

Home Care Nova Scotia, Western Region

Casual Positions. Ms. Herron was originally part of the Casual Float Pool, but in April 1996 she assumed a community caseload in Kings County. Additionally, Ms. Herron has functioned as an Intake Care Coordinator. Her duties included conducting in home needs assessments, case management, and liaison with other agencies. Ms. Herron also participated in committees\working groups that dealt with Intake, and Palliative Care.

**November 1993 to May 1994**

**Caseworker** Digby District Office, Community Services.

Casual position, Child Protection. Duties associated with child welfare program. Specific assignments at the Supervisor's discretion. Ms. Herron worked with families and children at risk. She worked closely with other agencies to perform my duties. Contacts with Mental health, Schools, RCMP, Family Physicians, etc. are actively maintained by workers.

**August 1992 to September 1993**

**Social Assessor\Case Manager**  
Kings County Home Care  
Municipality of the County of Kings

Conducted needs assessments of persons within the mandate of the Nova Scotia Coordinated Home Care Program. Once assessed, Ms. Herron acted as a case manager for those persons admitted to the program. Case management included liaison with agencies and professionals that provide service to clients, case planning, and client/family contact. The funding sources reduced this position to half time on June 14, 1993. She was then employed as a half time Assessor and a half time Home Support Worker. Home Support Workers are direct service providers in the Homemaking component of the Home Care Program. Home Support Workers provide personal care, home maintenance, laundry and meal preparation for clients of the program. In addition the Home Support Worker provides intrinsic support to the client. The Nova Scotia Program is designed to meet the needs of seniors and persons considered to be long term disabled. Ms. Herron was also the chair of the Employee Support Program Committee.

**EDUCATION****1989 - 1991**

**Acadia University**, Wolfville, N. S.  
Master of Education (Counselling)

Included in this degree are credits in Group therapy, Family Therapy, Marriage Counselling, Vocational Development, Literacy Development, Statistics, Research Methods, Integration, and Therapeutic Communication.

**1988 - 1989**

**Acadia University**, Wolfville, N. S.  
10 additional ½ credits in Psychology

These credits were Tests and Measurements, Social Development, Clinical Psychology, Health Psychology, Mental Retardation, Personality, Stress and Coping, Abnormal Psychology, Social Psychology, and Drugs and Behaviour.

**Sept. - Dec. 1982**

New Brunswick Community College, Fredericton, N. B.  
Evening non-credit course in Conversational French.

**1974 - 1976**

Acadia University, Wolfville, N. S.

**1977 - 1979**

Bachelor of Science - Psychology

Included in this degree are courses in Biology, Sociology, History, Chemistry, Art, and Religious Studies.

**1968 - 1974**

Horton District High School, Greenwich, N. S.  
Academic grades 8, 9, 10, 11, and 12.

**Additional Education**

Ms. Herron has also had the opportunity to receive training in rehabilitation related topics: i.e. adjustment to blindness, Reality Therapy, learning disabilities, case management, CPR, parenting programs, and computer programs.

**OTHER EXPERIENCE**

**April 1992 to August 1993**

**Caseworker**  
**N. S. Dept. of Community Services,**  
Dartmouth District Office

Maternity leave replacement in long term **child protection**. Ms. Herron's duties included: working with families and children who are at risk, assessing needs, liaison with appropriate programs for the clients, team participation.

**May to Aug. 1991:**

**Census Representative**, Statistics Canada, Census

Ms. Herron was employed for the period of the census. She contacted persons in a specific area to complete the National June 4th survey.

**August 1984 to September 1993:**

**Private tutoring**, Kings County, N. S.

These have been both volunteer and paid associations. Ms. Herron has assisted with GED upgrading; grades 3,5,6,7,9,11,12; also undergraduate courses, i.e., statistics, psychology, English, history, and philosophy.

**July 1989 to August 1991**

**House Manager**, Westwood Manor  
Wolfville, N. S.

Ms. Herron assisted with the renovations, maintenance and general upkeep of the house. She also managed the day-to-day operations of a house that accommodated twelve university students.

**September 1989 to April 1990**

**Graduate Assistant**, School of Education, Acadia University  
Wolfville, N. S.

Ms. Herron conducted literature research on educational leadership and change. She was also part of a project to catalogue the extensive text book collection in the Vaughan Library.

**May to Sept. 1988**

**Constituency Assistant**, J. Patrick Nowlan MP,  
Wolfville Constituency Office, Wolfville, N.S.

The duties included liaison with all levels of government, research, scheduling, also various secretarial functions. This was a temporary position as Ms. Herron replaced an employee who was on sick leave.

**April 1985 to March 1998**

**Program Assistant**, Atlantic Behavioural Science Applications, Truro, N. S.

Ms. Herron conducted and assisted with personal development workshops in communications, assertiveness, and stress management. She was also associated with the small private practice of a Registered Psychologist.

**April 1985 to April 1998****Kings Regional Rehabilitation Centre**

Waterville, Kings Co., N. S.

Ms. Herron was employed on three consecutive one-year limited funding programs. In each, she was the **Project Manager**. Her titles were **Outreach Coordinator**, and **Training Coordinator**. The duties included staff supervision; direct client service (i.e., counselling, vocational placement, post-discharge follow-up; life skills instruction, behavioural programming, and crisis intervention); staff in-service training; development of mini-courses for staff/clients (i.e., assertiveness, communication, stress management, clinical techniques); liaison with other departments; and report preparation. The clientele included persons diagnosed as mentally handicapped (severe to mild), mentally ill (acute and chronic) and physically disabled..

**January 1982 to May 1982****CEC Outreach Counsellor**

Canadian National Institute for the Blind  
New Brunswick Division, Fredericton, N. B.

Ms. Herron replaced an employee who was on a temporary leave. The responsibilities included guidance/vocational counselling, vocational program planning, assessment, employer/employee liaison, and case management. She also modified and taught job readiness training, and work skills development.

**September 1980 to October 1981 Program Coordinator, Project W-3**

Canadian National Institute for the Blind  
New Brunswick Division, Fredericton, N. B.

The responsibilities included case coordination and management, employer/employee liaison, individual program planning, and public relations. Ms. Herron was part of the team who developed and presented Employment '81 Employment Needs of the Disabled, at UNB on September 20, 1981.

**July 1982 to August 1983**

**Marketing Assistant**, N. B. Tourism, Marketing Branch  
Fredericton, N. B.

The responsibilities included market analysis, research, brochure preparation, public relations, some teaching, and clerical functions.

**VOLUNTEER ASSOCIATIONS**

Community Use of schools Committee -Chair	2004 to Present
<i>Our Active Community</i> Digby Courier Column	2004 to Present
Community Volunteer Income Tax Program	1998 to Present

Prior to 1998, Ms. Herron was actively involved with a number of service organizations and advocacy groups including CNIB, CACL (&CAMR), CPA, Boy Scouts, Girl Guides, CRCDC, and Wolfville Children's Centre

**AWARDS/PRESENTATIONS/PROFESSIONAL ASSOCIATIONS**

Acadia School of Education Graduate Fellowship	1989 - 1990
Acadia Graduate Studies Summer Fellowship	1990

Presentation to the Canadian Public Health Association 78th Annual Conference:  
*"New Perspectives in Community Mental Health - Illustrations from the files of a Rehabilitation Counsellor"*  
 1987 (Herron, Richman, Denton)

**Dwayne Hogg, M.Sc., P.Eng.****Senior Environmental Engineer/Hydrogeologist****PROFILE**

Mr. Hogg has 15 years experience in managing environmental site assessments and remediation programs, and hydrogeological projects. Recent experience with Jacques Whitford includes his on-going role as senior manager of environmental issues for a portfolio of over 40 retail gasoline and bulk fuel facilities for Shell Canada, and senior environmental project co-ordinator for Jacques Whitford of federal projects with PWGSC in Nova Scotia. His hydrogeological experience includes municipal well construction and testing, groundwater contaminant site characterization, and performing 3-D numerical modelling of groundwater flow and contaminant transport for designing groundwater plume interceptor/treatment wells or preparing well field Protection Plans.

**EDUCATION**

**University of Waterloo, 1997**

M.Sc. in Hydrogeology

Applications of Environmental Isotopes for Evaluating the impact of Landfill Gas and Leachate.

**University of N.B., 1988**

B.Sc. in Geological Engineering

**PROFESSIONAL COURSES AND DESIGNATIONS**

- DNAPLs in Fractured Geological Media, Waterloo Course, 2003
- Groundwater Modelling II, Advanced Applications, WHI, 2001
- Natural Attenuation for Remediation, NGWA, 2001
- Princeton Remediation Course, Princeton, 1999

**CAREER SUMMARY**

1999-present	<b>Jacques Whitford, Dartmouth, NS</b> Senior Project Manager/Hydrogeologist
1997-1999	<b>Jacques Whitford, Markham, Ontario</b> Project Manager/Hydrogeologist
1990-1995	<b>Agra Earth and Environmental, Nanaimo, B.C.</b> Project Manager
1988-1995	<b>Piteau Associates Engineering, Vancouver, B.C.</b> Engineer

**MEMBERSHIPS/ASSOCIATIONS**

- Professional Engineer, Assoc. of Professional Engineers of Nova Scotia, 1999- Present
- Member, National Ground Water Association. 1999



**LANDMARK PROJECTS****Demolition of Old Halifax Infirmary Complex**

N.S. Department of Transportation and Highways: Halifax, NS, 2004

Managed ESA program to delineate subsurface contamination, designed contaminant soil containment cells, designed groundwater interception and treatment program, and prepared relevant specifications for implementing remedial design.

Role: Environmental Project Manager and Hydrogeologist

**North Side Lower Zeke Brook - CFB Greenwood, Nova Scotia**

Department of National Defence and Defence Construction Canada:  
Greenwood, Nova Scotia, 2004

Managed subsurface investigation including borehole drilling, test pitting and groundwater sampling to delineate COCs in subsurface and wetland near brook; also managed hydraulic pump testing of 4 municipal wells at the base.

Role: Environmental and Hydrogeology Field Manager

**Acid Rock Drainage Plume, Former Coal Preparation Plant**

Public Works and Government Services Canada and Cape Breton  
Development Corporation: Victoria Junction, Nova Scotia, 2001 to 2003

Conducted hydrogeological assessment at Coal Waste Pile and adjacent wetland to delineate groundwater plume and gradients, constructed 3-D numerical model of groundwater flow and contaminant transport, and designed and prepared specs for installing leachate interception pilot test program,

Role: Senior Hydrogeologist

**RELEVANT EXPERIENCE****ENVIRONMENTAL SITE ASSESSMENT, REMEDIATION AND MONITORING**

Managed numerous Phase II and III ESA programs to assess subsurface impacts of hydrocarbons, MTBE, metals, DNAPLs, VOCs, PAHs, etc.; soil remediation programs ranging from excavation to in-situ treatment; and groundwater treatment to monitoring programs.

**Apartment Buildings, Fuel Oil Contamination**

Confidential Client: Shirley Street, Halifax, Nova Scotia, 2004

Managed Phase II and III ESAs to investigate and delineate extent of fuel oil impacts extending beneath several residential apartment building properties.

Role: Project Manager

**Hydrocarbon Contamination, Service Stations**

Shell Canada Products: Various sites across Maritimes, 2000-2005

Managed numerous Phase II ESAs, soil remedial excavating programs, Tier II RBCA risk assessments, risk management plans, groundwater monitoring, indoor air monitoring, groundwater in-site treatment, etc.

Role: Project Manager





**Dry Cleaning Fluid Contamination**

Confidential Clients: Condominium and Commercial retail properties, Quinpool, Halifax, Nova Scotia, 2005

Managed ESA program to delineate DNAPL plumes, excavation program to remove accessible soil, and risk assessment and risk management plan for remaining DNAPL impacts.

Role: Project Manager

## WATER RESOURCES

**Industrial Water Extraction Permit**

Industrial Client: Berwick, Nova Scotia, 2003

Conducted a groundwater supply assessment in support of obtaining extraction permit through review of historical water usage, interpretation of hydraulic pump tests and assessment of water quality issues for new and existing production wells.

Role: Project Hydrogeologist

**Condominium Groundwater Supply Assessment**

Annapolis Group: Glen Arbour, Nova Scotia, 2003

Overseen construction of developments production wells, long term in-situ hydraulic pump testing and water quality assessment for water supply to new residential development.

Role: Project Hydrogeologist

**Groundwater Supply Investigation**

Shopping Centre: Tantallon, Nova Scotia, 2003

Assessed well water quality issues through down-hole camera inspection review of historical chemistry trends and in-situ hydraulic testing.

Role: Project Hydrogeologist

**Evaluation of Water Supply Options**

Retirement Facility: Glenwood, Nova Scotia, 2002

Reviewed well yield and deteriorating water quality relating to salt water intrusion and well construction.

Role: Project Hydrogeologist

**RCMP Detachment: Water Supply Investigation**

Public Works and Government Services Canada: Chester, Nova Scotia, 2002

Managed construction and hydraulic testing of production well, and reviewed water quality issues.

Role: Project Hydrogeologist



**GROUNDWATER MODELING**

Developed 3-dimensional groundwater flow and contaminant fate and transport numerical models using MODFLOW (MT3D, & MODPATH). Models were calibrated to known groundwater hydraulic data and uses ranged from developing municipal well field production plans, predicting metal and organic contaminant plumes, to designing pumping wells for containing groundwater plumes.

**Former Rio Algom Tin Mine**

BHP Billiton Inc: East Kemptonville, Nova Scotia, 2005

Model developed and used to simulate groundwater flow at tailings facility, assess source of acid rock drainage plume, and assess significance of observed and predicted plume migration on river water quality.

Role: Project Hydrogeologist

**Village of Lawrencetown Municipal Well Field**

Municipality of the County of Annapolis: Lawrencetown, Nova Scotia, 2004

Model developed to determine well capture zones and Well Field Protection Plan for existing municipal wells and to assist in locating new production wells.

Role: Project Hydrogeologist

**Greenwich Peninsula, PEI**

Condominium and Golf Course: St. Peters Bay, Prince Edward Island, 2004

Model developed to predict sustainability of proposed developments water withdrawal, assess for potential salt water intrusion, and assess potential interference effects between aquifer and nearby pond and existing production wells

Role: Project Hydrogeologist

**Coal Waste Pile Acid Rock Drainage Plume**

Public Works Government Services Canada: Cape Breton, Nova Scotia, 2002

Model used to assess extent of ARD plume impacts to well and river, assess plume attenuation, and evaluate design options for installing groundwater extraction wells to intercept ARD plume.

Role: Project Hydrogeologist

**Former Service Station Gasoline Plume**

Petroleum Company: Montague, Prince Edward Island, 2000

Model developed to simulate an existing gasoline plume and used to assess effects of pump and treat remedial wells, potential impacts to nearby creek and natural attenuation.

Role: Project Hydrogeologist



**DAVID W. KERN**  
**CURRICULUM VITAE**

**EDUCATION:**

Delaware Valley College of Science and Agriculture, Doylestown, Pennsylvania, Major-Ornamental Horticulture, 1958-1960.

B.Sc. Environmental Design, Major-Landscape Architecture, California State Polytechnic University, Pomona, California, 1970.

Continuing Education y Sciences (ornithology and human ecology) at Marshall University, W. Virginia, Harvard Graduate School of Design (environmental analysis systems), Arts at Georgia State University, Georgia, and Leisure Studies at Acadia University, Wolfville, N.S.

**EXPERIENCE:**

1990 - Present

President, Delta Four Associates Inc. an interdisciplinary consulting firm.

1978 - Present

Private Practice including Environmental Planning, Environmental Assessment, Downtown Restoration, Parks and Recreation, Commercial and Residential Design.

1974 - 1978

U.S. Army Corps of Engineers, Atlanta Georgia, Landscape Architect (GS-12 to GS-13). Responsibilities include Policy, Management, and Technical Assistance to Five District Offices in the Southeastern U.S., including Parks and Recreation, Water Resource Planning, Environmental Impact Statements, and Landscape Architecture.

1970 - 1974

U.S. Army Corps of Engineers, Huntington, West Virginia, Landscape Architect (GS-7 to GS-11). Preparation of Environmental Assessments, Environmental Impact Statements, Resource Master Planning, Parks and Recreation and Landscape Architecture.

**AWARDS:**

1978

Superior Performance, U.S. Army Corps of Engineers

1974

President of the United States Award y Environmental Planning, Washington, D.C.

1973

Outstanding Performance, U.S. Army Corps of Engineers

1968

Gamma Sigma Delta, Agriculture Honor Society

**PUBLICATIONS:**

Kern, David W. Campground Restoration at Lake Lanier. Water Spectrum. Volume 10, No. 2, Washington, D.C., 1978

Dickson, Kenneth L.; Kern, David W.; Ruska, William F.; and Cairns, John Jr. Problems in Performing Environmental Assessments. Journal of the Hydraulics Division, ASCE, July 1975.

**AFFILIATIONS:**

American Society of Landscape Architects - Member

**RELEVANT PROJECT EXPERIENCE**

Yarmouth Mountain Cemetery Development Plan ý Yarmouth, NS

Saint Bernard Church Development Plan ý Saint Bernard, NS

Weymouth Waterfront Development Project ý Weymouth, NS

Eco/Heritage Interpretive Centre, Annapolis Royal, NS

Annapolis Basin Tourism Strategy - Department of Tourism

Annapolis Royal Waterfront Development Plan - Annapolis Royal, NS

Balancing Rock Trail (Design and Management), Tiverton, Digby County, NS

Joseph and Marie (Robichaud) Dugas Park, Municipality of Clare, NS

Western Valley Economic Development Strategy for Annapolis and Digby Counties

Shelburne County Economic Development Strategy

Queens County Economic Development Strategy

Municipality of Chester Long-Range Recreation Master Plan

Belliveau Cove and Area Recreation Plan ý Belliveau Cove, NS

Long Island Development Plan, Digby County, NS

Environmental Analysis of Central Ohio

Environmental Analysis of the Little Kanawha River Basin, West Virginia

Environmental Analysis of Salt Creek Lake Project, Ohio

Paint Creek Environmental Analysis, Ohio

Yatesville and Paintsville Lake Kentucky Environmental Assessment

Part-time Instructor, Research Project Advisor ý Planning Department, College of Geographic Sciences, Lawrencetown, NS.

**STATEMENT OF QUALIFICATIONS**  
**JOHN B. LIZAK**

John Lizak graduated with a B.Sc. degree in Fundamental Science & Engineering from Lehigh University with specialty in geology and geotechnical engineering. He received a M.Sc. degree in geology from Purdue University. Mr. Lizak also has considerable post-graduate study in hydrogeology, mining engineering, and mineral economics. He is a Licensed Professional Geologist in Pennsylvania, Indiana, and Kentucky.

John Lizak has been involved in geoscience, mining and environmental projects for over twenty-five years with Fortune 500 and private companies. He worked as a senior geologist with Exxon Coal & Minerals, Inc. and served as a Geologic Project Manager with British Petroleum's mineral group. He was also Chief Geologist and Manager of Environmental Affairs with the Millington Group of Companies. His geographic and project experience is extensive.

Mr. Lizak is a principal in LIZAK GEOSCIENCE & ENGINEERING, INC. (LGE) a geoscience, mining and environmental consulting company with offices in Indiana and Pennsylvania. The firm is a respected advisor on resource extraction, geoscience, and environmental issues as evidenced by the fact that LGE's clients include international and domestic Fortune 500 and private companies, law firms, State and city governments, public agencies such as the U.S. Park Service, and international conservation groups such as the Nature Conservancy. Mr. Lizak has been directly involved in hundreds of geoscience, mining, and environmental projects in the U.S. and overseas. These projects include over 20 groundwater and water supply investigations dealing with aggregate operations in environmentally sensitive locales.

Mr. Lizak is also a principal in MINERAL VALUATION & CAPITAL, INC. (MVC), a consulting company specializing in mineral valuation, mergers and acquisitions, and capital sourcing. MVC's clients include banks, law firms, the IRS, investment companies, mineral trusts, governments, international and domestic mineral extraction companies and individuals. John Lizak specializes in the valuation, acquisition, and development of industrial mineral and construction material ventures. His experience with MVC includes the evaluation of numerous domestic and international mineral ventures and markets. He has also been directly involved in numerous Greenfield start-ups.

John Lizak is a recognized expert on geoscience, resource extraction, and environmental issues. He has testified in numerous federal and state courts and has been appointed as a court master to arbitrate cases dealing with geoscience and mining issues. He has written numerous scientific papers and reports including "Aquifer Protection Within And Near Aggregate Operations" (National Stone Association 1998).

Mr. Lizak was Vice-Chairman of the Society of Mining & Exploration's (SME) Mineral Management Resource Committee and past President of the Indiana-Kentucky

Geological Society. He was a delegate to the Environmental Division of the American Association of Petroleum Geologists (AAPG). He is a member of SME, AAPG, the Forum on Industrial Minerals, and the National Water Well Association. He was also a member of the American Institute of Professional Geologists and the American Society of Appraisers.

Mr. Lizak was an Adjunct Professor of Geology in the University of Evansville's Mineral Land Management Program. He was also an Adjunct Professor of Geology at Raritan Valley College.

**David S. MacFarlane, M.Sc., P.Geo.**

Principle Hydrogeologist

**PROFILE**

David MacFarlane, is a principle hydrogeologist and service director (water resources) for Jacques Whitford. He has 26 years of groundwater resource development and groundwater contamination investigation experience, and has managed or provided senior technical services on over 150 groundwater supply projects throughout Atlantic Canada. Specialties include: groundwater exploration and development for municipal, institutional, commercial and industrial water supplies; source water protection plans, contaminated site assessments; landfill and tailings monitoring, mine water source assessments, and earth energy feasibility assessments.

**EDUCATION**

**University of Waterloo**, Waterloo, Ontario, 1980  
M.Sc. Hydrogeology.  
**Acadia University**, Wolfville, Nova Scotia, 1973  
B.Sc. Geology.

**PROFESSIONAL COURSES AND DESIGNATIONS**

- Groundwater Flow & Advective Transport, NWWA Short Course, 1994
- Geochemical Modelling of Groundwater, NWWA Short Course, 1991
- Organic Contaminants in Groundwater, 1987
- On-Site Sewage Disposal Systems, 1983
- Groundwater Quality Protection, 1981
- Environmental Earth Science and Hydrogeology, 1976-77
- Applied Geophysics, 1976

**CAREER SUMMARY**

1984-present	<b>Jacques Whitford Limited, Dartmouth, Nova Scotia</b> Principle Hydrogeologist: Service Director Water Res.
1980-1984	<b>Nova Scotia Department of the Environment Halifax, Nova Scotia</b> Regional Hydrogeologist
1978-1980	<b>University of Waterloo, Waterloo, Ontario</b> Graduate student, Research Teaching Assistant
1977-1978	<b>Environment Canada, Atlantic Region</b> Groundwater Technologist
1974-1976	<b>Chevron Standard Ltd., Calgary, Alberta</b> Technical Coordinator, Geophysics
1973	<b>Sherrit Gordon Mines Ltd., Ruttan Lake, Manitoba</b> Assistant Metallurgist and Assayer
1971-1972	<b>Department of Mines and Energy Halifax, Nova Scotia</b> Diamond Drill Geologist Assistant (summer terms)



**MEMBERSHIPS/ASSOCIATIONS**

- Member, Association. of Groundwater Scientists and Engineers, 1978
- Member Association of Professional Geoscientists of Nova Scotia, 2000
- Member International Association of Hydrogeologists, 1980

**RELEVANT EXPERIENCE****GROUNDWATER RESOURCES (WATER SUPPLY DEVELOPMENT)**

Experience includes all aspects of groundwater resource development, management and protection, for schools, mines, subdivisions, commercial, municipal and industrial well water supplies, including: feasibility assessment, groundwater exploration, production well development, hydraulic testing, water quality assessment, well field performance audits, well rehabilitation, source water protection plans, investigation of well damage claims.

**Commercial Water Supply Study, St. Peters Bay Resorts,**

St. Peters Bay Resorts Limited: Greenwich, Prince Edward Island, 2004

Jacques Whitford carried out groundwater exploration drilling to assess the groundwater development potential in a sensitive area of Greenwich peninsula where issues of land use conflict and sea water intrusion were a concern. Work over a three year period involved exploration, construction and hydraulic testing of three bedrock production wells, a 13 day pumping test with multiple instrumented observation wells, a 3D, finite difference (MODFLOW-Pro) steady state flow model of the Greenwich Peninsula, interpretation, reporting, aquifer monitoring strategy and sustainable yield recommendations.

Role: Senior Hydrogeologist and Technical Manager

**Groundwater Supply Services for a Rural Municipality in Nova Scotia  
Municipality of the County of Annapolis: Nova Scotia, 2004/2005**

Jacques Whitford provided professional hydrogeological services for several rural communities in the Annapolis Valley, Nova Scotia. Work included: Step I GUDI Assessments for three small municipal well fields with recommendations for well head protection; groundwater exploration and development programs for two municipal well fields at Granville Ferry and Lawrencetown, NS; and groundwater modeling of production well capture zones for two municipal Source Water Protection Plans.

Role: Project Manger and Senior Hydrogeologist

**WELL FIELD AUDITS AND WELL REHABILITATION**

Provide expertise in the assessment of production well and well field performance, design and supervision of well rehabilitation, and investigation of well damage and water quality problems.

**Municipal Well Field Rehabilitation and Development**

City of Charlottetown: Charlottetown, Prince Edward Island, 1993,2002-03

Jacques Whitford provided hydrogeological services for the development of a new five-well, 8,800 m<sup>3</sup>/d municipal well field and a model-based well head protection plan at Suffolk PEI; the design and replacement of nine, 35 year-old production wells at two existing (24,500 m<sup>3</sup>/d) municipal well fields in the Winter





River Basin; and a GIS-based site suitability study for a fourth municipal well field based on aquifer vulnerability and protection capability.

Role: Senior Hydrogeologist, technical Manager

#### SALT WATER WELL EXPLORATION AND DEVELOPMENT

Experience includes development of guidelines for salt water well prospecting, development of salt water wells for aquaculture and marine aquarium applications; and assessment of sea water intrusion problems.

#### High Capacity Industrial Salt Water Well Field

Ocean Choice Seafoods Ltd: Souris, Prince Edward Island, 2005

Jacques Whitford supervised exploration drilling, production well construction, hydraulic testing and aquifer evaluations for a five-well, high capacity (26,000 m<sup>3</sup>/day) salt water well field with salinity approximately 70 % sea water for a lobster processing client. Work included construction and testing of five, production wells, extensive hydraulic and water quality testing, aquifer monitoring, interpretation and reporting, and on application for a water abstraction permit for the facility.

Role: Senior Hydrogeologist, technical Manager

#### CONTAMINANT HYDROGEOLOGY

Experience includes investigation and assessment of contaminant fate and mobility for a wide range of contaminated sites, senior advisor and peer reviewer for JWEL RBCA, Risk Assessment, landfill, and Phase II/III ESA's.

#### Contaminant Hydrogeology Study,

ESSO; DND: CFB Goose Bay, Labrador, 1989-1994

Jacques Whitford conducted geotechnical and hydrogeological investigations as part of the POL upgrading program. The source, partitioning, mobility and extent of major free product plumes were investigated in the vicinity of 29 major POL compounds, fire training areas, pipelines, and POL storage facilities. The hydrogeology of the area was characterized, free hydrocarbon recovery systems were designed and field tested, and recommendations were provided for on-going product monitoring and recovery. This project was basis for further investigations and product recovery operations at the CFB Goose Bay site.

Role: Senior Hydrogeologist

#### WASTE MANAGEMENT

Experience has involved hydrogeology related issues associated with the design of groundwater monitoring systems and monitoring plans, hydrochemical trend analysis, and compliance audits for industrial, municipal and mining waste management facilities, and assessment of contaminant fate and mobility in sub-surface environments.

#### City of Halifax Regional Disposal Facility

Halifax Regional Municipality: Goodwood, Nova Scotia, 1996-1997

As a member of the MIRROR NS consortium to develop and implement a Solid Waste Management Plan for Metro Halifax region, JW conducted a Hydrogeological study, design and installation of 50 monitor wells, and conducted baseline quarterly water monitoring and assessment.

Role: Senior Hydrogeologist, Technical Manager



**EARTH ENERGY DEVELOPMENT**

Groundwater source and earth coupled heat pump for feasibility assessment, and investigation of coal mine water thermal energy potential.

**Coal Mine Water geothermal Heat Pump Feasibility Study, Springhill GeoThermal Demonstration Project**

Springhill Geothermal Committee: Springhill, Nova Scotia, 1988

Jacques Whitford conducted baseline investigations leading to the development of a mine water source geothermal demonstration at the Town of Springhill, NS. The anomalously warm waters stored in flooded abandoned coal mine workings were investigated by drilling into the abandoned flooded workings, a 7 day pumping test, and computer modelling of water chemistry. A mine water geothermal development strategy and monitoring plan was prepared.

Role: Project Manager

**MINING AND TUNNELLING**

Experience includes investigation of source of mine water inflows and effect of mining development on local groundwater resources.

**Assessment of hydraulic interaction between abandoned and active collieries, Cape Breton, N.S., for Cape Breton Development Corporation**

Cape Breton Development Corporation: Cape Breton, Nova Scotia, 1987-2002

JW was initially retained to determine the likely source of mine waters inflows at two deep sub-sea coal mines. Work included: a mine water monitoring program, periodic interpretation of the monitoring results, an assessment of the interconnectivity of the 27 collieries in 1994, an assessment of the sources of flooding into the Lingan Mine in 1997, and prediction of mine flooding rate and environmental significance of mine water outfall to the surface.

Role: Senior Hydrogeologist; Member CBDC Mine Water Advisory Group

**INTERNATIONAL EXPERIENCE**

Advisor to JW international projects involving hydrogeology, groundwater resource development, and contaminant remediation. Projects in France (McCains), Eritrea (Canadian Fisheries Consultants Ltd. 2000), Tarim Basin, China (CIDA 1998), Anguilla, British West Indies (CIDA 1986-1987), Kingdom of Swaziland, Africa (IDRC 1987-1990), Samira, Niger (Etruscan, 1998-1999).

**Fishery Infrastructure Development Project, State of Eritrea, Africa.**

African Development Bank Project for the Eritrea Ministry of Fisheries (2000-2001). Work involved design and senior review of groundwater exploration and development programs to establish groundwater supplies for three rural fish plants at Coast of Eritrea.

Role: Senior Hydrogeologist and technical advisor.

**PUBLICATIONS AND PRESENTATIONS**

Provided upon request



## *Curriculum vitae*

Name: André L. Mallet  
Business Address: Mallet Research Services Ltd.  
4 Columbo Drive  
Dartmouth, Nova Scotia  
B2X 3H3  
Office Phone: (902) 462-5884  
Fax: (902) 484-6189  
Home Phone: (902) 435-4666  
E-mail: amallet@ns.sympatico.ca

Date of Birth 18 June 1956

Citizenship Canadian

### Education

1973-1974: Attended Royal Military College  
1974-1977: Attended Dalhousie University, received BSc in Biology, First Class Honours.  
1977-1982: Attended Dalhousie University, received Ph.D. degree

### Academic awards

1982-1984: DFO Visiting Post Doctoral Fellowship  
1982-1984: NATO NSERC Post Doctoral Fellowship, acceptance declined  
1979-1981: NSERC Post Graduate Fellowship  
1979-1981: O'Brien Fellowship  
1977-1979: Dalhousie Post Graduate Fellowship  
1976-1977: Dalhousie Award Scholarship

### Experience

(Research or related experience)

1. 1997 to present: President and shareholder of l'Etang du Ruisseau Bar Ltée, a company located in Shippagan, New Brunswick dedicated to the culture of juvenile and market-sized American oyster.
2. 1995 to present: President and shareholder of Lunenburg Shellfish Inc., a shellfish hatchery aimed at the seed production and growout of European oysters and sea scallops. Activities include the management of and growout operations as well as directing various research projects to optimize shellfish production.
3. 1998 to present: for PecNord Inc., continue the development of the broodstock genetic program for sea scallop.
4. 1989-2004: Scientific advisor of the New Brunswick shellfish hatchery program located at the Aquarium and Marine Center, Shippagan, NB. My responsibilities are directed at developing and analyzing several hatchery and field-related research projects on various shellfish species

5. Sep 2003 - Mar 2004: Responsible for obtaining samples and documenting the occurrence of non-indigenous phytoplankton and zooplankton taxa in ballast water originating from Chesapeake Bay; funded by the Department of Transport, Marine Safety Division.
6. Jun 2002 - Mar 2004: Responsible for collecting and processing samples for the purpose of evaluating the environmental impact of shellfish culture; funded by the Aquaculture Canada Research Development Program (ACRDP), Department of Fisheries and Oceans.
7. Feb 2002 - Mar 2002: Involved in preparation of report on risk of introducing invasive species in ballast water - subcontractor to SNC-Lavalin (report title: Management of Marine Invasive Species in Canadian Naval Operations Atlantic - MARLANT).
8. Sep 2001 - Mar 2002: Responsible for obtaining samples and documenting the occurrence of non-indigenous phytoplankton and zooplankton taxa in ship ballast water; funded by the Department of Transport, Marine Safety Division.
9. 1999: Design and evaluate a Floating Upwelling System (FLUPSY) for a private company in northern New Brunswick for growing shellfish seed.
10. 1998: Evaluate the distribution of *Mytilus trossulus* along the coast of New Brunswick as a contract from the NB Department of Fisheries and Aquaculture.
11. 1998: Evaluate the feasibility of using cold storage as a means of maintaining shellfish larvae alive for extended periods for eventual use in hatchery production, IRAP project.
12. 1998: for l'Étang Ruisseau Bar Ltée, evaluate the value of using triploid American oysters for commercial production in N.B., a project funded by the NB Department of Fisheries and Aquaculture.
13. 1998: For Lunenburg Shellfish Inc., evaluate different production techniques and equipment for growing the European oyster in Nova Scotia. Funded under the Cooperative Program.
14. 1998: For PecNord Inc., continue the development of an indoor nursery systems for juvenile sea scallops, a project partially funded by the MAPAQ.
15. 1997 to 1999: Design and advise on the construction of an American oyster hatchery in Prince Edward Island for Atlantic Marine Seed Inc. Other activities include staff training as well as director of R&D activities
16. 1997-1998: Project manager on a study aimed at understanding the cause of the high losses of European seed on the South Shore of Nova Scotia for the South West Shore Development Authority, Yarmouth, NS.
17. 1995 to 1998: For PecNord Inc., design and construct a sea scallop hatchery in northern Quebec. Activities included the training of the staff and directing a research program.
18. 1996: Design a shellfish hatchery for the Aquaculture Station, MAPAQ, Grande-Rivière, Gaspé, Québec and train the staff in hatchery operations.
19. 1988-present: Participated on numerous research and development projects on shellfish species such as the American oysters, the European oysters, quahogs, and mussels
20. 1987-1993: Research project manager on a study aimed at developing the procedures and technologies for the mass production of juvenile sea scallops in hatchery system (Fisheries Resource Development Ltd., HFX)

21. 1992 to 1994: Research project manager on a study aimed at understanding the causes of settlement failures in a commercial European oyster hatchery, Mountain Island hatchery, Blandford, NS.
22. 1988-1990 Research scientist on a project aimed at estimating the carrying capacity of bivalve production site (Dalhousie University, HFX);
23. 1987-1988 Project manager of an unsolicited proposal contract to Mallet Research Services - Investigating causes of summer mortality in the blue mussel, *Mytilus edulis* - funded by the Department of Supply and Services, DFO, and the Nova Scotia Department of Fisheries; Project manager of a contract awarded to Mallet Research Services - A comparative technical and economic analysis of mussel sleeving methods - funded by the NS Department of Fisheries.
24. 1984-1986 Project manager of a research contract funded jointly by the Department of Supply and Services and the Department of Fisheries and Oceans aimed at evaluating strategies to optimize mussel production in Nova Scotia. It involved extensive laboratory and field studies on both genetic and ecological aspects of production characters.
25. Project manager of two studies on the bay scallop, *Argopecten irradians* funded by E.R.D.A.
26. 1982-1984 Postdoctoral fellow conducting genetic research on the blue mussel (*Mytilus edulis*). The main focus was to relate genetic factors with production characters through (1) enzyme polymorphism, and (2) quantitative characters. Institution: Department of Fisheries and Oceans, Bedford Institute of Oceanography, Dartmouth, Nova Scotia.
27. 1981-1982 Lecturer, teaching an Introductory Biology as well as a genetic course. Institution: Dalhousie University, Halifax, Nova Scotia.

### **Thesis and publications**

1. **Mallet, A.L.** 1982. Quantitative genetics of the Atlantic Canadian oyster, *Crassostrea virginica* (Gmelin). Ph.D. Thesis, Dalhousie University. Thesis supervisor: Dr. L.E. Haley.
2. Hildreth, D.I. and **A.L. Mallet**. 1980. The effect of suspension density on the retention of 5  $\mu$ m diatoms in the *Mytilus edulis* gill. *Biol. Bull.* 158: 316-323.
3. **Mallet, A.L.** and L.E. Haley. 1983. Effects of inbreeding on larval and spat performance in the American oyster. *Aquaculture* 33:229-235.
4. **Mallet, A.L.** and L.E. Haley. 1983. Growth rate and survival in pure population matings and crosses of the oyster *Crassostrea virginica*. *Can. J. Fish. Aquat. Sci.* 40: 948-954.
5. Zouros, E., S.M. Singh, D.W. Foltz, and **A.L. Mallet**. 1983. Post-settlement viability in the American oyster (*Crassostrea virginica*): an overdominant phenotype. *Genet. Res. Camb.* 41: 259-270.
6. **Mallet, A.L.** and L.E. Haley. 1984. General and specific combining abilities for larval and juvenile growth and viability estimated from natural oyster populations. *Mar. Biol.* 81:53-59.
7. **Mallet, A.L.**, E. Zouros, K.E. Gartner-Kepkay, K.R. Freeman, and L.M. Dickie. 1985. Larval viability and heterozygote deficiency in populations of marine bivalves: evidence from pair matings of mussels. *Mar. Biol.* 87: 165-172.
8. **Mallet, A.L.**, E. Zouros, K.E. Gartner-Kepkay, and K.R. Freeman. 1986. Genetics of growth in blue mussels: Family and enzyme-heterozygosity effects. *Mar. Biol.* 92:475-482.
9. **Mallet, A.L.** 1986. Quantitative Genetics: Opportunities for Strain Improvement. In *Shellfish Culture Development and Management* published by IFREMER 1987

10. **Mallet, A.L.**, K.R. Freeman, and L.M. Dickie. 1986. The genetics of production characters in the blue mussels *Mytilus edulis* I. A preliminary analysis. *Aquaculture* 57: 133-140.
11. **Mallet, A.L.** and E. Zouros. 1986. A comment on the use of Nass's contingency test for random association of alleles at different loci. *Heredity* 59:117-118.
12. **Mallet, A.L.**, C.A.E. Carver, S.S. Coffen, K.R. Freeman. 1986. Winter growth of the blue mussel: Importance of stock and site. *J. Exp. Mar. Biol. Ecol.* 108:217-228.
13. **Mallet, A.L.**, C.A.E. Carver, S.S. Coffen and K.R. Freeman. 1987. Mortality variations in natural populations of the blue mussel, *Mytilus edulis*. *Can. J. Fish Aquat. Sci.* 44:1589-1594.
14. Zouros, E., M. Romero-Dorey and **A.L. Mallet**. 1988. Heterozygosity and growth in marine bivalves: further data and the associative overdominance explanation. *Evolution* 42:1332-1341.
15. **Mallet, A.L.** and C.E.A. Carver. 1989. Growth, mortality, and secondary production in natural populations of the blue mussel, *Mytilus edulis*. *Can. J. Aquat. Sci.* 46:1154-1159.
16. Zouros, E. and **A.L. Mallet**. 1989. Genetic explanations of the growth/heterozygosity correlation in marine mollusks. *EMBS* (in press)
17. **Mallet, A.L.** 1989. Mussel Culture. In: *Cold Water Aquaculture in Atlantic Canada* edited by Andrew Boghen. Published by the Institut Canadien de Recherche sur le Développement Regional, Université de Moncton, Canada
18. Carver, C.E.A. and **A.L. Mallet**. 1990. Assessing the carrying capacity of a coastal inlet for mussel culture. *Aquaculture* 88:39-53.
19. **Mallet, A.L.**, C.E.A. Carver and K.R. Freeman. 1990. Summer mortality of the blue mussel in Eastern Canada: Spatial, temporal, stock, and age variation. *Mar. Ecol. Prog. Ser.* 67:35-41.
20. Carver, C.E. and **A.L. Mallet**. 1991. Summer mortality of the blue mussel in Prince Edward Island. *Bull. Aqua. Assoc. Can.* 91(2): 30-36.
21. **Mallet, A.L.** and C.E. Carver. 1991. An assessment of strategies for growing mussels in suspended culture. *J. Shellfish Research* 2:471-477.
22. **Mallet, A.L.** and C.E.A. Carver. 1993. Temporal production patterns in various size groups of the blue mussel. *JEMBE* 170:75-89.
23. Emmerson, C.W., J. Grant, **A.L. Mallet**, C.E. Carver. 1993. Growth and survival of sea scallops (*Placopecten magellanicus*): Effects of culture depth. *Mar. Ecol. Prog. Ser.* 108: 119-132.
24. **Mallet, A.L.** and B. Myrand 1994. Mussel Culture. In: *Cold Water Aquaculture in Atlantic Canada*; 2nd edition. edited by Andrew Bodghen. Published by the Institut Canadien de Recherche sur le Développement Regional, Université de Moncton, Canada
25. Jackson, A.E., A.S.W. deFreitas, L. Hooper, **A. Mallet**, and J.A. Walter. 1994. Phosphorus metabolism in juvenile sea scallops (*Placopecten magellanicus*) from an aquaculture site in Nova Scotia. The effects of overwintering in pearl nets on phosphorus metabolite levels measured *in-vivo* by <sup>31</sup>P NMR. *Canadian Journal of Aquatic Sciences* (accepted).
26. Coutteau, P. M. Caers, **A. Mallet**, W. Moore, J. Manzi, and P. Sorgeloos. 1994. Effect of lipid supplementation on growth, survival, and fatty acid composition of bivalve larvae (*Ostrea edulis* L. and *Mercenaria mercenaria* In: *Measures for success Metrology and instrumentation in Aquaculture management*. Eds P. Kestemont, J. Muir, F. Sevilla, P. Williot CEMAGREF eds 1994

27. **Mallet, A.L.** and C.E. Carver. 1995. Comparative growth and survival patterns of *Mytilus trossulus* and *Mytilus edulis* in Atlantic Canada CJAS 52: 1873-1880.
28. Carver, C.E., **A.L. Mallet**, R. Warnock, and D. Douglas. 1996. Red-coloured digestive glands in cultured mussels caused by ingestion of *Mesodinium rubrum*. Journal of Shellfish Research 15: 191-201.
29. **Mallet, A.L.** and C.E. Carver. 1999. Maritime distribution and commercial production performance of *Mytilus edulis* and *Mytilus trossulus*. Bull. Aquac. Assoc. Can. 99-3: 7-13.
30. **Mallet, A.L.** And C. Gionet. 2001. Performance of juvenile bar clam (*Spisula solidissima*) grown at five different densities in an indoor nursery system. Bull. Assoc. Can. 01-4:97-98.
31. Grant, J., C.W. Emmerson, **A.L. Mallet**, and C. Carver. Growth advantages of ear hanging compared to cage culture for sea scallops, *Placopecten magellanicus*. Aquaculture.
32. Jackson, D.L., B.W. MacDonald, B. Vercaemer, X. Guo, **A.L. Mallet**, and E.L. Kenchington. 2003. Investigations with triploid atlantic sea scallops, *Placopecten magellanicus*, at the Bedford Institute of Oceanography, 2000-2003. Canadian Technical Report of Fisheries and Aquatic Sciences No. 2460.
33. Vercaemer, B., K. Spence, E. Kenchington, **A.L. Mallet**, and J. Harding. 2003. Assessment of genetic diversity of the European oyster (*Ostrea edulis*) in Nova Scotia using microsatellite markers. Canadian Technical Report of Fisheries and Aquatic Sciences. No. 2453.
34. Carver, C.E., A. Chisholm, and **A.L. Mallet**. 2003. Strategies to mitigate the impact of *Ciona intestinalis* (L.) Biofouling on shellfish production. J. Shellfish Research. 22: 621-631.
35. **Mallet, A.L.**, C.E. Carver and J-Y Daigle. 2005. The effect of peat moss particles on the physiology of the eastern oyster, *Crassostrea virginica*. J. Shellfish Research (in press)
36. **Mallet, A.L.**, C.E. Carver and T. Landry. 2005. Impact of suspended and off-bottom American oyster culture on the benthic environment in eastern Canada (submitted)

## Reports

- A.L. Mallet and C.E. Carver. 2004. The environmental impact of using non-permanent gear for culturing oysters in New Brunswick and Nova Scotia. Prepared for the New Brunswick Shellfish Growers Association.
- C.E. Carver and A.L. Mallet. 2004. Investigating potential ballast water management strategies for ships travelling from Chesapeake Bay to ports in Nova Scotia. Prepared for the Department of Transport, Marine Safety Division.
- C.E. Carver and A.L. Mallet . 2003. A preliminary assessment of the risks of introducing non-indigenous phytoplankton and zooplankton species from South Amboy, New Jersey (Raritan Bay) into White's Point Cove, Digby Neck, Nova Scotia. Prepared for Global Quarry Inc. (Donald Kern).
- C.E. Carver and A.L. Mallet. 2002. An assessment of the risk of ballast water-mediated introduction of non-indigenous phytoplankton and zooplankton species into Atlantic Canadian waters. Prepared for the Department of Transport, Marine Safety Division.
- C.E. Carver** and A.L. Mallet. 2001. A preliminary assessment of the risks of ballast water-mediated introduction of non-indigenous phytoplankton and zooplankton species into Nova Scotian waters. Prepared for the Department of Transport, Marine Safety Division.

- C.E. Carver**, A.L. Mallet and A. Chisholm. 2001. Developing strategies for minimizing the impact of the tunicate *Ciona intestinalis* on shellfish culture in Nova Scotia. Prepared for Lunenburg Shellfish Inc.
- Mallet, A.L., and **C.E. Carver**. 1998. Overwintering of juvenile European oysters in Nova Scotia: 1997-1998. Prepared for the Northwest Atlantic Oyster Growers.
- Mallet, A.L., and **C.E. Carver**. 1997. The performance of juvenile European oysters in a field upweller system and at four production sites on the south shore of Nova Scotia. Prepared for the Northwest Atlantic Oyster Growers Association.
- Mallet, A.L., and **C.E. Carver**. 1997. The design and evaluation of nursery systems for the sea scallop (*Placopecten magellanicus*). Prepared for Pec-Nord Inc.
- Mallet, A.L., and **C.E. Carver**. 1996. The optimization of hatchery procedures for the production of sea scallop juveniles in northern Quebec. Prepared for Pec-Nord Inc.
- Mallet, A.L. and C.E.A. Carver. 1996. Intensive nursery systems for European oyster. Nova Scotia Department of Fisheries, Nova Scotia Cooperative Agreement
- Mallet, A.L. and **C.E. Carver**. 1995. The effect of peat moss particles on the physiology and survival of the American oyster, *Crassostrea virginica*. Prepared for the New Brunswick Department of Fisheries.
- Carver, C.E. and A.L. Mallet. 1993. Phytoplankton research in Ship Harbour: May to August 1992. PartB: Investigating the source of the "unknown toxin" in cultivated mussels. Prepared for DFO - Biological Sciences Branch, Halifax, N.S.
- Mallet, A.L. and C.E. Carver. 1993. The ecological and commercial implications of genetically-distinct Mytilids: Variation in growth and survival. Prepared for DFO - AFAP.
- Carver, C.E.A. and A.L. Mallet 1992. Assessment of field grow-out strategies for one-year-old quahogs, *Mercenaria mercenaria*, in Nova Scotia. Nova Scotia Department of Fisheries.
- Carver, C.E. and A.L. Mallet. 1992. The ecological and commercial implications of genetically-distinct Mytilids: Completion of the geographic survey. Prepared for: D.F.O., Aquaculture and Resource Development, Biological Sciences Directorate, Ottawa, Ontario.
- Mallet, A.L. and S. Hancock. 1991. The ecological genetics of mussel in Nova Scotia. AFAP report.
- Carver, C.E. and A.L. Mallet. 1990. Assessment of nursery growout strategies for juvenile quahogs, *Mercenaria mercenaria*, in Nova Scotia. Nova Scotia Provincial Department of Fisheries, E.R.D.A. Report IDD1001
- Mallet, A.L. and C.E. Carver. 1989. A bio-economic assessment of grow-out methods for mussel culture. Nova Scotia Provincial Department of Fisheries E.R.D.A. Report no. 15.
- Mallet, A.L. and C.E. Carver. 1988. Within and among site variation in bay scallop production. Nova Scotia E.R.D.A. Report No. 13.
- Mallet, A.L. and C.E. Carver. 1988. Optimizing mussel production in Nova Scotia: assessment of stock performance, site performance, and carrying capacity. Prepared for Whitehead Mussel Farms.
- Mallet, A.L. and C.E. Carver. 1987. The feasibility of bay scallop culture in Nova Scotia: a preliminary study. Nova Scotia E.R.D.A. Report



## **Presentations**

- May 2004: Impact de la conchyliculture sur l'environnement. World Aquaculture Society, Hawaii, USA.
- May 2001: Impact of invader species on shellfish culture operations. Marine Biological Invasions: A perspective on Atlantic Canada and New England. Halifax, Nova Scotia
- April 2001: The impact of tunicates on Shellfish Culture. New Brunswick Oyster Grower Association. Miramichi, New Brunswick.
- March 2001: L'impact des tuniciers en conchyliculture. L'Association des mariculteurs du Québec. Carleton, Québec.
- December 2000: Maine Aquaculture Association. New technologies in American oyster culture
- March 2000: The optimisation of European oyster culture in Nova Scotia. National Shellfish Association, Seattle, Washington.
- 1998: The distribution and commercial implication of *Mytilus edulis* and *Mytilus trossulus* in the Maritime provinces. Presented at the Aquaculture Association of Canada, St. John's, Newfoundland.
- 1997: Status of the European oyster industry. Presented at the Aquaculture Association of Nova Scotia meeting, Halifax, Nova Scotia.
- 1997: Bacterial monitoring in shellfish hatchery. Aquaculture Association of Canada, Quebec, Quebec
- 1990: Mussel Growth. Presented at the World Aquaculture Society Meeting, Halifax, Canada
- 1989: Mussel Recruitment in Atlantic Canada. Presented at the World Mariculture Society meeting, Los Angeles, USA.
- 1986: Winter growth of the blue mussel: Importance of stock and site. Aquaculture Workshop, Halifax, Nova Scotia
- 1985: Quantitative genetics of bivalves. Colloque Internationale de l'aménagement de la conchyliculture, LaRochelle, France.
- 1984: Estimates of genetic parameters for larval and early juvenile growth and viability in *Mytilus edulis*. First Atlantic Aquaculture Workshop in Atlantic Canada, Halifax, Nova Scotia
- 1982: Effects of inbreeding and spat performance in the American oyster. University College, Galway, Ireland
- 1980: Growth and viability of pure population matings and crosses of the American oyster. World Mariculture Society, Hawaii, USA

## CURRICULUM VITAE

**Barry Morris Moody**  
**Department of History**  
**Acadia University**  
**Wolfville, NS B0P 1X0**

**Telephone:**  
**Off.: 902-585-1505**  
**Fax: 902-585-1070**  
**Home: 902-532-5664**  
**Email: barry.moody@acadiau.ca**

### EDUCATION

PhD Queen's University, Kingston, ON, 1976  
Thesis title: 'A Just and Disinterested Man:' The Nova Scotia  
Career of Paul Mascarene, 1710-1752  
MA Queen's University, Kingston, ON, 1970  
BA (Honours), Acadia University, Wolfville, NS, 1967

### TEACHING EXPERIENCE

1994-present	Professor, Acadia University, Wolfville, NS
1981-1994	Associate Professor, Acadia University
1976-1981	Assistant Professor, Acadia University
1972 & 1973	Lecturer, History Department, University of New Brunswick (summer sessions)
1970-1976	Lecturer, Acadia University
1968 & 1969	Lecturer, History Department, Acadia University (summer sessions)
1992-Present	Honorary adjunct professor, Department of History, Dalhousie University

### FELLOWSHIPS/GRANTS

SSHRC Occasional Conference Grant (\$6500), Planter Studies Conference, 1993  
SSHRC Occasional Conference Grant (\$6500), Planter Studies Conference, 1990  
Canada Council Doctoral Fellowships, 1968, 1969  
Ontario Graduate Fellowship, 1967

## **COURSES TAUGHT**

### Department of History and Classics, Acadia

Canadian Survey  
 History of the Maritime Provinces  
 Comparative Colonial Societies  
 British Empire/Commonwealth  
 Canadian Social/Intellectual History  
 American Survey  
 Peopling the Maritimes in the 18th Century  
 Early Britain  
 History of Religion in Canada  
 Colonial America Seminar  
 Canadian Seminar  
 The Study of History

### Department of History, University of New Brunswick

History of the Atlantic Provinces

### School of Education, Acadia

Teaching Maritime History

### Acadia Divinity College

History of the Baptists of Atlantic Provinces

Courses through Extension, Teleconferencing and Correspondence, Acadia University

## **THESES SUPERVISED**

37 Honours theses (Acadia University)

5 Masters theses (Acadia University):

Taunya Padley, The Church of England's Role in Settling the  
Loyalists in the Town of Digby, 1783-1810 (1991)

Heather Davidson, *Public Lives from Private Artifacts: The Architectural Heritage of the Horton-Yankee Planters* (1987)

Daniel Goodwin, *Advancing Light: Evangelicalism in Yarmouth Township, 1761-1830* (1986)

Allen Robertson, *Loyalist, Methodist, Merchant: Robert Barry, from Refugee to Nova Scotian* (1984)

Neil Boucher, *The Development of an Acadian Village: Surette's Island, 1859-1970* (1974)

1 Masters thesis for St. Mary's University  
Mitch McNutt, *The Township of Onslow, 1760s - 1830s* (1996)

Co-supervisor,  
P. Lorraine Coops, *Living by Faith: Maritime Baptist Single Women Missionaries in India. 1880-1930*. PhD dissertation, Queen's University (1996)

Served as external reader for MA, MEd and MDiv theses completed in Department of English, Acadia University; School of Education, Acadia University; Acadia Divinity College; Department of History, Memorial University of Newfoundland, and internal reader for MA thesis, Dept. of English, Acadia University

### **COMMITTEE WORK**

2005- present	Admissions and Academic Standing Committee
2005	Search Committee, Dean of Arts
2002-2005	Chair, Senate Library Committee
2001- present	University Review Committee
2001- 2002	Search Committee, Head Librarian
2001	Departmental Review Committee, Department of English
2000-1	Chair, ASPC Sub-committee, Culture and Civilization

2000-present	Head, Department of History and Classics
2000-2005	Library Committee
1999-2002	Senate, Acadia University
1982-present	Arts Faculty Planning Committee
1999-2001	University Planning Committee
1999-2001	Academic Sector Planning Committee
1995-2000	Head, Department of History
1995-98	University Chaplaincy Committee
1995-97	Selection Committee, Excellence in University Service Award
1994	Member, Task Force on Research and Graduate Studies
1993-1996	Senate
1992-1995	Curriculum Committee, Member
1994-1995	Co-Chair
1992-1994	AUFA Status of Women Committee
1986-1989	Teaching Excellence Award Committee
1986-1989	Joint Committee on Baptist Archives, Acadia University and United Baptist Convention (Chair)
1987-1989	University Long Term Planning Committee
1986-1989	University Archives Committee
1988-1989	Chair
1986-1988	University Appeals Committee
1984-1988	150th Anniversary Committee
1985-1986	Senate Committee on Archives

1982-1986	Four-Year Degree Committee, Faculty of Arts
1981-1984	Honours Committee
1979-1980	Continuing Education Committee
1978-1979	Honorary Degrees Committee
1977-1979	Senate
1978	Search Committee, Headship, Department of English
1975-1978	Honours Committee
1976-1977	Landscape and Development Committee
1971-1973	Elections Officer, Faculty

### **MAJOR PAPERS DELIVERED**

2004	þAnd I humbly desire to be informed how I shall behave to them; British Perceptions of the Acadians, 1710-1755,ý French Colonial History Society, Washington, DC
2003	þSeriously weighed, considered and impartially determined; Envisioning Justice in Post-Conquest Nova Scotia,ý Courts, Communities & Conflict conference, Dalhousie Law School, Halifax, NS
2000	þBoers and Baptists: Maritime Canadians View the War in South Africa,ý Canada and the Boer War, Commonwealth Institute, University of London  þMaritime Baptists and Religious Freedom: Acadia University in 1965,ý Atlantic Canada Studies Conference, Mount St. Vincent's University, Halifax, NS
1999	þThe Nova Scotia Career of John Winslow,ý Marshfield Historical Society, Marshfield, MA

- þThe Contexts of Expulsion,ý invited commentary on two papers on mid 18<sup>th</sup> century Nova Scotia, Association for Canadian Studies in the United States, Conference, Pittsburg, PA
- 1997 þGeorge Rawlyk's Henry Alline,ý George Rawlyk Memorial Symposium, Atlantic Baptist University, Moncton, NB
- þLeft Behind in the Gold Rush: Rebecca Ells of Nova Scotia,ý Canadian Studies Conference, Edinburgh, Scotland
- 1996 "Ties of Blood and Memory: The New England Planters in British Nova Scotia," Canadian Studies Conference, Edinburgh, Scotland
- 1995 "The Secularization of Acadia University, 1950-1965," Religion, Culture and Society in Atlantic Canada in the Twentieth Century Conference, University of New Brunswick
- 1994 "Satire and Hidden Meaning in the Boys Books of James B. DeMille," Thomas H. Raddall Symposium, Acadia University
- 1993 "Acadian Material Culture: The Challenge for the Historian," The Association for Canadian Studies in the United States, New Orleans, LA
- "Growing up in Granville Township, 1760- 1800," Planter Studies Conference, Acadia University
- "From the Ground Up: Re-examining the Pre-Expulsion Acadian Experience," Canadian Studies Conference, Lafayette, LA
- 1992 "Esther Clark Goes to College: Perceptions of Acadia, 1912-1914," Raddall Symposium, Acadia University
- 1991 "The Homogenization of Student Culture: Acadia University in the Interwar Years," Raddall Symposium, Acadia University
- 1990 þThe Novelist as Historian: Images of Nova Scotia in the Novels of Thomas H. Raddall,ý Raddall Symposium, Acadia University
- "Land, Kinship and Inheritance in Granville Township, 1760-1800," Planter Nova Scotia Conference, Acadia University

- 1989 "Acadia College and Liberal Education," -- The Past and Future of Liberal Education-Conference at Mt. Allison University
- 1987 " 'Breadth of Vision, Breadth of Mind' --The Baptists and Acadia College," Hayward Lecture, Acadia University
- 1986 "Acadia and the Great War," Canadian Historical Association, McMaster University
- 1985 "Use and Reuse: The Evolution of Eighteenth Century Houses in Annapolis Royal, NS," Atlantic Canada Workshops, Sydney, NS
- 1983 "Joseph Howe, the Baptists and the College Question," Joseph Howe Symposium, Mount Allison University, Sackville, NB
- 1981 "Joseph Howe and the Baptists," Royal Nova Scotia Historical Society, Halifax, NS
- "Eighteenth Century Buildings in Annapolis Royal, N.S.," Eighteenth Century Studies Conference, Acadia University
- 1981 "From Itinerant to Settled Pastor: The Case of Edward Manning," The Canadian Society of Church History, Halifax, NS
- 1980 "The Founding of Acadia College: The Halifax Connection," Atlantic History Conference, Dalhousie University, Halifax, NS
- "The Maritimes of James B. DeMille," Royal Nova Scotia Historical Society, Halifax, NS
- 1979 "Maritime Baptists and Higher Education in the Early Nineteenth Century," The Baptists in Canada: An International Symposium, Acadia University
- 1978 "Two Centuries of Witness: The Baptists of Atlantic Canada," The Convention of the United Baptist Churches of the Atlantic Provinces, Wolfville, NS
- 1977 "Concepts of Empire: The Neutral French in British Acadia," Society of Eighteenth Century Studies, Université de Moncton, Moncton, NB
- 1976 "Paul Mascarene, Peacetime Administrator," Nova Scotia Historical Society, Halifax, NS



1974 "The Founding and Philosophy of Acadia College," Humanities Association of Canada, Wolfville Branch

In addition, presentations have been made to 15 historical and genealogical societies in Canada and the United States. Approximately 140 presentations have been made to service clubs, senior citizen groups, community organizations, and church groups.

## **PUBLICATIONS**

In the Dictionary of Canadian Biography, (R)

vol. III (Toronto:University of Toronto Press, 1974), biographies of:

John Adams  
Alexander Cosby  
François Mangeant  
Benjamin Goldthwaite  
Arthur Noble

In the DCB, vol. IX, 1976 biography of:  
William Henry Chipman

In the DCB, vol. IV, 1979 biographies of:  
John Ritchie  
John Winslow

In the DCB, vol. XI, 1982, biographies of:  
Charles Tupper, Sr.  
E. A. Crawley  
John M. Cramp  
Avard Longley

In the DCB, vol. V, 1983, biography of:  
James DeLancey

In the DCB, vol. VIII, 1985, biographies of:  
Edward Manning  
Richard Burpee

In the DCB, vol. VII, 1988, biographies of:

Asa McGray  
Joseph Dimock

In the DCB, vol. XII, 1990, biographies of:

I. E. Bill  
John Pryor

In the DCB, vol. XIII, 1994, biographies of:

T. A. Higgins  
Mary Graves  
Mary Sanford  
Artemus Sawyer  
Daniel Welton

In the DCB, vol. XIV, 1998, biography of:

Edward M. Saunders

Accepted for publication, DCB, vol. XV, biography of:

Minard W. Graves

- 2004      The Conquest of Acadia, 1710: Imperial, Colonial, and Aboriginal Constructions (with John Reid, Maurice Basque, Elizabeth Mancke, Geoffrey Plank and William Wicken) (Toronto: University of Toronto Press) (R)
- 2001      Introduction to reprint of Evelyn Eaton, Quietly My Captain Waits (Halifax: Formac Publishing [first publication 1940])
- edited (with Margaret Conrad), Planter Links: Community and Culture in Colonial Nova Scotia (Fredericton, NB: Acadiensis Press)
- 2000      George Rawlyk's Henry Alline, in Daniel C. Goodwin (ed.), Revivals, Baptists, & George Rawlyk (Wolfville, NS: Gaspereau Press), 53-75.
- 1999-2002      Co-editor (with Margaret Conrad), Planter Notes (the newsletter of the Planter Studies Centre, Acadia University)

- 1997            þThe View from the Front Steps: Esther Clark Wright and the Making of a Maritime Historian,ý in Beverly Boutilier and Alison Prentice (eds), Creating Historical Memory: English-Canadian Women and the Work of History (Vancouver: UBC Press) 233-253 (R)
- 1995            "Growing Up in Granville Township, 1760-1800," in Margaret Conrad (ed.), Intimate Relations: Family and Community in Planter Nova Scotia, 1759-1800 (Fredericton, NB:Acadiensis Press, 1995), 78-97.
- "Esther Clark Goes to College," Atlantis, vol. 20 no. 1, 39-48.
- 1994            "Songs of Salvation," The Second Mile, August 1994, 3-8.
- "Acadia and Old Nova Scotia to 1784" in M. Brook Taylor (ed.), Canadian History: A Reader's Guide. vol. I Beginnings to Confederation (Toronto: University of Toronto Press), 76-111. (R)
- Articles in Dictionary of Baptists in America (ed. Bill J. Leonard), (Downers Grove, Illinois: InterVarsity Press), reprints of articles in Dictionary of Christianity in America (1990)
- 1993            "Two Decades in Review" in The Second Mile, October 1993
- 1991            "El 'Descubrimiento' Europeo de America" in Ayeres: Cuadernos de Historia Ano II - No. 4 (Madrid, Spain) [translated by Ian MacKinnon]
- "The Novelist as Historian: The Nova Scotia Identity in the Novels of Thomas H. Raddall," in Alan Young (ed.), Time and Place: The Life and Works of Thomas H. Raddall (Fredericton: Acadiensis Press)
- "Land, Kinship and Inheritance in Granville Township, 1760-1800" in Margaret Conrad (ed.), Making Adjustments: Change and Continuity in Planter Nova Scotia, 1759-1800 (Fredericton: Acadiensis Press, 1991), 165-179.

- 1990 5 articles, Dictionary of Christianity in America (Downers Grove, Illinois)
- Marie Maisonnat of Acadia (Grolier Press, Toronto)
- 1989 "Acadia and the Great War", in Paul Axelrod & John Reid (eds.), Youth, University and Canadian Society: Essays in the Social History of Higher Education (McGill-Queen's Press), 143-160. (R)
- "Imperios en Conflicto (1535-1783)" in Historia 16 (Madrid, Spain) reprinted in Asi nacio Canada (Madrid, 1990) [translated by Ian MacKinnon]
- 1988 " 'Breadth of Vision, Breadth of Mind': The Baptists and Acadia College" in G. A. Rawlyk (ed.) Canadian Baptists and Christian Higher Education (Montreal: McGill-Queen's Press), 3-29. (R)
- "Acadia University", "John M. Cramp" and "Edward Manning" in The Canadian Encyclopedia revised ed.
- 'Give Us an A': An Acadia Album (Wolfville)
- 1985 "Out of Chaos", Horizon Canada, vol 3, no 6, Sept.
- "Acadia University" and "John M. Cramp", in The Canadian Encyclopedia (Edmonton: Hurtig Publishers)
- 1984 "Joseph Howe, the Baptists and the College Question", in The Joseph Howe Symposium: Papers (Sackville, NB: Mt. Allison University)
- 1983 "Religious History: The State of the Craft in the Maritime Provinces," The Journal of the Canadian Church Historical Society, XXV, no. 2
- 1982 with James Beverley (eds.), The Journal of the Rev. Henry Alline (Hantsport, NS)
- 1981 "From Itinerant to Pastor: The Case of Edward Manning, (1767-1851)" in Canadian Society of Church History, Papers (Montreal)
- The Acadians (Grolier Press, Toronto)

- 1980 editor, 'Repent and Believe': The Baptist Experience in Atlantic Canada (Lancelot Press, Hantsport, NS)
- "The Message of the Old Cemetery" and "The Life and Times of Harris Harding" in Bicentennial Essays: The Wolfville United Baptist Church, 1778-1978 (Lancelot Press, Hantsport, NS)
- "Maritime Baptists and Higher Education in the Early Nineteenth Century" in 'Repent and Believe': The Baptist Experience in Atlantic Canada
- 1975 "Self-Help Restoration at Annapolis Royal" in Ontario Museum Association Newsletter, vol. 4 no. 1, Jan. 1975

Reviews in:

Canadian Historical Review  
The Island Magazine  
The Journal of American History  
Dalhousie Review  
Studies in Religion/Sciences Religieuses  
The North Carolina Historical Review  
Sunday Herald  
Canadian Journal of Higher Education

Accepted for publication:

In NewDictionary of National Biography [Great Britain] (Oxford University Press)  
 Biography of Paul Mascarene (R)

In Encyclopedia Britannica, the entry for Nova Scotia

### **HISTORY-RELATED POSITIONS HELD**

- 2004 Board of Consulting Editors, History of Intellectual Culture, journal published by University of Calgary
- 2001 Participant, Roundtable discussions, Canadians and their Heritage: a Dialogue with Canadians, Department of Canadian Heritage, Halifax, October 2001

2000-2002	Consultant, Nova Scotia Department of Justice (on 18 <sup>th</sup> century Nova Scotia)
2000-2002	Board Member, Historic Restoration Society
1996-1998	Founding President, Port Royal 400th Anniversary Society
1995-1998	Member, Raddall Symposium Committee
1995-1996	Member, 2005 Committee, Municipality of Annapolis County
1993-1995	Member, coordinating committee, 7th North American Fur Trade History Conference
1991-present	Member, Acadia Centre for Baptist and Anabaptist Studies
1991-1995	Chairman, Acadia Centre for Baptist and Anabaptist Studies
1986-1997	Chairman, Planter Studies Committee
1996-1997	Co-ordinator, Planter Studies Conference (September, 1997)
1992-1993	Co-ordinator, Planter Studies Conference (October, 1993)
1989-1990	Co-ordinator, Planter Studies Conference (October, 1990)
1992-1993	Advisory Committee, Planter Exhibit, Canadian Parks Service, Department of the Environment
	Federation of Nova Scotian Heritage
1994-1996	Past-president
1992-1994	President
1990-1992	Vice-President
1988-1996	Board Member
	[This is the largest heritage-related organization in Nova Scotia, with approximately 115 member organizations.]
	Annapolis Royal and Area Heritage Foundation
1988-1993	Chairman
1987-1988	Vice Chairman
1986-1993	Board Member
	Historical Committee, United Baptist Convention
1992-1997	Member

1971-1989	Member
1982-1988	Chairman
1981-1997	Heritage Advisory Committee of the Annapolis Royal Town Council
1977-present	Founding member, Editorial Committee, "Baptist Heritage in Atlantic Canada" Series
	[This series is the largest such undertaking in Canada. Its books are regularly reviewed in the historical and religious presses of Canada, the United States and Great Britain. To date, seventeen volumes have been produced.]
1987	Organization Committee, "Baptists in Canadian Society", Wolfville, NS
	Historic Restoration Society of Annapolis County
1967-1995, 2001-present	Member, Board of Directors
1977-present	Director of Museums
1971-1977	Treasurer
1967-1971	Chairman, Board of Directors
1967	Founding Member
1983-1984	Henry Alline Bicentennial Committee
1981	Advisor, Nova Scotia Departments of Municipal Affairs and Culture, Recreation and Fitness, on Implementation of Heritage Property Act - Consultant
1980-1981	Design Review Committee, Town of Annapolis Royal (Heritage Development)
1979	Organizational Committee, "Baptists in Canada: An International Symposium", Wolfville, NS
	Wolfville Historical Society
1977-1979	President
1971-1977	Vice-President
	Atlantic Association of Historians
1973-74, 76-79	Treasurer

Restoration Supervisor

Development Commission of Annapolis Royal  
for the Adams-Ritchie House, 1980-81  
for the Sinclair Inn Project, 1981-82

Historical Consultant

Development Commission  
for the Acadian Cottage Project, 1980-81  
for the Adams-Ritchie House, 1980-81  
for the Sinclair Inn Project, 1981-82

Jost Architects Limited  
for the Farmers' Market, Annapolis Royal, 1980-81  
for the Streetscape Project, Annapolis Royal, 1980-82

**POSITION PAPERS PREPARED**

- |      |                                                                                                                                                                                                                                                         |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2001 | For Provincial Heritage Advisory Board, paper on the Sherman-Belcher House, Canard (with Jost Architects Ltd.) (Contract)                                                                                                                               |
| 2001 | þThe Melanson Site: Post-Planter Uses,ý for Canadian Parks Service, (Contract)                                                                                                                                                                          |
| 2000 | þThe Peopling of Port Royal, 1605-1613ý for Canadian Parks Service, (Contract)                                                                                                                                                                          |
| 1992 | Historical and architectural reports on train stations at<br>Digby<br>Annapolis Royal<br>Bridgetown<br>Middleton<br>Wolfville<br>Hantsport<br>Amherst<br>For Canadian Parks Service, Department of the Environment, Ottawa (with Harry Jost) (Contract) |
| 1991 | Historical and architectural reports on train stations at<br>Stewiacke<br>Bedford<br>Halifax                                                                                                                                                            |



- For Canadian Parks Service, Department of the Environment, Ottawa (with Harry Jost) (Contract)
- 1986 "DeGannes-Cosby House", for Heritage Unit, Department of Culture, Recreation & Fitness, Halifax, historical and architectural assessment (Contract)
- 1985 "The North Hills Museum", for Heritage Unit, Department of Culture, Recreation & Fitness Halifax, historical and architectural assessment. (Contract)
- 1985 "The Adams-Ritchie House" for Heritage Unit, Department of Culture, Recreation & Fitness Halifax, historical and architectural assessment. (Contract)
- 1982 "The Sinclair Inn" for Parks Canada (Historic Sites and Monuments Board, Ottawa, historical and architectural assessment. (Contract)
- 1981 "Sometime the Talking Must Stop" - The Implementation of the Heritage Property Act in Nova Scotia", for Nova Scotia Department of Municipal Affairs and Culture, Recreation and Fitness, Halifax (Contract)
- 1981 "The Sinclair Inn: Beginnings to 1781" for Heritage Canada Foundation, Ottawa (Contract)
- 1980 "The Adams-Ritchie House: A Social Document" for the Annapolis Royal Development Commission (Contract)

Over the last number of years, I have served on a regular basis as an outside reviewer of applications for SSHRC funding. I also serve as assessor of manuscripts for University of Toronto Press, Carleton University Press, Michigan State University Press, McGill-Queen's Press, Columbia University Press, and the journal *Acadiensis*, and for applications for funding to The Institute of Social and Economic Research, Memorial University of Newfoundland.

I have also been interviewed for nine heritage-related television shows (4 for the CBC, 4 for CTV and 1 for Maine Public Broadcasting), for a film on the New England Planters (Canadian Parks Service), and a film on Henry Alline (for Vision Television).

### **CURRENT RESEARCH/WRITING**

Article on 1885 hiring controversy at Acadia College, for a book on the Canadian professoriate, edited by Paul Stortz.

Contracted to write 5 entries for The Oxford Companion to Canadian History (Oxford University Press).

### **COMMUNITY SERVICE**

2000-present	Chair, Board of Trustees, Lower Granville United Baptist Parsonage
1985-1995	Sunday School teacher, adult class, Granville Beach United Baptist Church
1981-1987	Deacon, Port Royal United Baptist Church
1983-1986	Cub leader, Annapolis Royal
1978-1980	Deacon, Wolfville United Baptist Church
1979-1980	Superintendent of Sunday School, Wolfville United Baptist Church
1976-1979	Scout Master, 1st Wolfville Troop
1971-1973	Secretary, Kings South Liberal Association

February 2006

# CURRICULUM VITAE

## NEIL, Kenneth Allan

**Canadian citizen**, born October 29, 1952, Halifax, Nova Scotia.

### Address

Home 259 Black Hole Road

RR 5 Canning, Nova Scotia

B0P 1H0

Phone (902) 691-2392

e-mail [ken.n@xcountry.tv](mailto:ken.n@xcountry.tv)

### Special Interests and Experience

General entomology, insect taxonomy, ecology, and biodiversity, as well as insect control, especially biological control and integrated pest management.

### Education

Graduated, J.L. Ilsley High School, Halifax, N.S. 1972.

Graduated, Dalhousie University, Halifax, N.S., 1975. B.Sc. (Biology).

Carleton University, Special Studies Year, 1975 (Dr. H.F. Howden, supervisor).

Graduated, Dalhousie University, Halifax, N.S., 1981. PhD (Entomology) ,( Dr. D.P. Pielou, supervisor). Thesis topic: "Taxonomy, Life Histories, and Host Plant Specificity of Some Nova Scotia Cutworms (Lepidoptera: Noctuidae) with Descriptions of the Immature Stages and Redescriptions of Some Adults".

Postdoctoral Research Fellow, Simon Fraser University, Burnaby, B.C., 1981-1982, (Dr. B.P. Beirne, supervisor).

### Professional Experience

**Research Scientist**, Acadia University, Wolfville, N.S. June - Sept. 2005. Collecting and rearing and establishment of a reference collection of Lepidoptera from Belleisle Marsh, Annapolis Co., N.S.

**Research Associate**, Nova Scotia Museum of Natural History, Halifax, N.S. 2004. A survey of the Cicindellidae (Carabidae: Coleoptera) of Nova Scotia.

**Research Scientist**, employed by East Coast Commodities, Kentville, N.S., Agri-Futures, and Agri-Focus Development Agencies, Truro, N.S. 1998-2001. Project Title: A Program to Develop an Integrated Pest Management System for the Cereal Leaf Beetle *Oulema melanopus* (L.)

(Coleoptera: Chrysomelidae). Objectives: to establish and release *Anaphes flavipes* (Foer.), an egg parasite of the Cereal Leaf Beetle in Nova Scotia, to enhance native populations of *Tetrastichus julis* (Wlk.), a larval parasite, in Nova Scotia, and to determine through statistical analysis the ability of both parasites to reduce Cereal Leaf Beetle populations.

**Professor** (part-time), Biology 200, Introductory Biology for Science Majors, and Biology 307, Genetics, St. Mary's University, Halifax, N.S. 1995-1997. Duties included lectures, organizing laboratory work, and supervision of undergraduate student demonstrators.

**Research Consultant**, employed by Dr. Soren Bondrop-Neilson, Acadia University, Wolfville, N.S. 1995-1996. To aid in the identification of beetle (Coleoptera) specimens collected in woodland environments throughout Nova Scotia and to establish a permanent reference collection of beetle specimens at Acadia University.

**Research Scientist**, employed by the Nova Scotia Department of Agriculture and Marketing under a Federal/Provincial AFDA grant at the Kentville Agriculture Research Station, Kentville, N.S. 1994-1996.

This project was funded to determine the distribution of adult Blueberry Maggot (*Rhagoletis mendax* Curran) in wild blueberry fields, and to develop a system of integrated pest management for this insect species.

**Research Scientist**, employed by the Nova Scotia Department of Agriculture and Marketing under a Federal/Provincial AFDA grant at the Kentville Agriculture Research Centre, Kentville, N.S. 1991-1992.

This project was funded to determine differences in morphology and phenology of the Green Pug Moth (*Chloroclystis rectangulata* L.) and Winter Moth (*Operophtera brumata* L.) in Nova Scotia.

**Research Scientist**, employed by the Environmental Protection Service (J.G. Julian and L. Rutherford, scientific authorities). 1985-1993. (Ten separate contracts).

To identify and quantify aquatic invertebrates collected in river systems in New Brunswick and Nova Scotia.

**Research Scientist**, employed by the Department of Fisheries and Oceans, Halifax, N.S. (Dr. N. Watson, scientific authority). 1990-1992.

To identify and quantify fresh water invertebrates collected in southwestern Nova Scotia.

**Research Scientist**, employed by the Nova Scotia Department of Agriculture and Marketing under a Federal/Provincial ALFI grant at the Kentville Agriculture Research Centre, Kentville, N.S. 1988-1991.

This project was funded to determine the effect of the English grain aphid (*Sitobion avenae* F.) on winter wheat yields in Nova Scotia and to develop a control strategy for

this species.

**Research Assistant** to Dr. D. Crowe, Agriculture Canada Research Centre, Kentville, N.S. 1987.  
Testing susceptibility of different crab-apple cultivars to Apple Maggot (*Rhagoletis pomonella* (Walsh) and determination of growth rates of the maggots on different cultivars.

**Vegetable Crop Specialist**, employed by IMMS (Insect and Mite Monitoring Service). 1987.  
Monitoring insect pests of vegetable crops (peppers, cole crops, corn), and recommending controls to producers.

**Research Scientist**, employed by the Potato and Vegetable Producers Association of Nova Scotia under a joint Federal/Provincial AFDA grant at the Kentville Agriculture Research Centre, Kentville, N.S. 1984-1987.

Project was undertaken to determine the effectiveness of using imported species of parasitic Hymenoptera (Wasps) in controlling corn earworm (*Heliothis zae* (Boddie)), fall armyworm (*Spodoptera frugiperda* (J.E. Smith)) and other Lepidoptera pests of corn in Nova Scotia.

**Lecturer, Laboratory Co-ordinator**, Biology 3324, Entomology, Biology 4324, Advanced Entomology, Biology 3323, Invertebrate Biology, Dalhousie University, 1977-1981.

Duties included lectures, organizing laboratory exercises, and supervision of honours students under Dr. D.P. Pielou.

**Technician** to Dr. H.F. Howden, Carleton University, Ottawa, Ont. 1975-76. Mounting and identification of Coleoptera (beetle) specimens.

**Research Assistant** to Dr. J. Pringle, Environmental Protection Service, Bedford Institute of Oceanography, Dartmouth, N.S. 1973.

Sorting and identification of aquatic invertebrate specimens collected in the St. John River, New Brunswick.

**Curatorial Assistant** to Mr. B. Wright, Curator of Entomology, Nova Scotia Museum, Halifax, N.S. 1970.

Mounting, sorting, and identification of insect specimens, mainly Lepidoptera.

## PUBLICATIONS

### Refereed Journals

18. Neil, K. and R. Acciavatti 2004. A Previously Undescribed Form of *Cicindella sexguttata* Fab. (Carabidae: Coleoptera) from Nova Scotia. *Cicindella* submitted for publication.

17. Neil, K. The Butterflies of Nova Scotia (in preparation).
16. Neil, K. and S.O. Gaul, K.B. McRae. 1997. Control of the English Grain Aphid (*Sitobion avenae* (F.)) (Homoptera: Aphididae) and Oat-Birdcherry Aphid (*Rhopalosiphum padi* (L.)) (Homoptera: Aphididae) on Winter Cereals in Nova Scotia. Canadian Entomologist 129: 1083-1095.
15. Neil, K. 1991. The larva of *Ommatostola lintneri* Grt. (Noctuidae: Amphipyridae). Journal of the Lepidopterists' Society 45(4): 204-208.
14. Neil, K. and H.B. Specht. 1990. Field Releases of *T. pretiosum* (Hymenoptera: Trichogrammatidae) for Suppression of Corn Earworm *Heliothis zea* (Lepidoptera: Noctuidae) Egg Populations on Sweet Corn in Nova Scotia. Canadian Entomologist 122 (111): 1259-1266.
13. Neil, K. 1988. Larvae of North American *Leuconycta* (Noctuidae). Journal of the Lepidopterists' Society 42(4): 285-290.
12. Neil, K. and H.B. Specht. 1987. Sixth Instar Larvae of *Noctua pronuba* (Lepidoptera: Noctuidae). Canadian entomologist 119(3): 209-214.
11. Neil, K. 1986. Lepidoptera reared from a Simple Wheat Germ Diet. Journal of the Lepidopterists' Society 37(4): 290-292.
10. Neil, K. 1984. *Noctua comes*, A Noctuid New to North America (Lepidoptera: Noctuidae: Noctuinae). Canadian Entomologist 116(4): 479-480.
9. Neil, K. 1984. The larva of *Homorthodes furfurata* (Lepidoptera: Noctuidae). Journal of the Lepidopterists' Society 37(4): 92-95.
8. Neil, K. 1984. The Larva of *Autographa flagellum* (Lepidoptera: Noctuidae). Journal of the Lepidopterists' Society 38(2): 92-95.
7. Neil, K. 1983. An Aberrant *Glaucopsyche lygdamus couperi* (Lepidoptera: Lycaenidae). Journal of the Lepidopterists' Society 37(3): 258.
6. Neil, K. 1983. A New Species of *Agrotis* (Lepidoptera: Noctuidae) from Sable Island, Nova Scotia. Journal of the Lepidopterists' Society 37(1): 14-17.
5. Wright, B., and K. Neil. 1983. *Noctua pronuba* (Noctuidae: Lepidoptera) in Nova Scotia. Canadian Entomologist 115(8): 14-17.

4. Neil, K. 1981. The Occurrence of *Noctua pronuba* (Lepidoptera: Noctuidae) in Nova Scotia, a New North American Record. *Journal of the Lepidopterists' society* 35(3): 248.
3. Neil, K. 1980. The occurrence of *Chloroclystis rectangulata* (Lepidoptera: Geometridae) in New Brunswick. *Journal of the Lepidopterists' Society* 34(1): 75.
2. Neil, K. 1979. A New Subspecies of *Orgyia leucostigma* (Noctuidae: Lymantriidae) from Sable Island, Nova Scotia. *Journal of the Lepidopterists' Society* 33(4): 245-247.
1. Neil, K. 1978. A Second Locality for *Eulythis mellinata* (Lepidoptera: Geometridae) in North America. *Journal of the Lepidopterists' Society* 32(3): 224-225.

#### **Non-Refereed Journals and Reports**

7. Neil, K. 1990. An Accidental Occurrence in Nova Scotia of *Oxydia vesula transponens* Wlk. in Nova Scotia (Geometridae: Ennominae).
6. Gaul, S.O. and K.A. Neil. 1989. Effects of Selected Pesticides used in Winter Wheat IPM on Seven Spotted Ladybird Beetle (*Coccinella septempunctata* (L.) Mortality. *Pesticide Research Report*. 158.
5. Neil, K. 1988. Evaluation of GX8731 for Control of Colorado Potato Beetle on Potato Plants. *Pesticide Research Report*.
4. Neil, K. 1988. Production of *Trichogramma* (Hymenoptera: Trichogrammatidae) for Control of Vegetable Insects. *Agriculture Canada Project Report*. 31 pp.
3. Neil, K. 1979. Additions to the Macrolepidoptera of Nova Scotia. *Proceedings of the Nova Scotia Institute of Science* 29: 197-200.
2. Neil, K. 1977. An Annotated List of the Macrolepidoptera of Sable Island. *Proceedings of the Nova Scotia Institute of Science* 28: 41-46.
1. Neil, K. and B. Wright. 1971. A List of the Sphinx Moths in the Nova Scotia Museum Collection. *Nova Scotia Museum Curatorial Report #5*. 30 pp.

## **REFERENCES**

Dr. J.D. Lafontaine, Asst. Director, Canadian National Collection, Agriculture and Agri-Food  
Canada, CEF, Ottawa, Ont. K1A 0C6  
phone: (613) 759-1791

Jeff Ogden, Research Assistant, Nova Scotia Department of Natural Resources, P.O. Box 130  
Shubenacadie, N.S. B0N 2H0  
phone: (902) 758-7015



## CURRICULUM VITAE

### Ruth Estella (Hersey) Newell

164 Schofield Road, RR2,  
Wolfville, Nova Scotia B4P 2R2

Tel: (902)542-2095(h)

(902)585-1335(w)

e-mail: [rnewell@ns.sympatico.ca](mailto:rnewell@ns.sympatico.ca)

[ruth.newell@acadiu.ca](mailto:ruth.newell@acadiu.ca)

## Personal

Canadian citizen (birthplace: Middleton, Annapolis County, Nova Scotia).

## Education

**Master of Science Degree** in Botany, 1978, University of Guelph, Guelph, Ontario

**Bachelor of Science Degree (with Honours)** in Biology, 1975, Acadia University, Wolfville, Nova Scotia

**Grades 10-12**, 1968-71, Middleton Regional High School, Middleton, Nova Scotia.

### *Additional Studies & Courses*

- St. John Ambulance CPR Course ÿ A Level, 2004 (recertification)
- St. John Ambulance CPR Course ÿ A Level, 2001
- Red Cross Standard First Aid Course ÿ C level, 2001
- Ornithology (BIOL 4163), 1980, Acadia University
- Greenhouse Flower Production (53-328), Culture of Plants (53-332), 1979, University of Guelph
- ðPlants of the Tropicsý, 1978, Fairchild Tropical Garden, Coral Gables, Florida (Harvard University)
- Intermediate German, 1975, Kassel, West Germany (University of Ottawa)
- French Immersion, 1972, College Ste. Anne, Church Point, Nova Scotia
- Conversational French, 1969, College Ste. Anne, Church Point, Nova Scotia

## Work Experience

- employment (1979 to present) as **Curator of the E. C. Smith Herbarium** (Irving Biodiversity Collection, K.C. Irving Environmental Science Centre) and **Botany Technician** (Biology Department) of Acadia University, Wolfville, Nova Scotia. As curator, job duties include the care and maintenance of the E.C. Smith Herbarium (the largest collection of dried, pressed plant specimens in Atlantic Canada). This includes plant collecting, identification and processing for herbarium insertion, supervising the entry of specimen data into the herbarium database file, representing the Herbarium (and Biology Department) at scientific conferences, carrying out studies on the occurrence of rare plant species in Nova Scotia, handling public inquiries,

maintaining a separate Teaching Herbarium and working with outside agencies on plant-related projects. As botany technician, job duties include supervision of the departmental darkroom, assisting with student laboratories, maintaining a living collection of plants for Biology labs. , etc.

- **Contract Botanist** for Scotia Aggregates Ltd., 2005; botanical survey for a proposed sand pit expansion.
- **Contract Botanist** for the Canadian Wildlife Service, 2004; A Botanical Survey of the Boot Island National Wildlife Area.
- **Contract Botanist** for Black River Hydro Ltd., 2004; botanical surveys of 3 sites in Nova Scotia for wind farm development.
- **Contract Botanist** for the Canadian Wildlife Service, 2003; A Botanical Survey of the Port Joli and Port Hebert Migratory Bird Sanctuaries.
- **Contract Botanist** for the Canadian Wildlife Service, 2002; A Botanical Survey of the Sand Pond National Wildlife Area.
- **Contract Botanist** for Parks Canada, 2001; Vegetation Inventory of the Melanson Settlement National Historic Site
- **Project Botanist** for Acadia Centre for Estuarine Research, Acadia University; 2001; Shoreline and Littoral Zone Vegetation Surveys of Major Lakes and Head Ponds in the St. Croix and Halfway river Systems of Nova Scotia.
- **Contract Botanist** for Dillon Consulting Ltd., Halifax, N.S.; 2001; Botanical Survey of Flintstone Rock, Yarmouth Co., N.S.
- **Contract Botanist** for Dillon Consulting Ltd., Halifax, N.S.; 2000; Sempra Gas Distribution Project.
- **Botanical Consultant** for Dillon Consulting Ltd., Halifax, N.S.; 1999; Vegetation Surveys NSPI Tusket System.
- **Project Botanist** for Envirosphere Consultants Ltd., Windsor, N.S.; 1999; Fisheries and Oceans Canada: Sampling of Shoreline Vegetation Exposed to Oil and Remediation ÿ Upper St. Lawrence R., Quebec.
- **Contract Botanist** for Parks Canada, Halifax, N.S.; 1999; Floral Mitigation Study for a Proposed St. Catherines River Headlands Loop Trail, Seaside Adjunct, Kejimikujik National Park.
- **Contract Botanist** (with Reg. B. Newell) for Parks Canada, Halifax, N.S.; 1999; Vegetation Surveys of Mountain, Cobrielle and Grafton Lakes, Kejimikujik National Park.
- **Contract Botanist** with Acadia Center for Wildlife and Conservation *and* N. S. Dept. of Natural Resources to co-author Atlantic Coastal Plain Flora Recovery Plan; 1998.
- **Botanical Consultant** for Washburn & Gillis & Associates, Ltd., Halifax, N.S.; 1998; Rare flora survey of wetlands in immediate vicinity of gas plant, Goldboro, N.S.
- **Botanical Consultant** for Porter Dillon Ltd., Halifax, N.S.; 1998; Natural resource inventories of DND antenna sites: Great Village, Masstown, Mill Cove, and Newport Corner.
- **Botanical Consultant** for Bernard L. Mailman Projects, Ltd.; 1998; Botanical survey of greater impact area of proposed Rhodes Corner Quarry Expansion and Rhodes and Beck Lakes, Lunenburg Co., N.S.
- **Sabbatical Replacement** for Acadia University, Wolfville, Nova Scotia; Fall Term, 1997; course taught: Biol 3293 (Flora of Nova Scotia).
- **Botanical Consultant**, in conjunction with Marbicon Inc., Somerset, N.S., for South West Shore Development Authority, Yarmouth, N.S.; August/Sept. 1997; botanical surveys of potential cranberry bogs in southwestern Nova Scotia.
- **Botanical Consultant** for Annapolis Valley Peat Moss Co., Ltd., Berwick, N.S.; July 1997: environmental assessment of Aylesford and Auburn Bogs, Kings Co., N.S.
- **Project Botanist** for Porter Dillon Ltd., Halifax, N.S.; summer, 1997; environmental assessment of proposed gas pipeline route through Nova Scotia and New Brunswick.
- **Botanist** for Lane Environment Ltd., Halifax, N.S.; 1994; vegetation and rare flora survey of proposed transmission line between Brushy Hill, Halifax County and St. Croix, Hants County by Nova Scotia Power Inc.

- **Botanist** for P. Lane and Associates Ltd., Halifax, N.S.; 1993; environmental assessments for highway construction projects on Highways 101 and 104.
- **Botanist** for P. Lane and Associates Ltd., Halifax, N.S.; Nov., 1992; environmental assessment for Highway 101 construction project, Halifax Co., N.S.
- **Field Consultant** with Marbicon Inc., Somerset, Kings County, N.S.; August, 1991; ecological survey of Pt. Pleasant Park, Halifax, Halifax County, N.S.
- **Botanist** for P. Lane and Associates Ltd., Halifax, Halifax County, N.S.; Feb. 1991 (environmental assessment of Waverly/Burnside area, Halifax County, N.S.).
- **Field Consultant** for Acadia Estaurine Center, Acadia University, Wolfville, N.S.; June, 1987 (Parks Canada contract involving a marine resource and limnological inventory of the Seaside Adjunct to Kejimkujik National Park); duties included the collection and identification of marine and freshwater aquatic plants (flowering plants, algae, cryptogams); also the mapping of aquatic plant distributions.

## Scholarships

NRC Postgraduate Scholarship	1975-76-77	University of Guelph
Graduate Research Scholarship	1975	University of Guelph
Henry Burton DeWolfe Scholarship	1975	Acadia University
Bertha A. Curry	1974-75	Acadia University
Ingram B. Oakes Scholarship	1971-75	Acadia University

## Professional Memberships & Societies

Canadian Botanical Association  
Federation of Nova Scotia Naturalists  
Blomidon Naturalist Society

*Past member of:*

Canadian Wildflower Society  
Nova Scotia Wild Flora Society

## Publications & Reports

- Newell, Ruth E. 2005. Provincial Status Report (Nova Scotia) on Northern White Cedar (*Thuja occidentalis*).
- Newell, Ruth E. 2003. **COSEWIC** Update Status Report for New Jersey Rush (*Juncus caesariensis*).
- Newell, Ruth E. and Marian Zinck. 1999. **COSEWIC** Status Report for Tubercled Spike-rush (*Eleocharis tuberculosa*).
- Newell, Ruth E. 1998. **COSEWIC** Update Status Report for Eastern Mountain Avens (*Geum peckii*).
- Newell, Ruth E. 1998. **COSEWIC** Update Status Report for Golden Crest (*Lophiola aurea*).
- Newell, Ruth E. 1998. **COSEWIC** Update Status Report for Pink Coreopsis (*Coreopsis rosea*).

- Newell, Ruth E. 1998. **COSEWIC** Update Status Report for Plymouth Gentian (Sabatia kennedyana).
- Newell, Ruth E. & Reg. B. Newell. 1998. Report on the Atlantic Coastal Plain plants found on Grafton Lake, Kejimikujik National Park, subsequent to the drawdown.
- Newell, Ruth E. and Gini Proulx. 1998. Documentation of the occurrence of Lophiola aurea (Golden Crest) on Digby Neck, Digby County, Nova Scotia.
- Newell, Ruth E. 1998. **COSEWIC** Update Status Report for Water Pennywort (Hydrocotyle umbellata).
- Newell, Ruth E. 1997. **COSEWIC** Update Status Report for Sweet Pepperbush (Clethra alnifolia).
- Newell, Ruth E. and Reg. B. Newell. 1994. Juncus caesariensis Coville (New Jersey Rush) in Nova Scotia, Canada. *Bartonia* 58:121-124.
- Newell, Ruth E. and Reg. B. Newell. 1992. **COSEWIC** Status Report on the New Jersey Rush, Juncus caesariensis Cov.
- Odell, A. E., S. P. Vander Kloet and R. E. Newell. 1989. Stem anatomy of Vaccinium section Cyanococcus and related taxa. *Can. J. Bot.* 67: 2328-2334.
- Benjamin, Lawrence K. and Ruth E. Newell. 1985. Scurvygrass, Cochlearia tridactylites, a new plant record for Nova Scotia. *Canadian Field-Naturalist* 99(3): 373-375.
- Hersey, R. E. and D. M. Britton. 1981. A cytological study of three species and a hybrid taxon of Lycopodium (Section Complanata) in Ontario. *Can. J. Genet. Cytol.* 23: 497-504.
- Peterson, R. L., Ruth E. Hersey and J. D. Brisson. 1978. Embedding softened herbarium material in Spurr's resin for histological studies. *Stain Technology* 53(1): 1-9.
- Hersey, R. and S. P. Vander Kloet. 1976. IOPB Chromosome Number Reports LII. *Taxon* 25(2/3): 342-343.
- Hersey, R. E. and S. P. Vander Kloet. 1976. Taxonomy and distribution of Gaultheria in the Caribbean. *Can. J. Bot.* 54(21):2465-2472.

## References

- Dr. T. B. Herman**, Professor, Biology Department, Acadia University, Wolfville, Nova Scotia, B4P 2R6  
Telephone: (902)585-1469.
- Dr. S. P. Vander Kloet**, University Botanist, Acadia University, Wolfville Nova Scotia B4P 2R6 Telephone:  
(902)585-1334.
- Dr. E. Reekie**, Professor, Biology Department, Acadia University, Wolfville, Nova Scotia, B4P 2R6  
Telephone: (902)585-1162.

# RESUME

## GINI PROULX

19 Old Trunk 1  
RR 1, Deep Brook  
Nova Scotia BOS 1JO

### Work Experience

- ❖ 2004 - Clean Annapolis River Project: Rare and endangered plant survey of DND Rifle Range, North Mountain, Granville, Annapolis Co., N.S. Report submitted.
- ❖ 1997 - Nova Scotia Museum Research Grant: Documentation of the Occurrence of *Lophiola aurea* (Golden Crest) on Digby Neck, Digby County, Nova Scotia (with Ruth Newell). Report submitted.
- ❖ 1990 to present - Nature interpretation, lectures, field trips for Elderhostel, Back Roads, Easy Riders, Tauck Tours
- ❖ 1975-1994 - Librarian, CFB Cornwallis

### Volunteerism

- ❖ Collected and submitted plant specimens to NS Museum and Acadian U. Herbaria
- ❖ Assisted with nature interpretation, trail development southwest N.S. (Delapys Cove; Mickey Hill; Balancing Rock; Medicine Trail, Bear River Nations; Ross Farm; Pine Grove Park; and others)
- ❖ Monitored Golden Crest populations Digby Neck, reported to Nova Scotia Nature Trust
- ❖ Discovered and reported over a dozen rare or endangered plants in Digby and Annapolis Counties (acknowledged in Roland/Zinck (1998) *Rolandys Flora of Nova Scotia*)
- ❖ 1988 to present - Christmas and Migratory Bird Counts
- ❖ 1986-1990 - Maritime Breeding Bird Atlas Observer

### Awards

- ❖ 2003 þ The Nova Scotia Bay of Fundy Environmental Awareness Award (in recognition of ý monitoring, research and conservation of rare plant species ý Brier Island, Long Island and Digby Neck ý )

## **Education**

- ❖ 1955 - Graduated High School, Annapolis Royal Academy
- ❖ 1998 þ Biology 3293 üFlora of Nova Scotiaû þ Acadia U.
- ❖ 2005 þ Bryophyte Workshop þ Acadia U.

## **Interests**

- ❖ Self-taught botanist: Life-long interest in plants.
- ❖ Since 1985, have made an in-depth study of existing literature on native (pre-European) and introduced flora of Nova Scotia, with an emphasis on rarities.
- ❖ Spent hundreds of hours in the field exploring N.S. natural habitats

## **Memberships**

- ❖ Annapolis Field Naturalists Society (founding member)
- ❖ Blomidon Field Naturalists
- ❖ N.S. Wild Flora Society
- ❖ North American Native Plant Society
- ❖ Nature Canada
- ❖ World Wildlife Fund, and others

## JAMES B. ROSS

49 Braemount Dr.  
Halifax, NS  
Canada  
B3M 3P3

902-445-4886 (h)  
rossj@ns.sympatico.ca

### EDUCATION

- Dalhousie University - Masters of Environmental Studies 1991
- St. Mary's University - BA Marine Geography, first class honours 1986
- College of Geographic Science & Cartography, first in class 1974

### ADDITIONAL TRAINING

- Marine Cartography, Canadian Hydrographic Service, Ottawa 1979
- Aids to Navigation, Canadian Coast Guard, Dartmouth 1986
- Controlling Sediment on Construction Sites, TUNS, Halifax 1993
- Controlling Erosion from Construction Sites & University of Wisconsin 1996
- Education component, Management Trainee Program - Canadian Centre for Management Development, Ottawa 1997
- MacMillan Coastal Biodiversity Workshop, Bamfield Marine Station, BC 1999
- Fundamentals of Environmental Audits and Management of Environmental Audits, DalTech, Halifax 2000

### EXPERIENCE

Nova Scotia Community College, Halifax 2004 - Present

#### **Instructor**

Teach *Biology and Aquatic Environments* (see page 7 for description of course) to students in the Water Resource Technology Program at the Institute of Technology Campus of the Nova Scotia Community College.

Consulting (part-time) 2004 - Present

I have undertaken consultant work on environmental assessment, HACCP assessment, and other environmental issues.

Habitat Management Division, DFO, Halifax 2002 & 2003 (Retirement)

#### **Section Head** (Acting)

- Provide direction to Habitat Management Division, Maritimes Region on matters relating to biological assessment, the *Fisheries Act*, and Canadian Environmental Assessment Act (CEAA) reviews as they applied to fresh and marine environments

- Responsible for the optimal use of assessment biologists, engineers and technicians of the section
- Liaison with other levels of government, Ottawa, and industry on matters relating to the Division at large concerning aquaculture and CEAA.
- Provide advice on policy and issues that relate to the Section's activities to senior management at the Division Manager level and above.
- CEAA Public Registry Officer for DFO, Maritimes Region.
- Environmental Studies for Sustainable Aquaculture Project (2000-2003): Project Team Member and Steering Committee member.

Habitat Management, Operations, Ottawa

2001 p 2002

**Senior Habitat Biologist** (Assignment)

- Lead the development of a nationally consistent approach for the application of S35 of the *Fisheries Act* to aquaculture developments
- Liaison with Office of Sustainable Aquaculture and Environment Canada on S36 regulations and CEAA information guidelines for aquaculture
- Liaison with Environmental Science in development of science-based tools for assessment and monitoring of aquaculture developments in the marine environment
- Provide advice on policy and issues that relate to aquaculture to senior management at the Director General level and above.
- Chair of the National Habitat Management Working Group on Aquaculture.

Habitat Management Division, DFO, Halifax

1997 p 2001

**Unit Head** (Acting)

- See responsibilities for Section Head, above.

Habitat Management Division, DFO, Halifax

1996 p 1997

**Habitat Assessment Biologist**

- Provide habitat representation on issues relating to aquaculture, marine plants, and bogs and wetlands. This was often on an issue-related basis.
- Participate on the NS Introductions and Transfers Committee to insure that DFO habitat concerns are addressed in the introduction and transfer of marine organisms within and into the province.
- Ensure DFO habitat input into policy issues through participation on committees such as the steering committee to develop a DFO-CEAA Implementation Guide, DFO's Species at Risk Working Group, and Biodiversity Strategy.
- Assess the effects of projects on fish and fish habitat in fresh and marine environments and recommend mitigation measures where necessary. This is usually on an issue-related basis such as mineral exploration in Jim Campbells Barrens.
- Conduct environmental assessments under CEAA in support of DFO legislation.

Aquaculture and Oceans Science Branch, DFO, Ottawa

1995 p 1996

**Advisor** (Assignment)

- Developed policies on Introductions and Transfer of Aquatic Organisms, Gene Banks, and Transgenic Marine Organisms. These were designed to protect and conserve the marine environment while providing opportunity for economic development.
- Participated in national working groups concerned with introductions of alien marine and other organisms by presenting information, reviewing drafts, and representing DFO's interests.
- Prepared background documentation for a number of projects such as: Australian GATT challenge and DFO Science progress report to Cabinet on the Aquaculture Strategy.



- Made various presentations at scientific workshops, to university biology classes, and to trade delegations from other countries.
- Prepared Ministerial correspondence, briefs for Question Period, and update briefs on environmental issues. Quick response was assured by maintaining current awareness on these issues.

Aquaculture Co-ordination Branch, DFO, Halifax 1994 p 1995  
**Science Advisor** (Assignment)

- Represented DFO's interests on committees and working groups on aquaculture within the MOU agreements in NS and NB.
- Co-ordinated DFO Science responses to regional aquaculture issues and requests by ensuring the proper information was available either through liaison with the scientific community or by conducting literature research.
- Acted as Scientific Authority for aquaculture environmental studies undertaken in the Annapolis Basin by co-ordinating project design, developing terms of reference, monitoring progress, reviewing reports, etc.
- Prepared briefing notes and updates as required.

Habitat Management Branch, DFO, Halifax 1992 p 1993  
**Assignment**

- Co-ordinator of the Environmental Monitoring Committee of the Gulf of Maine Council on the Marine Environment by organizing meetings, drafting and reviewing reports, and liaison between U.S. and Canadian participants.
- Participated on the Shubenacadie Lakes Planning/Pollution Control Task Force Task Force to represent DFO, by assisting in drafting terms of reference, reviewing reports, and participating in public discussions.
- Conducted fish habitat restoration studies in fresh water environments by undertaking fish surveys, designing restoration techniques, and demonstrating these methods to community groups.
- Completed the initial development of the Branch's GIS and converted the Referral System to a computerized database.

Canadian Hydrographic Service, DFO, Dartmouth 1978 p 1992  
**Marine Cartographer**

- Produced navigational charts to the high standards of the CHS by researching, compiling, and digitizing data.
- Completed numerous long-term acting assignments as Supervisor of the Cartography and Navigational Information Units. This involved prioritizing work, determining work time-lines, assigning work to staff, and conducting initial quality control.
- Acted as Scientific Authority responsible for the contract compilation and digitizing of navigational charts by preparing technical specifications, awarding contracts, and monitoring progress.

Bedford Institute of Oceanography, Dartmouth 1978  
 Illustrator

Public Works Canada, Halifax 1977 p 1978  
 Survey drafting

University of New Brunswick, Fredericton 1974 p 1977  
 Drafting and photography, Geology Dept.

National Harbours Board, Halifax  
Construction and hydrographic surveying, and construction inspection

1969 p 1972

### **SCHOLARSHIPS and AWARDS**

- Dalhousie University Graduate Scholarship 1990 and 1991.
- Canadian Environmental Assessment Research Council Award (CEARC) 1990/91.
- Clean NS Foundation Environmental Award 1989 for study on persistent marine litter, Butler et al.
- Norman-Wade prize for cartography 1974.

## PUBLICATIONS

- Ross, J.B. 1988. DesBarres and the Atlantic Neptune. *Lighthouse*. 37:40.
- Ross, J.B. 1989. Book review. *Lighthouse*. 39:34.
- Ross, J.B. Parker, R., and Strickland, M. 1991. A survey of shoreline litter in Halifax Harbour, 1989. *Marine Pollution Bulletin*. 22(5): pp245-248.
- Ross, J.B. 1991. White-tailed deer and responsible snowmobile trail planning. *NS Trails*. 3: pp8-9.
- Ross, J.B. 1991. Impacts of all-terrain vehicles on bogs of the Cape Breton Highlands, Nova Scotia, Canada. in *Science and Management of Protected Areas*. Elsevier, Amsterdam. pp 533-534.
- Ross, J.B. 1991. Off-road vehicles in Nova Scotia: cause for concern. *NS Conservation*. 15(2): pp8-11.
- Ross, J.B. 1991. On snowmobiles and bogs. *NS Conservation*. 15(3):p12.
- Janowicz, M. and Ross, J. 2001. Monitoring for benthic impacts in the southwest New Brunswick salmon aquaculture industry. *ICES Journal of Marine Science*, 58:2, pp453-459.
- Ross, J.B. and Knapp, W. 2001. Knowledge Gaps in Aquaculture-Environment Interactions with respect to cumulative effects and the determination of HADDÜ In Hargrave, B.T. and Phillips, G.A. (Eds.). 2001. *Environmental Studies for Sustainable Aquaculture (ESSA): 2001 Workshop Report*. Can. Tech. Rep. Fish. Aquat. Sci. 2352:viii + 73pp.
- Ross, J.B. 2001. DFO's aspirations for fish habitat in Halifax Harbour: Realities and opportunities. In *Preserving the Environment of Halifax Harbour, proceedings of Workshop 2*. HRM/DFO. pp3-6.
- Ross, J.B., Knapp, W. 2002. An approach to determining habitat types in the context of siting marine aquaculture facilities. In Ross, J.B. and Delaney, V.A. (Eds.). 2002. *Proceedings of the National Habitat Management Working Group on Aquaculture Workshop 2002*. Halifax, NS., Can. Tech. Rep. Fish Aquat. Sci. 2404E. pp 55-62.
- Barry, K., Knapp, W. and Ross, J. 2002. Developing the use of underwater videos as a tool in the assessment of benthic impacts of aquaculture. In Ross, J.B. and Delaney, V.A. (Eds.). 2002. *Proceedings of the National Habitat Management Working Group on Aquaculture Workshop 2002*. Halifax, NS., Can. Tech. Rep. Fish Aquat. Sci. 2404E. pp 39-45.
- Ross, J.B. 2002. Identifying Habitat Management's major aquaculture-related science requirements, p 4. In Hargrave, B.T. (Ed.). 2001. *Environmental studies for sustainable aquaculture (ESSA): 2002 workshop report*. Can. Tech. Rep. Fish. Aquat. Sci. 2411: v + 117 p.
- Ross, J.B., Delaney, V.A. (Eds.). 2002. *Proceedings of the National Habitat Management Working Group on Aquaculture Workshop 2002*. Halifax, NS., Can. Tech. Rep. Fish Aquat. Sci. 2404E.
- Ross, J.B. 2002. Fish Habitat in Halifax Harbour: A resource worth protecting. in *Bedford Institute of Oceanography 2002 in Review*. Pp.134-137.

## SELECTED UNPUBLISHED PAPERS

Ross, J.B. 1991. Environmental impact of all-terrain vehicles in the bogs and barrens of the Cape Breton Highlands. CEARC contract KA171-0-5729, Environment Canada. May, 1991.

Ross, J.B. 1994. A summary of the 1993 aquaculture baseline studies in the Annapolis Basin, NS Aquaculture Co-ordination Branch. DFO. Dec. 2, 1994.

Ross, J.B. 1995. Global status of Canadian aquaculture production to 1993. Aquaculture Co-ordination Branch. August 25, 1995.

Regional electrofishing policy for backpack units. Fisheries and Oceans, Maritimes Region, Science. August, 1997.

Protocol for the analysis of Total Suspended Solids samples to be used for legal proceedings Habitat Management Division, Maritimes Region. DFO. February, 1998.

Ross, J. and Keizer, P. 1998 Aquaculture and protection of fish habitat: A DFO strategy for salmon aquaculture in the Maritimes Region. DFO discussion paper.

Ross, J. 2000 Can the New Brunswick experience advance the use of national performance-based standards to monitor impacts of aquaculture? DFO discussion paper prepared for the National Habitat Management Working Group on Aquaculture.

# Susan Sherk, B.A.

SENIOR HUMAN ENVIRONMENT CONSULTANT

## PROFESSIONAL SUMMARY

Ms. Sherk is a socio-economist with over thirty years of experience. She has been involved in a wide range of projects throughout Canada as well as in more than ten other countries working for private organizations and government agencies. Projects have generally entailed the design and implementation of public consultation, baseline studies and socio-economic impact assessments related to various human activities such as oil and gas, mining/construction, forest harvesting, hydroelectric developments, environmental clean ups and telecommunications. Efforts of Ms. Sherk have focused on problem identification and issues management of sensitive issues related to human disturbance. She is trained in project management, strategic planning, community economic development and needs assessment. Prior to joining AMEC more than eight years ago, she was the Public Affairs Manager (East Coast) for Mobil Oil Canada, Manager of Corporate Affairs for Michelin (Tires) Canada and former Assistant Deputy Minister for the province of Newfoundland and Labrador (Economic Development and Tourism).

## PROFESSIONAL QUALIFICATIONS

Accreditation by the Canadian Public Relations Society (1984)

## EDUCATION

Memorial University of Newfoundland, M.A. Program (Anthropology) 1972

Wheaton College, B.A. (Sociology) 1966

## LANGUAGES

English: French medium reading proficiency

## SUMMARY OF CORE SKILLS

### Public Participation

Ms. Sherk has conducted a variety of large and small public participation programs including a two year program for ExxonMobil's Sakhalin 1 project on Sakhalin Island, Russia; short term programs as part of environmental audits of former American military bases and sites in Western Newfoundland and Labrador, a waterway user study in Notre Dame Bay, NL. and an oil and gas familiarization program for community/aboriginal representatives from British Columbia to Newfoundland. She is now managing the province of Newfoundland's Innovation Strategy and a public participation program for De Beers's proposed Gaucho Kue diamond project northeast of Yellowknife. She was responsible for all of Mobil Oil's and Michelin Tires public participation and consultation on Canada's east coast as well as for some projects in Alberta and the North West Territories. As a Commissioner with the Economic Recovery Commission of Newfoundland and Labrador, Ms. Sherk undertook economic development and needs assessment of all of Labrador's communities as well as identifying, planning and developing specific provincial growth sectors including tourism, secondary food processing, health, crafts, culture, fur farming, home-based and micro businesses.

## Susan Sherk

### Socio-Cultural Analysis

Ms. Sherk has undertaken socio-cultural analysis for both the private and public sector in Newfoundland and Labrador, Nova Scotia, Ontario, Alberta, Norway, Scotland, Russia, Nepal, Pakistan and some regions of the United States in social, gender, aboriginal and human resource issues. Work has included TEK studies for the De Beers Victor Diamond Mining Project near James Bay, national park opportunities for the Labrador Metis Nation, cultural sensitivity training and due diligence in Labrador for both the Labrador Inuit and Innu; socio-economic institutional strengthening of the oil and gas sector in Pakistan; socio-economic and gender analysis of two proposed pilot water and sanitation projects in Nepal; attitude studies of the Hibernia project; developing and identifying local business opportunities, models and processes for bringing together two mining towns in Western Labrador; a social analysis of industry/town relationships in Beaufort, Texas, designing and implementing employee assistance programs for Michelin Tires (Canada) Ltd. and identifying education and training needs as they relate to Newfoundland's opportunities for growth.

### Socio-economic Impact Assessments

Ms. Susan Sherk has managed and conducted socio-economic baseline and impact assessments throughout Canada and as well as in the Russian Far East and Pakistan for projects involving natural resource developments (e.g. oil and gas, mining, forestry). She has also appeared as an expert witness in public hearings regarding these studies. Recent projects include: De Beers Victor Diamond project near James Bay as well as northeast of Yellowknife; ExxonMobil's Sakhalin I Oil project in Sakhalin Island, Russia; Shell-Premier's EIA in the Sindh province of Pakistan; Sydney Tar Ponds in Cape Breton, Nova Scotia; and several projects in Canada's north (e.g. Mackenzie Valley Pipeline, Nanisivik Mine, Doris North in Nunavut). She has also conducted four economic impact studies on military flight training (DND and Allied countries of Germany, Italy, Netherlands and Great Britain) in Labrador and Northeastern Quebec. She has recently managed and conducted economic and social impact studies of the cultural industries of Newfoundland and Labrador as well as the craft industry.

### Regulatory Management

Ms. Sherk initiated the first government/business review of all regulations for the province of Newfoundland and sat on the four person regulatory task force. As a Commissioner with the Economic Recovery Commission, she developed and helped identify and implement provincial policies, strategies and businesses for growth sectors including health, tourism, secondary food processing, micro and home based business, culture, crafts and fur farming. As Assistant Deputy Minister of Tourism and Craft Development, she helped develop and implement appropriate provincial policies. Ms. Sherk undertook strategic planning for a number of communities and community groups including economic zones in Labrador. She also helped establish and set policies for the former Crown Corporation, Enterprise Newfoundland and Labrador, and was responsible for liaison of all programs and opportunities between Labrador and the Economic Recovery Commission. Most recently she managed a review of oil and technology developments that occurred between 1990-2000 for the BC government.

## EMPLOYMENT HISTORY

- 1996-Present AMEC Earth & Environmental Limited (formerly AGRA Earth & Environmental), St. John's, NL
- 1994-1996 Assistant Deputy Minister, Tourism and Craft Development, Province of Newfoundland and Labrador, St. John's, NL
- 1990-1994 Commissioner, Economic Recovery Commission, Province of Newfoundland and Labrador, St. John's, NL

## Susan Sherk

- 1989            Manager, Corporate Communications, Michelin Tires (Canada) Ltd., Granton, NS
- 1987-1988      Advisor, Community Affairs, Mobil Corporation, New York City
- 1980-1987      Senior Staff Coordinator, Public Affairs, Mobil Oil Canada, St. John's, NL
- 1972-1980      Head, Publications and Information, Memorial University of Newfoundland Extension Service, St. John's, NL
- 1968-1970      Assistant Director of Admissions, Bradford College, Norton, Massachusetts
- 1967-1968      Sociologist, International Grenfell Association, North West River, Labrador
- 1966-1967      Relocation Coordinator, Boston Redevelopment Authority, Boston, Massachusetts

## MEMBER

Investors Group (Board of Directors, Executive Committee, Governance Committee and Chair of Public Policy Committee)

Public Service Pension Investment (Board of Directors and member of Human Resources Committee)

## PRESENTATIONS / PUBLICATIONS

International Coastal Zone Management Conference, 2002, Use of TEK in Coastal Zone Management

The Fisheries of Newfoundland and Labrador (Grade 10 Fisheries Textbook)

Women in Oil and Gas (published article, several conference presentations)

Former publisher of Decks Awash magazine, resource magazine about Newfoundland and Labrador

## DETAILED CORE SKILLS OR DETAILS BY PROJECT

### COMMUNITY CONSULTATION PROGRAMMING

**University of Northern British Columbia:** Organized a two day oil and gas familiarization program on the Avalon Peninsula for 21 community/aboriginal members from Queen Charlotte and Hecate Strait, British Columbia.

**ExxonMobil:** Managed and conducted extensive two year public consultation program for the Sakhalin 1 project on Sakhalin Island, Russia and the mainland of the Russian Far East. Work included organizing and conducting open houses to meet regulatory requirements, issues management, focus groups, workshops, surveys and EIA preparation.

## Susan Sherk

**Department of Works, Services and Transportation**, Government of Newfoundland and Labrador: conducted extensive public consultation regarding the feasibility of constructing a causeway and bridge structure across Long island Tickle in Notre Dame Bay, NF.

**Newfoundland Hydro**: Undertook community consultation for a controversial diesel site clean up which was purported to be causing cancer among the community's residents as a result of PCBs.

**Deer Lake Power Company Ltd**: Organized open houses regarding the Silver Mountain Power project on the Upper Humber River.

**Chevron Canada Resources/Texaco Canada**: Managed preparation of all materials and logistics for community consultation program for Georges Bank, Nova Scotia in preparation for public hearings on whether a Moratorium on offshore exploration should be lifted.

**Alliance Pipeline Project**: Undertook community consultation in the Edmonton, Alberta area for a 3,000 km, 914 mm high pressure, natural gas pipeline transmission system.

**Mobil Oil Canada, Ltd.**: Developed province wide community consultation program for the fishing, education, community/social and business sectors for the Hibernia Oil project.

**Mobil Oil Canada, Ltd.**: Developed province wide community consultation program for the fishing, education, community/social and business sectors for the Sable Island Gas project including open houses, store front operation.

**Mobil Oil Canada, Ltd.**: Developed regional community consultation program for the farming, education, community/social and business sectors for the Cold Lake heavy oil project.

**Mobil Oil Canada, Ltd.**: Developed community consultation program for an iceberg testing project in Pond Inlet, Baffin island, NWT.

**Province of Newfoundland and Labrador**: Developed province-wide community consultation program of provincial Tourism Strategy.

**Province of Newfoundland and Labrador**: Developed province-wide community consultation program on regulatory reform including survey, focus groups, panel discussions and meetings.

**Government of Newfoundland and Labrador**: Managed community consultation programs for environmental audits of former American military bases in Western Newfoundland and Labrador.

**Voisey's Bay Smelter and Refinery**: Undertook community consultation and focus groups for the smelter and refinery in Argentia, NF in conjunction with Community Resources Inc.

**Deer Lake Power Company Ltd.**: Managed community consultation for the Silver Mountain Power Project on the Upper Humber River

**Michelin Tires (Canada) Ltd.**: Managed, developed and implemented community consultation and supplier development initiatives throughout Nova Scotia.



## Susan Sherk

**Mobil Oil Canada, Ltd.:** Managed community consultation throughout Newfoundland and Labrador for the Hibernia oil project, including action plan and participation in environmental assessment hearings.

**Mobil Oil Canada, Ltd.:** Managed community consultation throughout Nova Scotia for Ventures gas project including implementing action plan.

**Mobil Oil Canada, Ltd.:** Managed community consultation for the Cold Lake heavy oil project in Alberta including socio-economic action plan.

**Mobil Oil Canada, Ltd.:** Undertook evaluation of community consultation and socio-economic impacts in Norway, Scotland and the Shetland Islands.

**Mobil Corporation:** Managed community consultation and detailed action plan in Beaufort, Texas during strike.

**Mobil Corporation:** Undertook community consultation in Shawnee, Oklahoma regarding community programming.

**Mobil Corporation:** Initiated and managed community relations projects for company at its 137 United States locations including United Way and Red Cross blood donor programs.

## SOCIO-ECONOMIC IMPACT ANALYSIS

Some representative projects Ms. Sherk has been involved in include the following, with the most recent listed first:

**Miramar Hope Bay Ltd.** Managed a socio-economic impact assessment of the proposed Doris North mine in the Kitikmeot Region of Nunavut in the High Arctic.

**Sydney Tar Ponds Agency:** Prepared a desk top Socio-economic Description of the Sydney Tar Ponds, one of the largest environmental clean-ups in Canada.

**De Beers:** conducting a socio-economic baseline and impact analysis of the proposed Gaucho Kue diamond mining project 300 km northeast of Yellowknife, NWT.

**De Beers:** conducted the qualitative analysis of an economic impact study of the proposed Victor Diamond Mining Project near Attawapiskat on the western side of James Bay.

**Imperial Oil Resources Ventures Limited et al:** Undertook assigned sections of socio-economic baseline studies of the Mackenzie Valley Pipeline Project (e.g. gender, cumulative impacts).

**Nunavut Water Board:** Conducted a socio-economic review of the Final Reclamation and Closure Plan for the Nanisivik Mine operated by Canzinc Ltd.

**Institute for Environmental Monitoring and Research:** Managed and researched four economic impact studies (1999, 2001, 2003, 2004) of Military Flight Training in Labrador and Northeastern Quebec in conjunction with Gardner Pinfold Consulting Economists. Low-level military flight training is conducted by four allies: Germany, Britain, the Netherlands and Italy in Labrador. Due to on-going concern by the Innu of Labrador, the Institute wanted to determine

## Susan Sherk

what was the economic benefit of this activity to the Happy Valley-Goose Bay region, Labrador and Northeastern Quebec and the province of Newfoundland.

**ExxonMobil:** Conducted fisheries socio-economic impact analysis for the Sakhalin 1 project on Sakhalin Island and the mainland of the Russian Far East.

**Premier Oil Pakistan:** Managed, researched and successfully defended in the first ever environmental assessment public hearings in Pakistan, a socio-economic impact assessment for a seismic project to be located in the Kirthar National Park, a desert region in the Sindh Province of Pakistan.

**Association of Cultural Industries:** Managed a major study on the economic and social impacts of both the arts and heritage sector of Newfoundland in conjunction with Management by Design, Gardner Pinfold Consulting Economists and Canning and Pitt. Conducted research on the four major arts sub-sectors: literary, media, performing and visual.

**Point LePreau Nuclear Station:** Managed a socio-economic impact analysis of two scenarios concerning the future of the Point LePreau Nuclear facility: decommissioning and building a smaller gas-fired generator or refurbishing, in conjunction with Gardner Pinfold Consulting Economists.

**Ontario/Hydro/Bruce Community Development Corporation:** Managed socio-economic analysis of the downsizing of Bruce Nuclear Power Station and a cost/benefit analysis of a proposed co-generation plant at the site.

**Corner Brook Pulp and Paper:** Prepared socio-economic impact assessment of 5-year cutting plan.

**Georges Bank Review Panel:** Managed socio-economic risk assessment of oil and gas developments on Georges Bank which had been closed to all petroleum exploration/production activities for 10 years.

**CIDA:** undertook social development needs and opportunities analysis of 21 oil and gas upstream and downstream companies operating throughout Pakistan.

**Exxon:** Conducted partial socio-economic impact assessment of Sakhalin I Energy Project on Russia's Sakhalin Island.

**Government of British Columbia:** Managed a review of offshore development technologies for the Science and Technology Branch of government who were reviewing the moratorium on all its offshore petroleum activities.

**Deer Lake Power Company Ltd:** Managed socio-economic impact assessment of the Silver Mountain Power project on Newfoundland's Upper Humber River.

**Voisey's Bay Smelter and Refinery:** Undertook land use and community health studies for the proposed project in conjunction with Community Resource Services Inc..

## Susan Sherk

**Alliance Pipeline Project:** Undertook land use studies for the Alliance pipeline project in Alberta.

**Mobil Oil Canada, Ltd.:** Managed issues management program of province in order to identify major issues as well as educate the general public about offshore oil and gas.

**Mobil Oil Canada, Ltd.:** Managed attitudinal studies within Province of NF on offshore oil.

**Mobil Corporation:** Undertook social analysis of Beaufort, Texas to determine underlying community factors and attitudes during prolonged and bitter strike.

**Government of Newfoundland and Labrador:** Developed model and processes for bringing together two mining towns in western Labrador to work on common goals and concerns.

**Government of Canada:** Chairperson of Governor General's Canadian Study Conference of North West Territories resulting in having to research through fieldwork major N.W.T. issues

**Memorial University of Newfoundland:** Through provincial publication, Decks Awash, undertook social as well as economic analysis of most communities in Province of Newfoundland and Labrador.

## GENDER ISSUES ANALYSIS

**CIDA Inc.:** Conducted a social/gender analysis feasibility study for a water optimization project in Kathmandu Valley, Nepal.

**CIDA:** Participated in a Women and Canada oil and gas analysis. Co-authored report on Women in the Canadian Oil and Gas Sector.

**Mobil Oil Canada, Ltd.:** Identified, developed and implemented program for recruiting women to the oil industry including comprehensive school program.

**Government of Newfoundland and Labrador:** Analyzed needs of women entrepreneurs and helped managed research program for identifying factors preventing women from greater access to financial aid to start a business.

**Women's Enterprise Bureau:** Member of Board of Directors for non-profit organization dedicated to helping and developing women entrepreneurs.

## ABORIGINAL ISSUES ANALYSIS

**De Beers:** Was a member of a three person AMEC team conducting Traditional Ecological Knowledge with the Attawapiskat First Nation as well as with the Constance Lake and Fort Albany First Nations on the western side of James Bay as part of the EIA process for the Victor Diamond Mine project .

**Labrador Metis Nation:** managed and conducted an opportunities identification study related to the proposed Mealy Mountains National Park in southeastern Labrador.

## Susan Sherk

**ExxonMobil:** Conducted needs analysis of indigenous population of Sakhalin island and mainland of Russian Far East as their needs relate to oil and gas activities on the island and Russian Far East mainland.

**Government of Newfoundland and Labrador:** Undertook economic needs analysis of Davis Inlet, Labrador as part of overall Labrador needs analysis. Worked with community of Sheshashiu on community health needs.

**Labrador Hydro Project:** Managed and participated in cultural sensitivity workshops for consultants and employees.

**Labrador Inuit Association:** Preparation of due diligence study for the Labrador Inuit land Claims Agreement in Principle.

**Towns of Hopedale and Makkovik, Labrador:** managed community and school environmental education project in these two communities.

## HUMAN RESOURCE ANALYSIS

**Department of Human Resources and Development:** Managed a province wide program review of HRDC and the provincial department of Human Resources and Employment's Support Measures Program under the Canada/Newfoundland Labour Market Agreement in conjunction with Gardner Pinfold Consulting Economists.

**Michelin Tires (Canada) Ltd.:** Helped develop employee appraisal program and easily accessible computerized employee assistance program; developed training videos around employee issues.

**Government of Newfoundland and Labrador:** Identified training needs and issues around new opportunities for growth within the Province with regional colleges.

**Government of Newfoundland and Labrador:** Developed and implemented 'Building the Entrepreneurial Base' program from primary to post secondary school level including: enterprise education & enterprise fairs (primary); cooperative education (secondary); business skills in secondary training; small business development at university level (post secondary).

**Government of Newfoundland and Labrador:** Managed program of community education in designated regions of the Province.

**Government of Newfoundland and Labrador:** Major reviewer of provincial education white paper and sat on implementation sub-committee of Royal Commission on Education including school indicators committee.

**AGRA Earth & Environmental:** Undertook review of environmental training program conducted for CIDA Inc. in Panama.

## PUBLIC INFORMATION PROGRAMMING

Some representative projects Ms. Sherk has been involved in include the following:

**Susan Sherk**

**Mobil Oil Canada, Ltd.:** Developed and implemented offshore oil education project in Newfoundland and Labrador and Nova Scotia including award winning poster series, school and college visitation program, store front, open houses, videotex presentations.

**Province of Newfoundland and Labrador:** Designed, developed and implemented:

**Ambassador Newfoundland and Labrador program** to create positive national awareness about the province and its capabilities.

**Newfoundland Manufacturer's Association:** Designed, developed and implemented province-wide Manufactured Right Here Program to create awareness of Newfoundland and Labrador made products which would encourage individuals to buy these products thereby continuing and creating employment in the province.

#### COMMUNITY DEVELOPMENT/NEEDS ASSESSMENT

**Government of Newfoundland and Labrador:** Needs assessment of all Labrador communities including development and implementation of community planning model and identification of business needs and opportunities.

**Government of Newfoundland and Labrador:** Development of models and processes for bringing two mining towns in Western Labrador together through establishment of Labrador West Economic Development Working Group.

**Government of Newfoundland and Labrador:** Helped develop and implement, as well as being a member of the Board of Directors, Enterprise Newfoundland and Labrador, a provincial crown corporation responsible for regional planning and financial services.

**Government of Newfoundland and Labrador:** Designed program for identification and introduction of small-scale technology to rural Newfoundland as well as comprehensive business ideas and projects for rural Newfoundland and Labrador.

**Government of Newfoundland and Labrador:** Initiated and managed economic analysis of the arts and developed a provincial Telefilm fund.

**Government of Newfoundland and Labrador:** Initiated and helped manage supplier development forums in western Labrador.

**Government of Newfoundland and Labrador:** Participated in team evaluations of proposals for Comprehensive Labrador Subsidiary Agreement economic development sub-committee.

**Government of Newfoundland and Labrador:** Developed program for adapting and transferring rural economies to the 21st. Century by building on existing skills and interests in sectors in which the province has a competitive advantage.

**Memorial University of Newfoundland:** Wrote, edited and published textbook on the Fisheries for Grade 10 provincial school system.

**Memorial University of Newfoundland:** Through provincial publication, Decks Awash undertook needs analysis of every provincial resource and economic sector as well as a majority of Newfoundland and Labrador's over 700 communities.

**Susan Sherk**

## COMMUNICATIONS AND WORKSHOP FACILITATION

**NewTel, Petro-Canada, Canadian Association of Petroleum Producers and Government of Newfoundland and Labrador:** organized and chaired "Lessons from Frontier Regions" an international conference on managing the effects of oil and gas activity in frontier regions.

**Government of Newfoundland and Labrador:** Initiated and organized provincial adventure tourism conference and regional workshops.

**Government of Newfoundland and Labrador:** Conceived and organized workshop on cultural tourism.

**Government of Newfoundland and Labrador:** Conceived, organized and chaired working groups on health, secondary food processing, crafts, culture, home-based and micro businesses, fur farming and adventure tourism.

**Government of Newfoundland and Labrador:** Initiated and organized major cultural workshop with interest groups, federal and provincial officials; initiated and chaired working group to develop federal/provincial cultural cooperation agreement.

**Hibernia Development and Management Company:** Organized "Responsible Work" conference on behalf of Canada Offshore Oil and Gas Operators.

**Memorial University of Newfoundland:** Conference organizing and reporting for large variety of community economic development conferences spanning 8 year period including offshore oil and gas, crafts, agriculture, fisheries, community opportunities.

**Mobil Oil Canada:** Organized and chaired international conference on "Speculative Immigration"

## REGULATORY PROCESS MANAGEMENT

**Mobil Oil Canada, Ltd.:** Prepared all documentation including initial Environmental Assessment, Code of Health and Safety and Emergency Response Measures for Mobil Oil's West Coast Newfoundland geological drilling program and obtained all necessary provincial regulatory approvals.

**Government of Newfoundland and Labrador:** Initiated and chaired business/government working group on regulatory reform; sat on four person task force to assess and make recommendations for removal of all provincial regulations which did not meet health, safety, environment or public order standards.

**Sable Island Energy Project:** participated in preparation of regulated Emergency Response Plan.

**Petro-Canada, Terra Nova Project:** participated in preparation regulated Emergency Response Plan.

## POLICY DEVELOPMENT AND IMPLEMENTATION



## Susan Sherk

**Government of Newfoundland and Labrador:** Developed policies in tourism on adventure tourism, cultural tourism, and helped develop policies on trail development, boat touring, hunting, decommissioned lighthouse use, golf courses and ski hills.

### STRATEGIC PLANNING

**Craft Council of Newfoundland and Labrador:** Managed and researched 5-year study on the craft industry of Newfoundland and Labrador in association with Hollet and Sons.

**Ontario Hydro:** Managed and prepared cost/benefit analysis of co-generation plant for the former Bruce Nuclear Power Plant including baseline study of region, impact on region and possible business opportunities.

**Hyron Regional Economic Development Board:** Prepared five-year strategic plan including baseline, plan and cost benefit analysis for Labrador West.

**Government of Newfoundland and Labrador:**  
Developed and managed province wide strategies on:

**Attitude/image** including initiating and chairing working group on changing attitude/image of province; identifying and promoting positive success stories about people, products and businesses; designing and implementing province-wide Manufactured Right Here and Ambassador Newfoundland and Labrador program to build positive awareness of Newfoundland and its capabilities, and developing and implementing province-wide entrepreneurial awareness campaign designed to build and strengthen the private sector.

**Adventure tourism** including chairing federal/provincial/association/training working group which developed provincial strategy; helping to initiate guide training programs in community colleges; developing interpretative materials for in-demand high yield activities; increasing non-resident hunting quotas and yield using cost benefit analysis and organizing workshops and conferences.

**Crafts** including initiating and chairing working group for five-year strategy and helping to implement major strategy components.

**Culture** including approach to best economic return, acceptance as an industry and components for five year funding agreement.

**Fur farming** including initiating and chairing working group on five-year strategy and writing major components of strategy.

**Education** and training as it relates to new opportunities for growth including developing province wide strategy called 'Building the Entrepreneurial Base' developing entrepreneurial education planning model and strategy; developing province-wide community education concept and projects; developing curriculum development for seminars for small rural businesses; coordinating with community college presidents on joint initiatives; undertaking initiatives related to development of distance/cooperative and small school education.

**Health** including initiating provincial working group of industry, hospitals, government and practitioners.

## **Susan Sherk**

**Micro and home based business** including initiating and chairing working group; initiating and managing major research project on home based industries including surveys, focus groups and interviews; managing research project on interconnected industries; participating in national Study on Home-Based industries; developing ideas and opportunities for Business Opportunity Index Database and initiating and researching two publications, Business Ideas for Newfoundland and Labrador and Your Own Business From Your Own Home.

**Secondary Food processing** including industry/government/education working group and publication of Taste for Success, a handbook for Secondary Food Processors in Newfoundland and Labrador; Pathways, a Regulations handbook for Secondary Good Processors in Newfoundland and Labrador and Step-by-Step, an overview of licensing procedures for secondary food processors in Newfoundland and Labrador.

**Tourism** strategy based on consultation, comparative advantages and market demand.



**EDUCATION**

M. Eng. University of British Columbia, Civil (Hydrotechnical) Engineering, 2002

B. Sc.(Eng.) University of Guelph, Environmental Engineering, 1996

***Other Courses:***

Erosion and Sediment Control for Highway Construction and Building Sites, CWRS, Dalhousie University, NS, July 2005

Hazardous Waste Operations and Emergency Response (40-hr HAZWOPER), OSHA Standard 29 CFR 1910.120, June 2005

WHMIS Training, June 2005

Standard First Aid, Wilderness and Remote First Aid, and CPR Level C, May 2005

Stream ecology and Hydrology Field Course, Kananaskis Field Station, Kananaskis, Alberta, 1997

**EMPLOYMENT**

2005– Water Resources Engineer

Present Conestoga-Rovers & Associates Ltd./MGI Ltd., Dartmouth, NS

2003–2004 Program Analyst, Water Environment Protection Program, City of Ottawa, Ottawa, ON

1998–2003 Project Engineer, Northwest Hydraulic Consultants Ltd., North Vancouver, BC

**PROFILE OF PROFESSIONAL ACTIVITIES**

- Participated in the development of a Source Water Protection Plan (SWPP) for the Lepper Brook Watershed, which supplies the drinking water for the Town of Truro, Nova Scotia. The SWPP included a comprehensive inventory of all land uses and activities within the Lepper Brook Watershed, including a detailed residential property survey, recreation survey, forest management study and plant study. Existing and potential sources of contaminants to both surface water and groundwater were identified and assessed as to their level of risk to the water supply. Currently, a draft management plan is being developed, outlining management options and strategies to be implemented to reduce the negative impacts to water quality outlined in the inventory
- Prepared a floodplain hydraulic analysis for the proposed Loveland Road subdivision in the Town of Wheatfield, NY. The study was commissioned in response to the planned subdivision development, to assess the impacts of the development (and particularly the placement of fill in the floodplain) on the floodplain and floodway of Bull Creek. The analysis was submitted in support of a Conditional Letter of Map Revision (CLOMR) application to the Town of Wheatfield and the Federal Emergency Management Agency (FEMA) for review and approval, as required by FEMA. The hydraulic analysis was completed by incorporating detailed cut/fill information into an existing HEC-2 model of Bull Creek and re-running the model
- Completed detailed hydraulic assessments of sections of stream channel slated for restoration following Removal Action (RA) activities under the Resource Conservation and Recovery Act (RCRA) Corrective Action at the GM Powertrain – Bedford Plant (Site) in Bedford, Lawrence County, Indiana. The assessments included a detailed thalweg profile survey, visual assessment of identified individual creek morphological features (i.e., pools/riffles/runs), assembly of a

photo-log of each identified feature, and general notes and observations made of each feature and reach. The information will be used to guide restoration activities along the channel, following remedial activities of the PCB-contaminated stream

- Developed and coordinated project logistics for a receiving water sampling program examining river pollutant levels downstream of the City of Ottawa's wastewater effluent discharge into the Ottawa River. The study was part of the city's environmental effects monitoring program developed in response to Environment Canada's P2 Planning Process requiring the *Preparation and Implementation of Pollution Prevention Plans in Respect of Ammonia Dissolved in Water, Inorganic Chloramines, and Chlorinated Wastewater Effluents*. Involved in sample collection and on-board sample analysis, data review and analysis, and GIS modeling and analysis
- Participated in subwatershed assessment studies in rural subwatersheds within the City of Ottawa. The assessments involved desktop and field-based geomorphological assessments of stream systems, and detailed hydraulic geometry surveys of reference reaches for on-going monitoring
- Implemented and managed a continuous streamflow monitoring program at four creek study sites within the City of Ottawa. The program involved the installation of submerged pressure transducers at each study site for continuous water level measurement, regular flow metering of each creek to establish stage-discharge curves for each site, and data management and provision to internal and external clients
- Supervised the construction and implementation of several creek restoration projects in remote locations along Vancouver Island, and the mid-coast of BC. Projects included the creation of pool/riffle structures, boulder clusters, large woody debris structures and rearing ponds. Provided supervision and guidance during construction of a \$700,000, 3 km long sockeye salmon spawning channel on the mid-coast of BC, including channel/pond excavation, intake placement, channel complexing with wood/boulder habitat structures and bank protection measures
- Designed, calibrated, tested and reported on results of several large-scale physical hydraulic models of dams, spillways, fish passage facilities and municipal pump stations. Projects included a 50 m by 20 m spillway and tailrace channel model of the San Roque Dam (Philippines), and 1:4 scale model of a juvenile fish bypass system for the Rocky Reach Dam (Columbia River, WA)
- General hydrotechnical engineering activities, including numerical modeling (using River2D) and analysis of various bridge pier alignments for feasibility studies of a 1.5 km bridge crossing of the Fraser River, BC; completion of several hydrologic and hydraulic (HEC-Ras) assessments of remote forest road bridge crossings; participated in studies, design and field implementation examining bridge pier scour, bank scour protection measures, flood and debris hazard assessment and mitigation measures; and, conducted numerous bathymetric surveys of sub-marine pipeline crossings and produced digital terrain models (DTMs) of river bed surfaces for pipeline cover.

DENIS H. THOMSON  
Marine Ecologist  
Vice-President and Principal, LGL Limited

---

## EDUCATION

- 1975 M.Sc. Marine Science, McGill University.  
1967 B.A. Biology, Loyola College, Montreal

## ENVIRONMENTAL ASSESSMENT AND RELATED EXPERIENCE

### *EAs for the Military*

- 1998/02 Managing and participating in an environmental assessment under NEPA for the U.S. Navy's tactical marine training range complex at San Clemente Island, California. Contributed to the environmental setting sections and to the impact assessment. Addressed acoustic and shock wave impacts on marine mammals, sea turtles and fish and fisheries.
- 1996/02 Participated in the preparation of an Environmental Impact Statement under NEPA for the U.S. Navy's Air Warfare Weapons Center marine test range off Point Mugu California. Produced the background section on fish and sea turtles and assessed impacts on them; contributed to the background section on marine mammals and the impact assessment on marine mammals. Major issues were effects of underwater noise and shock waves on marine mammals, fish and fisheries.
- 2001/02 Participating the Environmental Impact Statements for the East and West Coast shallow water anti-submarine training ranges. Preparing impact definitions and supporting the Naval Undersea Warfare Centre with their numerical modelling project and impact assessment for the East Coast range. Project Manager for LGL's portion of the West Coast range EIS.
- 2000/02 Project manager for an EA of the Canadian Navy's East Coast Ranges and training operations. Responsible for coordinating and mapping environmental description of fish, fisheries, birds, marine mammals and other marine life, and human use, assessing impacts on marine life and preparing a user-friendly manual that can be used to mitigate impacts.
- 1999 Project manager for a NEPA Environmental Assessment of mine clearance demolitions on fish and marine mammals for a U.S. Marines test site at San Clemente Island, California.
- 1998 Assessed impacts of underwater noise and shock waves generated by Canadian Maritime Forces Pacific training activities on fish and marine mammals. Effects of ship noise, gunfire, sonar, small explosives, and aircraft were included.
- 1997/98 Participated in an environmental assessment and formulation of a range management plan for Canada Department of National Defence Meaford Training Area. Produced the project description of this infantry, artillery and armour training range.
- 1996 Assessed impacts of a U.S. Navy acoustical underwater test on fish in the NE Pacific.
- 1995 Co-ordinator for Canada Department of National Defence's IEE for the High Arctic Data Communications System upgrade. Responsible for co-ordinating all inputs to the project and integrating the impact assessment.
- As part of an NEPA EA for ARPA and the U.S. Navy, assessed effects of underwater explosives on fish in the Strait of Korea and derived safe ranges for fish.
- 1993 Participated in a study of the effects of underwater explosives on marine mammals and fish in the New York Bight for ARPA and the U.S. Navy. Assessed effects on and derived safe ranges for fish, fisheries and marine mammals.

*EAs for Oil and Gas Exploration and Development*

- 2001 Assessed impacts of seismic exploration on fish and marine mammals for Exxon's Odoptu field off Sakhalin Island, Russia  
Assessed impacts of seismic exploration on fish, marine mammals and resource harvesting for Anderson Exploration's program in the Mackenzie Delta.
- 2000 Prepared site-specific EAs for two exploration drilling wells near Sable Island and one on southern St. Pierre Bank for Mobil Canada Properties Limited.  
Project manager for a workshop on the effects of seismic exploration on East Coast fisheries held in Halifax, NS in September, 2000.  
Contributed to the Comprehensive Study and EIS for the development of the White Rose oil field on the Grand Banks of Newfoundland.
- 1999 Reviewed an impact assessment and assessed impacts on fish of seismic exploration using buried explosives in a California estuary.  
Project manager for preparation of an environmental assessment and an environmental protection plan for ocean bottom cable seismic exploration on and near Sable Island, Nova Scotia.
- 1998/99 Senior author of an Environmental Assessment, under the CNSOPB and CEAA, of the impacts of exploration drilling on the Scotian Shelf for Mobil Canada and partners. Assessed impacts of drilling muds and other discharges, effects of noise and oil spills on the marine environment.  
Reviewed the literature and reported on effects of seismic exploration on fish and fisheries of Georges Bank.
- 1998 Participated in the preparation of a Class Environmental Assessment, under the CNSOPB and CEAA, of the impacts of seismic exploration on the Scotian Shelf on fish and marine mammals for Mobil Canada and partners. Assessed impacts on fish and the East Coast fishery.
- 1997/98 Prepared an assessment of the impacts of delineation drilling off Sakhalin Island, Russia on sea-associated birds and marine mammals
- 1995/97 Participated in an EIA under the Canadian Environmental Assessment Act for the development, operation and decommissioning of the Terra Nova oilfield development on the Grand Banks of Newfoundland. Produced the impact assessment portions of the EIA that dealt with effects of noise, shipping activities and routine and accidental discharges on fish, marine mammals, and the marine environment. Provided technical assistance and testified as an expert witness for the proponent during the Canada-Newfoundland Offshore Petroleum Board (C-NOPB) hearings on the development.
- 1996 Produced an preliminary environmental assessment of the effects offshore oil development off Sakhalin Island, Russia on marine mammals and birds.
- 1995 Prepared the marine ecology Appendix for the arctic shoreline oil spill cleanup assessment team manual.
- 1993 Prepared a scoping report on potential effects of all aspects of offshore oil and gas exploration and production operations on the marine environment of the Sea of Okhotsk in Russia.
- 1990 Participated in the design of a program to monitor effects of construction of the Hibernia GBS construction site in Newfoundland.
- 1981 Contributed to studies that were background documents for Petro-Canada's planned EIS for Baffin Bay and Lancaster Sound. These included a theoretical model of energy flow through the pelagic environment of Lancaster Sound, a review of the literature on the effects of oil on arctic marine animals, and a review of the biological environment of Lancaster Sound.  
Contributed to Dome Petroleum's EIS of their proposed tanker route through the Northwest passage and Baffin Bay.

- 1979-80 Wrote parts of an environmental description and a review of potential impacts of hydrocarbon development in the Beaufort Sea. This document was the basis for the environmental description for Dome Petroleum's Beaufort EIS.
- 1977 Participated in the preparation of an environmental impact statement for the Polar Gas Project. Responsible for evaluating the impacts of pipeline marine crossings, docks, staging facilities, and discharges of oil and other substances on the marine environment and writing descriptions of the marine environment of Hudson Bay and the Arctic Islands.
- 1982-85 Participated in the Beaufort Environmental Monitoring Project that was designed to produce monitoring program for hydrocarbon development activities in the Beaufort Sea.

*EAs Related to Effects of Shipping*

- 1996 LGL's project manager for a Canadian Coast Guard study that compared spills, routine discharges and regulations governing discharges from ships with shore-side sources in the Canadian and U.S. Great Lakes with the objective of determining whether or not Canadian Shipping Regulations needed to be modified.
- LGL's project manager for an EIA under the Canadian Environmental Assessment Act for the development and operation of a tanker terminal at Rankin Inlet, N.W.T. Oil spills, effects of shipping and underwater noise were major issues.
- Produced the eastern arctic portion of the Arctic Environmental Sailing Directions that will be used by mariners to mitigate effects of shipping and associated activities in the Arctic. This included mapping and describing seasonal distribution of and concentration areas for marine mammals, seabirds and resource harvesting activities.
- 1993 Evaluated the effects of cargo residues from merchant ships on the environment of Great Lakes' harbours and offshore waters.
- 1992 Project manager for an environmental assessment of a marine transportation system to transport ore from Coronation Gulf, N.W.T. The assessment followed IEE format. Assessed effects of underwater noise, ice-breaking, routine discharges and accidental spills on the marine environment.
- For Canadian Coast Guard, participated in the design of the Arctic Environmental Sailing Directions that will be used by mariners to mitigate effects of normal shipping operations in the arctic.
- For Canadian Coast Guard and Government Consulting Group, assessed the impacts of changes to the Arctic Pollution Prevention Regulations on the arctic marine environment.
- 1991 Participated in an environmental assessment of Canadian Coast Guard's northern operations in Hudson Bay and the High Arctic. Assessed effects of underwater noise, icebreaking, routine discharges and accidental spills on the marine environment.
- Project manager for a Canadian Coast Guard project designed to assess the effects of operational discharges of oil from ships on marine life.
- 1989 Participated in a study designed to assess environmental effects of refuelling procedures used by Canadian Coast Guard ships and to design environmentally safe refuelling procedures.
- Participated in the Preparation of an Initial Environmental Evaluation (IEE) for the Canadian Coast Guard's Polar 8 Icebreaker. Assessed effects of underwater noise, icebreaking, routine discharges and accidental spills on the marine environment.
- 1982 Participated in workshops that were designed to (1) evaluate the environmental assessment process and (2) evaluate monitoring programs.

**STUDIES OF FISH, FISHERIES AND FRESHWATER ECOLOGY**

- 1999 For Mobilys EA of Exploration Drilling on the Scotian Shelf, analysed and mapped on a GIS, 5 years of raw fishery data collected by department of Fisheries and Oceans. Data representing over 1,000,000 individual catches were mapped and tabulated using programs written for the project.

- 1997 Produced the background section on California marine fish and fisheries in the vicinity of San Clemente Island California for a U.S. Navy EIS. Performed the data processing, tabulation and mapping on a GIS of five years of raw catch data.
- 1998 Performed the data processing, tabulation and mapping on a GIS of five years of fisheries catch data for the Scotian Shelf and southern Newfoundland for an EA of the effects of oil exploration.
- 1997 Produced the background section on California marine fish and fisheries of the Southern California Bight for a U.S. Navy EIS. Performed the data processing, tabulation and mapping on a GIS of five years of raw catch data.
- 1992 Participated in the production a database containing all benthic data collected in Lake Ontario; designed and set up the database and wrote data entry programs. Conducted analyses of the database to assess its contents.
- 1991 Assessed and reported on options for modelling plankton and benthos in the Bay of Quinte.
- 1990 Designed a study to assess effects of thermal discharge from a nuclear generating station on the receiving waters in Lake Ontario. Responsible for the analysis, synthesis and integration of fisheries and physical data collected over a period of ten years. Supervised the statistical analyses and interpreted the results. Participated in the production of an environmental effects report for the station.
- Participated in a study designed to develop a macrophyte and piscivore habitat model for the Bay of Quinte, Ontario using a geographic information system. The objective of the study was to link adjacent land use to aquatic habitat quality.
- Participated in the design of a database to hold data produced by the Long Term Monitoring of Atmospheric pollutants program.
- Performed the data analysis and reported on two index fishing surveys of Lake Erie, Ontario.
- 1987 Project manager for a study designed to assess the effects of erosion control measures on the environment of an Ontario creek.
- 1985-87 Responsible for the data analysis and reporting on acid rain and fisheries data from 200 lakes in Newfoundland and Labrador. Acted in an advisory capacity for LGL's study of effects of acid rain on fresh water benthos in Newfoundland.
- 1982 Performed data analysis and acted in an advisory capacity for a study of high arctic benthic marine fish.
- 1982 Planned and performed the data analysis for a study of inshore movements of Atlantic cod off Labrador. Produced a statistical model of the relationships between movements of cod and hydrological and biological conditions.

#### **MARINE ECOLOGY STUDIES**

- 1993/94 Participated in projects to (1) classify the marine regions of Canada for the purposes of establishing a monitoring network and (2) to evaluate existing monitoring programs and design a network to monitor the health of Canada's ocean using existing programs.
- 1989 Project manager for a study investigating the relationships between the distribution and abundance of zooplankton and the physical oceanography of the Canadian Beaufort Sea.
- Performed data analysis for a hydroacoustic study of zooplankton in the Beaufort Sea.
- 1985-86 On behalf of LGL, planned and directed field work for a multi-disciplinary ecosystem process study on the North Aleutian Shelf for the U.S. National Oceanic and Atmospheric Administration. Supervised ship board field sampling and all laboratory analyses for invertebrates, and analyzed and reported on the benthos. Produced a static model of energy flow that incorporated primary production, transfer through the lower levels of the food chain, and consumption by fish, birds and marine mammals. Was chief scientist on cruises the NOAA research vessel *Miller Freeman*.
- Participated in LGL's study of the deep-sea benthos in the Gulf of Mexico on the R.V. *Gyre*.
- 1984-85 Project manager for a synthesis of LGL's high arctic benthic studies conducted between 1974 and 1981. Supervised the laboratory analysis of samples, performed the statistical analyses, and produced the report.

- The distribution and abundance of benthic animals was related to food availability, substrate, predation and other factors.
- 1982 Acted in an advisory capacity on the sampling design, laboratory analysis, data analysis and report preparation for the benthic component of the Offshore Labrador Biological Studies.
- 1980-85 Planned and participated in LGL's benthic studies component of the Baffin Island Oil Spill project. Responsibilities included formulation of the study design, collection of data using SCUBA techniques, data processing, statistical analysis of results and report preparation.
- 1978-79 Project manager for LGL's studies of the nearshore marine ecology of NW Baffin Bay and E. Lancaster Sound, as part of the EAMES project. Responsibilities included supervision of field data collection from shipboard and shore camps, identification of benthic and intertidal invertebrates, data analysis, and report preparation. Certified as a SCUBA diver (NAUI).
- 1977 Project manager for LGL's marine surveys at nine sites in the Canadian arctic islands; including sampling of benthos, plankton, and physical and chemical characteristics. Participated in LGL's mid-winter fish study in the Canadian high arctic.
- 1975 Responsible for the field sampling, laboratory and data analysis, and reporting of the benthic component of a study of the marine ecology of Creswell Bay and Assistance Bay, N.W.T.
- 1976 Participated in LGL's marine biological investigation of fast-ice edges in Barrow Strait, N.W.T. Identified invertebrates taken from fish and bird stomachs.
- 1975 For McGill University, participated in a field study of ice biota in Robson Channel, N.W.T.
- 1974 For McGill University, planned and supervised spring and summer marine environmental studies in Barrow Strait, N.W.T. Conducted work from the ice, shore camps and from C.S.S. *Hudson*. Sampling and analysis of the benthos was included.
- 1976 With McGill University, worked on C.S.S. *Hudson* as a technician investigating the distribution of petroleum hydrocarbons in the Gulf of St. Lawrence.
- 1973 For McGill University, acted as technician during geological and physical investigations on the behaviour of suspended sediments in the Gulf of St. Lawrence from the M.V. *Metridia*, and during investigations on the distribution of herring larvae in the eastern Gulf of St. Lawrence and the east coast of Nova Scotia from the M.V. *E.E. Prince*.
- Coauthored a literature review of marine life in the Arctic Islands and Hudson Bay.

#### **MARINE MAMMAL STUDIES**

- 1997/01 Assistant project manager for a field study of the feeding ecology of bowhead whales in the Alaskan Beaufort Sea.
- 1997 Compiled several of the major digital datasets of aerial and shipboard marine mammal survey data for southern and central California, mapped them on a GIS and then performed the GIS analysis needed to estimate density, for a NEPA EIS of the U.S. Navy's Air Warfare Weapons test range at Point Mugu, California.
- 1988-94 Conducted comprehensive literature reviews of sound production in marine mammals and produced four reports on the information, each with a different scope and terms of reference. The reviews that included these reports were evaluations of effects of human-induced acoustic disturbance to marine mammals. These reviews culminated with co-authorship of the book *Marine Mammals and Noise* (Academic Press, 1995).
- 1992 Wrote a chapter on aspects of site design and operations to minimize polar bear/human encounters for a manual for use by Alaskan industry to mitigate impacts on polar bears.
- 1985-87 Participated in LGL's study of the feeding ecology of bowhead whales in the Alaskan Beaufort Sea; conducted field work from the U.S. Coast Guard icebreaker *Polar Star* and was responsible for the planning, data analysis and reporting of major parts of the zooplankton and hydroacoustic components.

Produced a theoretical model of bowhead feeding energetics that was then compared to actual food availability.

Performed data analysis for and wrote the report for a similar study of the feeding ecology of bowhead whales in the Canadian Beaufort Sea. Related the distribution of whales to zooplankton abundance, small-scale physical oceanographic conditions as revealed by CTD casts, large-scale oceanographic conditions as revealed by satellite imagery and meteorological conditions. Related potential food supply to theoretical energetic requirements of bowhead whales.

1984-85 Project manager for LGL's retrospective study of the relationships between bowhead whale distributions, distribution of hydrographic phenomena as revealed by satellite imagery, meteorological events and zooplankton distributions in the Canadian Beaufort Sea.

1982-83 Project manager for LGL's study of the benthic feeding ecology of gray whales in the northern Bering Sea, sponsored by the National Oceanic and Atmospheric Administration (NOAA). Supervised benthic sampling using grabs and diver operated techniques. Participated in quantitative collection of benthos using SCUBA techniques. Results of the study included a computation of the theoretical energetic requirements of gray whales, a comparison of these to actual food availability and a conceptual model of energy flow through the benthos of the north Bering Sea. Was chief scientist on the NOAA research vessels *Miller Freeman* and *Discoverer*.

1983 Co-chairman of NOAA/OCSEAP workshop on marine mammals and offshore oil exploration in the Chukchi Sea, and co-author of the resulting synthesis report.

#### **DATA PROCESSING AND ANALYSIS**

Over 15 years experience in data processing and analysis including:

- Formulation of study designs and coding procedures and selection of analytical techniques;
- Design and implementation of databases to hold biological data including writing of input modules and validation routines;
- Programming to tabulate and produce graphical presentation of results;
- Univariate and multivariate statistical analyses using the SAS, BMDP and SPSS programs and the interpretation and presentation of results;
- Data processing and analysis using IBM mainframe, MS-DOS and Apple Macintosh microcomputers;
- Programming in BASIC, dBase III, and FORTRAN;
- Mapping of environmental data using MapInfo, CADD and other mapping software;
- Use of a variety of software including GIS, CADD, spreadsheets, database, scientific graphics software, and numerous other programs; and
- Computerized literature searches and information retrieval.

#### **SOCIO-ECONOMIC EXPERIENCE**

1996 Described and then assessed impacts on resource harvesting for an EIA for construction and operation of a tanker terminal in Rankin Inlet, N.W.T.

Summarized and mapped resource harvesting and land use data for the Lancaster Sound/Barrow Strait region for the Arctic Environmental Sailing Directions.

1992 Addressed socio-economic impacts and wrote a description of the socio-economic environment along the proposed route of an ore carrier through the arctic islands.

1991 Described and then assessed impacts on resource harvesting and other socio-economic issues for an Environmental Evaluation of Coast Guard Northern Operations.

Project manager for an analysis of leisure data collected by the Ontario Ministry of Tourism and Recreation. The objective of the study was to identify constraints to leisure on the basis of income, ethnic origin, language, and other socio-economic factors.



- 1990 Project manager for the analysis of sport-specific injury data. Compared injury rates and kinds of injuries among levels of play, age and gender of player and other factors and used multivariate statistical techniques to explore the relationships between injuries and causal mechanisms. Produced separate reports on injuries in hockey, soccer, gymnastics, baseball and softball and an inter-sport comparison.
- 1988-89 Project manager for a project designed to produce an economic cost model for sports injuries in the province of Ontario. Collected information and reported on the cost of injuries and hospitalization and produced a cost model that used as input the kinds of injuries sustained and the age and gender of the injured person.
- Project Manager for a comprehensive literature review of the rates, trends, causes and prevention measures for sporting injuries.

### **MILITARY EXPERIENCE**

- 1963-69 Royal Canadian Naval Reserve. Served as Navigating Officer, Navigation Instructor and Divisional Officer on the east and west coasts as well as the Great Lakes. Retired as Lieutenant.
- 1962-63 Royal Canadian Signal Corps (reserve). Basic training, radio operator's course and a junior NCO course.

### **REPORTS AND PUBLICATIONS**

- 2001 Thomson, D.H., J.W. Lawson and W.J Richardson. Definitions for impacts of sonar and related sources in marine mammals in Shallow Water Training Ranges. Rep. By LGL Limited for Naval Undersea Warfare Centre, Newport RI and Commanding Officer, Southwest Division, Naval Facilities Engineering Command, San Diego, CA.
- 2001 Thomson, D.H., J.W. Lawson and A. Muecke. Workshop to develop methodologies for conducting research on the effects of seismic exploration on the Canadian East Coast fishery. Rep. By LGL Limited, King City, ON for Environmental Studies Revolving Funds, Calgary Alberta.
- 2000 Thomson, D.H., R.A. Davis, V.D. Moulton, and P. Roussel. Environmental assessment of exploration drilling at the Adamant N-97 site on Sable Bank, Nova Scotia. Report by LGL Limited, King City, ON for Mobil Oil Canada Properties Ltd., Halifax, NS.
- 2000 Thomson, D.H., R.A. Davis and V.D. Moulton, Environmental assessment of exploration drilling at the Emma site on Sable Bank, Nova Scotia. Report by LGL Limited, King City, ON for Mobil Oil Canada Properties Ltd., Halifax, NS.
- 2000 Moulton, V.D., R.A. Davis, J. Christian, D.H. Thomson and M MacNeil. Environmental assessment of exploration drilling at the Bandol Prospect on St. Pierre Bank Report by LGL Limited, King City, ON for Mobil Oil Canada Properties Ltd., Halifax, NS.
- 2000 Thomson, D.H. R.A. Davis, R. Belore, E. Gonzalez, J, Christian, V. Moulton, and R. Harris. Environmental assessment of exploration drilling off Nova Scotia. Report by LGL Limited, King City, ON for Mobil Oil Canada Properties Ltd. and Partners, Halifax, NS. 278 p.
- 1999 Richardson, W.J. and D.H. Thomson, (eds.) Bowhead whale feeding in the eastern Alaskan Beaufort Sea: Update of scientific and technical information. Retrospective and 1998 results. Rep. by LGL Limited, King City, ON for Minerals Management Service, Anchorage, AK. 366 p. MMS Contract 1435-01-97-CT-30842.
- 1999 Thomson, D.H. Effects of buried underwater explosives on fish in the Sacramento p San Joaquin River Delta. Report by LGL Limited, King City ON for California Department of Fish and Game, Sacramento, CA.
- 1998 Lawson, J.W., Koski, W., D.H. Thomson, C.I. Malme and W.J Richardson. Point Mugu Sea Range marine mammal technical report: Biological consequences. Rep. by LGL Limited environmental research associates, King City for Ogden Environmental and Energy Services, Santa Barbara and Southwest Division Naval Facilities Engineering command, San Diego, CA. P 197-270.
- 1998 Koski, W., D.H. Thomson and W.J. Richardson. Point Mugu Sea Range marine mammal technical report: Descriptions of marine mammal populations. Rep. by LGL Limited environmental research associates, King City for Ogden Environmental and Energy Services, Santa Barbara and Southwest Division Naval Facilities Engineering command, San Diego, CA. P. 1-196.

- 1998 Davis, R.A. and D. H. Thomson. Review of potential effects of seismic exploration on Georges Bank. Rep. By LGL Ltd., King City, ON for Georges Bank Review Panel, Halifax, NS. 38 p.
- 1998 Thomson, D.H. Impacts of underwater noise associated with naval training exercises on the Canadian west coast on fish and marine mammals. Rep. By LGL Ltd. King City for LGL Ltd. Sidney, BC and Defence Construction Canada, Ottawa, ON. 22 p. (for inclusion in an EIS)
- 1998 Davis, R.A., D.H. Thomson and C.I. Malme. 1998. Environmental assessment of seismic exploration on the Scotian Shelf. Rep. By LGL Ltd. King City, ON for Mobil Oil Canada Properties Ltd, Shell Canada, Ltd. and Imperial Oil Ltd, Calgary AB for submission to Canada/Nova Scotia Offshore Petroleum Board, Halifax, NS. 180 p.
- 1997 Thomson, D.H. Environmental impacts of delineation drilling in the Arkutun-Dagi field off eastern Sakhalin Island, Russia, on marine mammals. Rep. By LGL Limited environmental research associates, Toronto for Agra Earth and Environmental, Calgary, AB and Exxon Neftagas, Houston, TX. 36 p.
- 1997 Thomson, D.H. Environmental impacts of delineation drilling in the Arkutun-Dagi field off eastern Sakhalin Island, Russia, on sea-associated birds. Rep. By LGL Limited environmental research associates, Toronto for Agra Earth and Environmental, Calgary, AB and Exxon Neftagas, Houston, TX. 36 p.
- 1996 Thomson, D.H. and S.R. Johnson. 1996. Effects of offshore oil development and production activities off Sakhalin Island on Sea Associated birds and marine mammals. Rep. by LGL Limited, King City, ON for Marathon Oil Company, Littleton, Colorado. 82 p.
- 1996 Thomson, D.H., S.R. Johnson and G.W. Miller. Biophysical impact assessment: Rankin Inlet proposed marine resupply depot. Rep. by LGL Limited, Toronto for Spencer Environmental Management Services, Edmonton and Department of Transportation, Yellowknife, N.W.T. 99 p.
- 1996 Thomson, D.H. and L. Weber. Assessment of pollution of the Great Lakes from vessel sources in comparison with other sources: Shoreside regulations and pollution. Rep. by LGL Ltd King City for Melville Shipping, Ottawa and Canadian Coast Guard, Sarnia.
- 1996 Thomson, D.H. Arctic environmental sailing directions Vol. IV: Chapter X: Northwest Passage - East Part. Rep. by LGL Limited, Toronto for Consulting and Audit Canada and Canadian Coast Guard, Ottawa. 55 p.
- 1995 Thomson, D.H., R.A. Davis, R.E. Harris and W.R. Koski. Arctic environmental sailing directions Vol IV: Lancaster Sound - Background maps and text. Rep. by LGL Limited, Toronto for Consulting and Audit Canada and Canadian Coast Guard, Ottawa. 154 p. + maps.
- 1995 Richardson, W.J., D.H. Thomson, C.R. Greene and C.I Malme. Marine Mammals and Noise. Academic Press, San Diego. 476 p.
- 1995 Thomson, D.H. Marine ecology appendix: Shoreline cleanup assessment team manual: Arctic Canada. Rep. by LGL Limited, King City for Owens Coastal Consultants, Bainbridge Island, WA.
- 1995 Richardson, W.J., S. Davis, R.E. Harris, D.W. Owens, N.J. Patenaude and D.H. Thomson. Assessment of potential impact of small explosions in the Korea Strait on marine animals and fisheries. Rep. by LGL Limited, King City for BBN systems and Technologies, Arlington, VA. 101 p
- 1993 Young, V.H. and D.H. Thomson. Lake Ontario benthic database phase II: biological data acquisition and entry and database organization. Rep. by LGL Limited, Toronto for National Water Research Institute, Canadian Centre for Inland Waters, Burlington, Ont.
- 1993 Thomson, D.H. Scoping report for oil and gas development of Sakhalin Island, Russia. Rep. by LGL Limited, Toronto for HBT Agra Limited, Calgary and Exxon Company International, Houston. 40 p.
- 1993 Thomson, D.H. Environmental effects of cargo residues from ships in the Great Lakes. Rep. by LGL Limited, Toronto for Melville Shipping and Transport Canada, Ottawa. 30 p.
- 1993 Richardson, W.J, D.H. Thomson, D.W. Owens, and R.L.Tremaine. 1993. Assessment of potential impact of small explosions in the New York Bight on marine animals and fisheries. Rep. by LGL Limited, Toronto, Ont. for BBN Systems and Technologies Corp., Cambridge MA. 95 p.

- 1993 Harper, J.R., J. Christian, W.E. Cross, R. Frith, G. Searing and D.H. Thomson. A classification of the marine regions of Canada. Rep. by Coastal and Ocean Resources Inc., Sidney, B.C. for Environment Canada. 77 p.
- 1993 Loftus, K.K., R.E. Elliott, D.H. Thomson, L.J.D. Alexander, N. McLeod, R.M. Schollen and C.A. Madramootoo. Sutherland Creek restoration study. Rep. by LGL Limited, Toronto for St. Lawrence Remedial Action Plan, Cornwall. 62 p.
- 1992 Thomson, D.H., S.R. Johnson and R.A. Davis. 1992, Ecological issues related to a marine transportation system servicing Coronation Gulf, N.W.T. Report by LGL Limited, King City Ontario for Canarctic Shipping, Ottawa.
- 1992 Thomson, D.H. Impacts of changes to the Arctic Pollution Prevention Regulations on the arctic marine environment. Report by LGL Limited, King City, Ont. for Canadian Coast Guard and Government Consulting Group, Ottawa.
- 1992 Thomson, D.H. and W. Koski. Site design and operations. *In*: J.C. Truett (ed.) Guidelines for OCS operations in polar bear habitats. Report by LGL Ecological Research Associates, Bryan Texas for Minerals Management Service, Anchorage AK.
- 1992 Thomson, D.H. Proposed specifications for the sailing directions of arctic Canada, Volume IV: Environmental and mapping specifications. Rep. by LGL Limited Toronto for Consulting and Audit Canada and Canadian Coast Guard.
- 1992 Loftus, K.K. and D. Thomson (eds.). Pickering NGS B Environmental Effects Report. Rep. by LGL Limited, Toronto for Ontario Hydro, Toronto. 361 p.
- 1991 Loftus, K.K. and D.H. Thomson. Modelling biotic interactions in the Bay of Quinte, Phase I report: Lower Trophic Levels. Rep. by LGL Limited, Toronto for Bay of Quinte Remedial Action Plan Coordinating Committee, Toronto Ontario.
- 1991 Thomson, D.H., R.A. Davis and T. Hillis. 1991. Effects of operational discharges from ships on marine life. Rep. by LGL Limited Toronto for Government Consulting Group, Ottawa.
- 1991 Thomson, D.H. and T. Elliott. An analysis of data collected during the Ontario Leisure Activity Participation Survey. Rep. by LGL Limited for Ontario Ministry of Tourism and Recreation.
- 1991 Thomson, D. and T. Elliott. Ontario leisure participation survey I: Factors affecting satisfaction with leisure activities. Rep. by LGL Limited for Ontario Ministry of Tourism and Recreation.
- 1991 Thomson, D. and T. Elliott. Ontario leisure participation survey II: Relaxation and entertainment activities. Rep. by LGL Limited for Ontario Ministry of Tourism and Recreation.
- 1991 Thomson, D. Ontario leisure participation survey III: Sports, fitness and outdoor activities. Rep. by LGL Limited for Ontario Ministry of Tourism and Recreation.
- 1991 Thomson, D. Ontario leisure participation survey IV: Synthesis. Rep. by LGL Limited for Ontario Ministry of Tourism and Recreation.
- 1991 Richardson, W.J., C.R. Greene, Jr., C.I. Malme and D.H. Thomson. Effects of noise on marine mammals. OCS Study MMS 90-0093. Rep. from LGL Ecol. Res. Assoc. Inc., Bryan, TX, for U.S. Minerals Manage. Serv., Atlantic OCS Reg., Herndon, VA. 462 p. NTIS PB91-168914.
- 1990 Loftus, K.K., R.E. Elliot, D.H. Thomson, R.B. Sayer, A.A. Crowder and J.M. Casselman. A Shoreline and Aquatic Habitat Geographic Information System and its Application to Classification of Aquatic Vegetation and Piscivore Habitat in the Bay of Quinte. Prepared for the Bay of Quinte RAP Coordinating Committee. (in preparation)
- 1990 Buchanan, R.A., W. Cross, D. Thomson and T. Northcott. Environmental effects monitoring programs for the Bull Arm GBS construction site, Trinity Bay, Newfoundland. Report by LGL Limited St. John's, NF for Mobil Oil Canada Properties, St. John's NF. 34 p.
- 1990 C. Holdsworth and D.H. Thomson. 1990. Lake Erie east central basin, index fishing survey, fall 1989. Rep. by LGL Limited, King City for Lake Erie Fisheries Assessment Unit, Ministry of Natural Resources, Port Dover, Ont.

- 1990 Thomson, D.H., C. Holdsworth and W.E. Cross. 1990. Lake Erie eastern basin, index fishing survey, fall 1989. Rep. by LGL Limited, King City for Lake Erie Fisheries Assessment Unit, Ministry of Natural Resources, Port Dover, Ont.
- 1990 Thomson, D.H. Analysis of data obtained from sport-specific injury studies: Inter-sport analysis. Rep. by LGL Ltd., King City, Ont. for Sports and Fitness Branch, Ministry of Tourism and Recreation, Toronto, Ontario.
- 1990 Thomson, D.H. Analysis of data obtained from sport-specific injury studies: Baseball. Rep. by LGL Ltd., King City, Ont. for Sports and Fitness Branch, Ministry of Tourism and Recreation, Toronto, Ontario.
- 1990 Thomson, D.H. Analysis of data obtained from sport-specific injury studies: Soccer. Rep. by LGL Ltd., King City, Ont. for Sports and Fitness Branch, Ministry of Tourism and Recreation, Toronto, Ontario.
- 1990 Thomson, D.H. Analysis of data obtained from sport-specific injury studies: Gymnastics. Rep. by LGL Ltd., King City, Ont. for Sports and Fitness Branch, Ministry of Tourism and Recreation, Toronto, Ontario.
- 1989 Thomson, D.H. Analysis of data obtained from sport-specific injury studies: Hockey. Rep. by LGL Ltd., King City, Ont. for Sports and Fitness Branch, Ministry of Tourism and Recreation, Toronto, Ontario. 82 p.
- 1989 Lemon, D.D., R.D. Houston, D.B. Fissel, M.S.W. Bradstreet and D. H. Thomson. Zooplankton distributions in the Southeastern Beaufort Sea Summer 1987. Report by Arctic Sciences Ltd., Halifax, N.S. and LGL Ltd., King City, Ont. for Dep. of Indian and Northern Affairs, Ottawa, Ont. 84 p.
- 1989 Thomson, D.H., K. Loftus and D.A. deGraff. An analysis of biological data of fish populations from lakes of varying acidity in Newfoundland and Labrador. Rep. by LGL limited, St. John's Nfld. for Department of Fisheries and Oceans, St. John's Nfld. 68 p.
- 1989 Richardson, W.J., C.R. Greene, J.P. Hickie, R.A. Davis and D.H. Thomson. Effects of offshore petroleum operations on cold water marine mammals: a literature review, 2nd ed. API Publ. 4485. American Petroleum Institute, Washington. 385 p.
- 1989 Malme, C.I., P.R. Miles, G.W. Miller, W.J. Richardson, D.G. Roseneau, D.H. Thomson and C.R. Greene. Analysis and ranking of the acoustic disturbance potential of petroleum industry activities and other sources of noise in the environment of marine mammals in Alaska. Report by BBN Systems and Technologies Corp. for Minerals Management Service, U.S. Dep. Interior, Anchorage, AK
- 1989 Thomson, D.H. and D. Richardson. A cost model for sports injuries in the Province of Ontario. Rep. by LGL Limited, Toronto, Ont. for Sports and Fitness Branch, Ministry of Tourism and Recreation, Toronto, Ont. (included a Report, Digital Model and Program Documentation).
- 1989 Thomson, D.H., F.A. Flint and E. MacDonald. A literature review on injuries incurred during sports, fitness and recreation activities. Rep. by LGL Limited, Toronto, Ont. for Sports and Fitness Branch, Ministry of Tourism and Recreation, Toronto, Ont. 219 p.
- 1989 Thomson, D.H. Sounds produced by marine mammals. p. 110-148. *In*: W.J. Richardson *et al.*, Effects of offshore petroleum operations on cold water marine mammals: A literature review. American Petroleum Institute, Washington, D.C. 385 p.
- 1987 Koski, W.R. and D.H. Thomson. Biological study report for the Stillwater Creek erosion control study. Rep. by LGL Ltd. for Totten Sims Hubicki Associates, Cobourg. 15 p.
- 1987 Bradstreet, M.S.W., D.H. Thomson and D.B. Fissel. Zooplankton and Bowhead whale feeding in the Canadian Beaufort Sea, 1986. Rep. by LGL Ltd. for Indian and Northern Affairs Canada. 204 p.
- 1987 Cross, W.E. and D.H. Thomson. Effects of experimental releases of oil and dispersed oil on arctic nearshore macrobenthos. I. Infauna. *Arctic* 40(Suppl. 1):184-200.
- 1987 Cross, W.E., C.M. Martin and D.H. Thomson. Effects of experimental releases of oil and dispersed oil on arctic nearshore macrobenthos. II. Epibenthos. *Arctic* 40(Suppl. 1):201-210.
- 1987 Thomson, D.H. Energetics of bowheads. p. 417-447 *In*: W.J. Richardson (ed.), Importance of the eastern Alaskan Beaufort Sea to feeding bowhead whales, 1985-86. Rep. by LGL Ecol. Res. Assoc. Inc., Bryan, TX, for U.S. Minerals Management Service, Reston, VA. NTIS PB87-124350OCS; Study MS 87-0037. 547 p.
- 1987 Thomson, D.H. and W.J. Richardson. Integration. p. 449-477 *In*: W.J. Richardson (ed.), Importance of the eastern Alaskan Beaufort Sea to feeding bowhead whales, 1985-86. Rep. by LGL Ecol. Res. Assoc. Inc.,

- Bryan, TX, for U.S. Minerals Management Service, Reston, VA. NTIS PB87-124350OCS; Study MS 87-0037. 547 p.
- 1987 Richardson, W.J. and D.H. Thomson. Conclusions. p. 481-484 *In*: W.J. Richardson (ed.), Importance of the eastern Alaskan Beaufort Sea to feeding bowhead whales, 1985-86. Rep. by LGL Ecol. Res. Assoc. Inc., Bryan, TX, for U.S. Minerals Management Service, Reston, VA. NTIS PB87-124350OCS; Study MS 87-0037. 547 p.
- 1987 Griffiths, W.B., D.H. Thomson and G.E. Johnson. Zooplankton and Hydroacoustics. p. 135-256 *In*: W.J. Richardson (ed.), Importance of the eastern Alaskan Beaufort Sea to feeding bowhead whales, 1985-86. Rep. by LGL Ecol. Res. Assoc. Inc., Bryan, TX, for U.S. Minerals Management Service, Reston, VA. NTIS PB87-124350OCS; Study MS 87-0037. 547 p.
- 1987 Thomson, D.H. Patterns of energy flow. *In*: J.C. Truett (ed.), Environmental characterization and biological utilization of the North Aleutian Shelf nearshore zone. U.S. Dept. Commerce, NOAA OCSEAP Final Rep. 60 (1989):489-522.
- 1987 Thomson, D.H. Invertebrates. *In*: J.C. Truett (ed.), Environmental characterization and biological utilization of the North Aleutian Shelf nearshore zone. U.S. Dept. Commerce, NOAA OCSEAP Final Rep. 60(1989):141-215.
- 1986 Thomson, D.H., C.M. Martin and W.E. Cross. Identification and characterization of arctic nearshore benthic habitats. Can. Tech. Rep. Fish. Aquat. Sci. No. 1434:vii + 70 p.
- 1985 Thomson, D.H., D.B. Fissel, J.R. Marko, R.A. Davis and G.A. Borstad. Distribution of bowhead whales in relation to hydrometeorological events in the Beaufort Sea. Environmental Studies Revolving Funds Report No. 028. Ottawa. 119 p.
- 1984 Cross, W.E., D.H. Thomson, C.M. Martin and M.F. Fabijan. Effects of oil and dispersed oil on nearshore macrobenthos at Cape Hatt, northern Baffin Island. IV. Results of 1980, 1981, 1982 and 1983 pre- and post-spill studies. Baffin Island Oil Spill Working Report 83-3. Environmental Protection Service, Environment Canada, Ottawa. 176 p.
- 1984 Davis, R.A. and D.H. Thomson. Marine Mammals. *In*: Barrow Arch Synthesis. Rep. by LGL Alaska Res. Assoc. Inc., Anchorage, for Nat. Oceanic & Atmos. Admin., Juneau, AK. 69 p.
- 1983 Thomson, D.H. Distribution, production, and ecology of grey whale prey species. *In*: D.H. Thomson (ed.), Feeding ecology of grey whales (*Eschrichtius robustus*) in the Chirikof Basin, summer 1982. U.S. Dept. Commerce NOAA OCSEAP Final Rep. 43(1986): 227-292.
- 1983 Thomson, D.H. and L.R. Martin. Feeding ecology of grey whales in the Chirikof Basin. p. 80-154 *In*: D.H. Thomson (ed.), Feeding ecology of grey whales (*Eschrichtius robustus*) in the Chirikof Basin, summer 1982. U.S. Dept. Commerce NOAA OCSEAP Final Rep. 43(1986): 337-340
- 1983 Cross, W.E., D.H. Thomson and A.R. Maltby. Effects of oil and dispersed oil on nearshore macrobenthos at Cape Hatt, northern Baffin Island. III. Results of 1980, 1981 and 1982 pre- and post-spill studies. (BIOS) Baffin Island Oil Spill Working Report 82-3. 135 p.
- 1982 Buchanan, R.A., D.H. Thomson and G.J. Chaput. Seasonal abundance, feeding ecology and biology of Atlantic cod (*Gadus morhua*) in the Packs Harbour and Domino region of the Labrador coast during the summer and early fall, 1981. Rep. by LGL Ltd. for Dept. of Fisheries and Oceans, St. John's. 135 p.
- 1982 Thomson, D.H., M.A. McLaren and A.D. Sekerak. Review of the effects of oil on marine flora and fauna with special reference to arctic regions. Rep. by LGL Ltd. for Petro-Canada Exploration Inc., Calgary. 120 p.
- 1982 Cross, W.E. and D.H. Thomson. Effects of oil and dispersed oil on nearshore macrobenthos at Cape Hatt, Northern Baffin Island. II. Results of 1980 and 1981 pre- and post-spill studies. (BIOS) Baffin Island Oil Spill Working Report 81-3. 105 p.
- 1982 Thomson, D.H. Marine benthos in the eastern Canadian high arctic: Multivariate analyses of standing crop and community structure. Arctic 35:61-74.
- 1981 Cross, W.E. and D.H. Thomson. Effects of oil and dispersed oil on nearshore macrobenthos at Cape Hatt, Northern Baffin Island. I. Results of 1980 pre-spill studies. (BIOS) Baffin Island Oil Spill Working Report 80-3. 81 p.

- 1980 Thomson, D.H. A coastal resources management plan for northern Quebec. Rep. by LGL Ltd., for Makivik Corporation, Montreal. 21 p.
- 1979 Thomson, D.H., W.E. Cross and G.L. Walder. Benthic and intertidal studies in Lancaster Sound, northwest Baffin Bay and adjacent waters, August-September 1979. Rep. by LGL Ltd. for Petro-Canada. 207 p.
- 1979 Dunbar, M.J. and D.H. Thomson. West Greenland salmon and climatic change. *Meddelelser om Gronland* 202(4):1-19.
- 1978 Thomson, D., W.E. Cross, H. Bain and L. Patterson. Aspects of the spring and summer marine environment of Brentford Bay, Boothia Peninsula, N.W.T. Rep. by LGL Ltd. for Polar Gas Project. 203 p.
- 1977 Bain, H., D. Thomson, M. Foy and W. Griffiths. Marine ecology of fast-ice edges in Wellington Channel and Resolute Passage, N.W.T. Rep. by LGL Ltd. for Polar Gas Project. 262 p.
- 1977 Buchanan, R.A., W.E. Cross and D.H. Thomson. Survey of the marine environment of Bridport Inlet, Melville Island. Rep. by LGL Ltd. for Petro-Canada. 265 p.
- 1976 Sekerak, A.D., D. Thomson, H. Bain and J. Acreman. Summer surveys of the marine ecology of Creswell Bay, Somerset Island and Assistance Bay, Cornwallis Island, N.W.T. 1975. Rep. by LGL Ltd. for Polar Gas Project. 215 p.
- 1975 Thomson, D.H., S. Woods and J. Acreman. Marine ecology survey in the central portion of Canadian Arctic Islands, 1974. McGill Univ. Rep. for Polar Gas Project. 77 p.
- 1973 Lalli, C.M., R. Buchanan, D. Thomson and F. Wells. Polar Gas preliminary environmental study: Marine ecology report. Rep. by McGill University for Polar Gas Project. 98 p.

#### **Contributions to Unauthored Reports and Environmental Assessments**

- 2000 Environmental Impact Statement and Overseas Environmental Impact Statement for the San Clemente Island Naval Training Complex: 3.6 Existing Conditions-Marine Fish, 3.7 Existing Conditions-Marine Mammals; 4.6 Environmental Consequences-Marine Fish; 4.7 Environmental consequences - Marine Mammals. Department of the Navy, Commanding Officer, Southwest Division, Naval Facilities Engineering Command. Arlington, VA.
- 2000 White Rose Oil Field Comprehensive Study for Husky Oil Limited, St. John's.
- 1999 Environmental Assessment for the Shallow Waters Assault Breaching (SABRE) and Distributed Explosive Technology (DET) Systems at San Clemente Island, California. Department of the Navy, Commanding Officer, Southwest Division, Naval Facilities Engineering Command for Naval Sea Systems Command, Program Executive Officer for Mine Warfare, San Diego, CA.
- 1999 Sable Island 1999 3D ocean bottom cable seismic exploration program: environmental assessment and environmental protection plan. Report by LGL Limited, King City ON for Mobil Canada Properties Ltd., Halifax NS.
- 1998 Application for permit for scientific purposes under the endangered species act and the marine mammal protection act. Submitted to Office of Protected Resources National Marine Fisheries Service Silver Spring, MD. 34 p.
- 1998 Point Mugu Sea Range Environmental Impact Statement/Overseas Environmental Impact Statement: 3.6 Existing Conditions-Marine Fish, 3.7 Existing Conditions-Marine Mammals; 4.6 Environmental Consequences-Marine Fish, 4.7 Environmental consequences - Marine Mammals. Department of the Navy, Naval Air Warfare Weapons Division and Naval Facilities Engineering Command, Southwest Division, San Diego, CA.
- 1996 LGL Limited. Environmental Impact Assessment for the Terra Nova oil field. Rep. by LGL Limited, St. John's for Petro Canada Limited, St. John's.
- 1996 LGL Limited. Initial Environmental Evaluation (IEE) in support of the high arctic data communications system (HADCS II) project. Rep. by LGL Limited, Toronto for Department of National Defence, Ottawa. 189 p.
- 1994 Canadian marine status and trends monitoring network: Phase II Final Report by LGL Limited, King City, Ont. for Evaluation and Planning, Conservation and Protection, Environment Canada, Vancouver, B.C. 54 p + 7 appendices.

- 1993 Consulting and Audit Canada. Initial Environmental Evaluation: Coast Guard Northern Operations. Rep. by Consulting and Audit Canada for Canadian Coast Guard, Ottawa.
- 1993 Background paper to the regulatory impact analysis statement for proposed amendments to the Arctic Shipping Pollution Prevention Regulations. Rep. by Consulting and Audit Canada and Melville Shipping, Ottawa for Coast Guard Northern, Ottawa. 163 p.
- 1990 Conceptual design report for the design and implementation of the DFO national LRTAP biomonitoring database. Report by Monenco Information Systems, Ottawa for Department of Fisheries and Oceans, Burlington 58 p.
- 1990 Consulting and Audit Canada. Initial Environmental Evaluation: Polar 8 Icebreaker. Rep. by Consulting and Audit Canada for Canadian Coast Guard, Ottawa.
- 1983 LGL Ltd. Biological environment of eastern Lancaster Sound and western Baffin Bay: components and important processes. Environmental Studies No. 30, Can. Dept. Indian & Northern Affairs, Ottawa. 288 p.
- 1982 LGL Ltd. Biological overview of the Northwest Passage, Baffin Bay and Davis Strait. Rep. by LGL Ltd., for Dome Petroleum Ltd., Calgary.
- 1982 LGL Ltd. and ESL Ltd. Biological overview of the Beaufort Sea and NE Chukchi Sea. Rep. by LGL Ltd., Toronto, for Dome Petroleum Ltd., Calgary.
- 1977 Polar Gas Project. Application to National Energy Board (Environmental Impact Statement). Vol. 5. Part A. Environmental Description, Vol. 6. Impacts. Prepared by Polar Gas Project, Toronto.

**JOHN I. WALKER**

**EDUCATION** Ph.D., University of Guelph, Ontario, Air Pollution Meteorology, 1980  
M.Sc., Queen's University, Kingston, Ontario, Geography (Climatology), 1976  
B.Sc., Queen's University, Kingston, Ontario, (Hons) Geography, 1975

**CAREER SUMMARY**

1994 to Present **Jacques Whitford Environment Limited, Dartmouth, Nova Scotia**

1990 - 1993 **Rowan Williams Davies & Irwin Inc.**  
Associate and Project Manager

1980 - 1990 **Acres International Ltd.**  
Senior Scientist, Environmental Department

**MEMBERSHIPS/ASSOCIATIONS**

Member, American Meteorology Society.

Member, Chair of Atlantic Canada Chapter, Air and Waste Management Association

**RELEVANT EXPERIENCE****Air Quality/Meteorological Monitoring Studies**

- Designed (in conjunction with Environment Canada and the Nova Scotia Department of Environment) and managed the implementation of the air quality monitoring program for the Sydney Tar Ponds Clean-Up
- Project Manager and principal investigator for the Sydney Tar Ponds Clean-Up Inc. ambient air monitoring program.
- Retained by the World Bank in 2002 as an expert consultant to design an approximately \$10 million (capital cost), air quality monitoring program for major cities in Iran, including Tehran, Mashhad, Arak, and Isfahan.
- Expert advisor to the Sable Island Air Quality Monitoring Committee made up of federal,



provincial, joint energy board and industry representatives to establish a high quality monitoring program using continuous analyzers at Sable Island in 2002.

- Set up and directed operations of air quality monitoring stations for the Sable Offshore Energy project, including air quality and meteorological stations at the gas plant near Goldboro, Nova Scotia, and the fractionation plant in Point Tupper, Nova Scotia.
- Director of the air quality program, including ambient air monitoring, modelling, and impact assessment for the Blue Atlantic Transmission System in Shelburne County, Nova Scotia.
- Project Manager for contracts running over ten years for air quality and noise monitoring programs at quarries in Nova Scotia.
- Designed the air quality monitoring program, meteorological monitoring station, and odour management system for the Sungai Bera Remediation Joint Venture at the Shell Petroleum Refinery, Brunei. The station included facility for real-time hazard warnings through a dispersion model based on current meteorological readings.
- Conducted extreme-value meteorological analyses on behalf of an international oil company for a confidential project in Saudi Arabia
- Designed meteorological station for wetlands treatment area in Prince Edward Island.
- Project Manager of air quality monitoring program for the Cavendish Farms processing plant in New Anaan, Prince Edward Island.
- Designed two meteorological and air quality stations for installation in northern Labrador during the Voisey's Bay Environmental Assessment.

#### **Air Quality Studies - Industrial**

- Project Manager and principal investigator in the dispersion modelling studies conducted for Michelin at the plants in Granton, Waterville, and Bridgewater, Nova Scotia.
- Air quality assessment of gypsum transshipment facilities.
- Manager of air quality assessment of the retrofit of the Trigen-PEI waste to energy plant in

Charlottetown, PEI, and subsequent source test program to confirm plant operating improvements.

- Project manager in an investigation and measurement program to determine odour emissions from the Acadian Seaplants facility in Nova Scotia.
- Consulted on aspects of PCB removal from Five Island Lake sediments
- Performed air quality modelling for the Voisey's Bay smelter/refinery complex at Argentia
- Performed air quality assessment of the Voisey's Bay mine and mill project in Labrador
- Reviewed the permit stipulations and monitoring program for Louisiana-Pacific, Port Hawkesbury NS
- Performed air quality component of Environmental Assessment for the proposed Alcell pulp mill in Atholville NB
- Calculated SO<sub>2</sub> emission balances and provided internal advisory services for permitting requirements to Acres Davy McKee engineering staff for the Inco SO<sub>2</sub> Abatement Program
- Supervised ambient perimeter and stack monitoring programs for various industrial plants
- Testified as an expert witness for General Motors during a trial relating to changes under the Environmental Protection Act
- Project Manager, cooling tower impact study, IBM T.J. Watson Research Center, Yorktown Heights, New York
- Project Manager, air quality and noise monitoring programs for Cavendish Farms, New Annan, Prince Edward Island

#### **Air Quality Assessment**

- Project Manager, wind tunnel air quality study of University of Maryland at Baltimore - Health Sciences Facility, Biomedical Research Division and the Penn Street Pharmacokinetics Building
- Project Manager, dispersion modelling (EPA ISC) and wind tunnel modelling for the existing 4

million square foot Clinical Center at the National Institutes of Health, Bethesda Maryland, Central Utility Plant Renovations, and a study of dispersion at the planned replacement Clinical Center.

- Project Manager, Harvard University School of Public Health - Francois Xavier Bagnold Building and Building No. 2, study of the dispersion from fume hoods and laboratory exhausts.
- Project Manager, new building design review for the United States Geological Survey, National Water Quality Laboratory, Denver Colorado
- Project Manager, wind tunnel study of exhaust reconfiguration at the Roswell Park Cancer Cell Center, Buffalo, New York
- Project Manager, wind tunnel study to investigate the aerodynamic drag of a US Navy Icebreaker, and testing to ensure that main engine exhausts were not reingested by the air intakes.
- Project Manager for a numerical study of ventilation design for the proposed US Navy Surface Warfare Center, Ship Materials Testing Facility, Bethesda, Maryland.
- Camp Hill Medical Centre – Problem Investigation
- Project Manager – L’Anse aux Meadows, Newfoundland – study of recurring air quality buildings in national park buildings.

### **Environmental Impact Studies**

- Components of the environmental impact studies for the Voisey’s Bay mine/mill project in Labrador and the smelter/refinery project in Argentina
- Coordinated the review and revisions to the Environmental Assessment of the potential impacts of nuclear powered vessels berthing in Canadian ports
- Coordinated the air quality and noise components of the assessment of environmental impacts of offshore training activities by DND
- Manager of the foundation report for the Northeastern Regional Air Quality Committee (NREAQC) comprising Newfoundland, New Brunswick, PEI, Nova Scotia, Maine, New

Hampshire, Vermont, and Massachusetts as well as federal representatives.

- Project Manager, study of the air quality issues with respect to the Prince Edward Home wood-fired system, Charlottetown, Prince Edward Island
- Performed initial screening and developed environmental audit protocol (air quality) for Department of National Defence Chemical and Biological Warfare Research Establishments at Suffield and Ottawa
- Compared candidate sites for radar sites in Northern Ontario
- Assessed possible impact of proposed ammonia plant, Kitimat, British Columbia
- Estimated Impacts of the proposed Thompson Lake Mine, Manitoba
- Conducted air quality and noise background measurement programs and impact assessment for the Halifax Harbour Sewage Treatment Plants.
- Project Manager, Air Quality and Noise studies, Environmental Baseline Study, CFB Trenton

#### **Environmental Studies – International**

- Member of the Project Appraisal Mission of the World Bank to the Syrian Arab Republic to develop a project to test alternate vehicle technologies in Syria as a Global Environment Facility project.
- Developed and presented a series of workshops on Urban Air Quality Management and Vehicle Emission Reduction in the cities of Xiamen, Haikou, and Chongqing, P.R. China as part of an Environment Canada project.
- Technical Director of the project for the People's Municipality of Shanghai to investigate the air quality and noise impacts of the Inner Ring Road
- Coordinated review of air quality and noise components of the Environmental Assessment of the Guangzhou Urban Transport Project, P. R. China, on behalf of the World Bank
- Assisted World Bank in the direction of the environmental assessment of urban transport projects

in three cities, Shenyang, Fushun, and Anshan in Liaoning province of P.R. China

- Participated in World Bank project identification mission to the Republic of Kazakstan, CIS, to develop strategies to improve urban air quality. This involved meeting with the Ministry of Environment and agencies in Almaty to review air quality monitoring activities and data.
- Provided technical assistance and review to the World Bank and Xinjiang Environmental Technology Assessment Center for the Urumqi Urban Transport Improvement Program.
- Retained by the World Bank to assist the Municipality of Shijiazhuang, China, in the conduct of urban airshed modelling and other components of the Environmental Assessment of urban transport projects.
- Contracted to compile a handbook for the World Bank on the conduct of environmental assessments with a focus on the noise and air quality aspects.

#### **Electric Power Sector Studies**

- Project Manager, dispersion modelling study to assess the impacts of flue gas desulphurization on the ground level impacts of the Lingan Thermal Generating Station, Cape Breton, Nova Scotia.
- Project Manager, dispersion modelling for the peaking power turbines at Burnside, Victoria Junction, and Tusket, Nova Scotia.
- Managed an air quality and noise assessment, including dispersion modelling, for a gas turbine power station in Halifax Regional Municipality.
- Developed and presented training programs in air pollution meteorology to staff on Electricity Generating Authority of Thailand
- Modelled air quality impacts for the Bruce Nuclear Energy Centre
- Air quality modelling for the cogeneration project at Abitibi-Price, Stephenville, NF.
- Developed a series operational air quality computer model for the Nova Scotia Power Corporation

- Provided expert review and testimony at hearings for the proposed Burnside energy from waste incinerator in Dartmouth NS
- Coordinated environmental assessment for a proposed energy from waste plant in North Bay, Ontario, including assessment of existing landfill conditions
- Preliminary air quality analysis for a proposed energy from waste facility at Ship Point, Nova Scotia
- Long-range transport air pollution model development and testing for Nova Scotia Power.
- Assessment of feasibility of Flue Gas Desulphurization options using dispersion models for Lingan Thermal Generating Station, Nova Scotia.
- Conducted preliminary environmental assessment for an energy from waste plant in Kitchener, Ontario
- Probable Maximum Precipitation Study for Manitoba Hydro in support of the dam safety program for the Lower Nelson River
- Long-Range Transport model development and studies for Ontario Hydro, including preparation of evidence for National Energy Board hearings.
- Water quality model development for the Dock Street Power Station, Philadelphia.

#### **Oil & Gas Sector Studies**

- Designed and coordinated a technological assessment and permitting program for low temperature thermal desorption of petroleum hydrocarbon soil contaminants
- Coordinated the environmental assessment and testified at the Ontario Energy Board Hearings for the 50 km Georgian Bay Reinforcement Pipeline
- Assessed sour gas treatment and disposal options for offshore energy projects of Pan Canadian.
- Air quality team leader for Environmental Assessment of the Deep Panuke project

- Air quality team leader for Environmental Assessment of Blue Atlantic Transmission Systems' proposed sour gas plant in southwestern Nova Scotia
- Air quality assessment for natural gas well-field development in Brunei by Brunei Shell Petroleum
- Design and implementation of real-time risk prediction and air quality monitoring and modelling systems for refinery waste clean-up project in Brunei

#### **Air Quality and Noise Studies - Urban**

- Project Manager, study of baseline noise during operation and shutdown modes of the Maritime Electric Company Limited plant in Charlottetown, Prince Edward Island.
- Expert advisor to counsel in the matter of a revision to project design in Manhattan, New York.
- Advisor to the Halifax Harbour Solutions Project in the matter of potential noise from facilities.
- Project manager for the assessment of noise and noise barrier design for Highway 104 at Salt Springs Provincial Park, NS
- Project manager for the assessment of potential construction noise impacts of the Third-Lane Project for the Macdonald Bridge, Halifax-Dartmouth, NS
- Manager of air quality assessment for the Toronto Transit Commission's Sheppard Subway East, Harbourfront LRT, Yonge-Spadina Loop
- Assessed the air quality impacts and impacts of the Alternate Vehicle Technology Program of the Hamilton Street Railway
- Prepared environmental assessment including noise, vibration, air quality and wind climate for the Broadway Street Reconstruction Project - Highway #9 in Orangeville.
- Advised the project team in modelling approaches for the Environmental Assessment for the expansion of Lester B. Pearson International Airport
- Project Manager, Noise Impact Study for the Fixed Link Crossing at Borden, Prince Edward Island

### **Climate Change, Meteorology, Climatology and Extreme Event Studies**

- Performed Probable Maximum Precipitation study for the Lower Nelson River drainage basin, Manitoba
- Performed climatological analysis relating the anomalous sequences of a 10 year period to the projected impact of climatic change as predicted by the CSU, GISS and GFDL models
- Examined the relationship between stagnant anticyclonic weather systems and the advection of air pollutants into southern Ontario
- Prepared inventory of data sources and assessed requirements for forecast technique research
- Developed and tested wind forecast techniques for the Beaufort Sea and Canadian Arctic Waters
- Designed and implemented a research database for the development of marine weather, forecasts from ship-of-opportunity observations
- Developed wind forecast methods based on ship buoy and ship observations on the Great Lakes and compared the two development bases as input to wave models

### **Waste Management**

- Performed landfill gas characterization/quantification (US EPA Scholl Canyon Model) and odour dispersion modelling (US EPA ISC2) from the Highway 101 Landfill, Sackville Nova Scotia
- Provided advisory services to the Municipality of Kings, Nova Scotia to address concerns of residents regarding hazardous and odorous emissions of the municipal landfill.
- Acted as facilitator for 1997 annual planning meeting of the Greenhouse Emission Management Consortium
- Supervised the development of an emergency response model for Project Swiftsure, the project to incinerate Canada's chemical weapons
- Designed and managed monitoring programs for dioxins and furans in ambient air



- Designed the ambient air quality monitoring program for the cleanup project at the tar ponds, Sydney, Nova Scotia.
- Expert advisor to counsel for the Regional Municipality of Niagara for the OWMC Waste Disposal Site Environmental Assessment
- Reviewed waste management options for the City of Burlington, Ontario
- Provided critical review of the site selection study by Region of Halton to solicitors for the Town of Milton
- Project Manager for air quality and noise impacts of the proposed Waste Diversion Facility, City of Kingston
- Advisor to the project team for air quality studies at Britannia Landfill in Mississauga, Ontario
- Advised in the development of landfill gas monitoring protocol for the Eastview Landfill Guelph, Ontario

## **PUBLICATIONS**

Role of Agrometeorology in Predicting Crop Injury by Air Pollution, Presented at the O.A.C. Agriculture Conference, University of Guelph, Guelph, Ontario, 1977 (Co-author)

A Note on Temperature and Humidity Profile Measurement Over Forests Using Diodes, J. App. Meteor - 16, 106-109, 1977 (Co-author)

Ozone Uptake and its Relationship to Damage in Corn, Final Report to A.E.S. for D.S.S. Contract KM601-7-19045, 1979 p. 52 (Co-author)

Ozone Uptake by Corn, Ph.D. Thesis, University of Guelph, Ontario, 1980

Ozone Uptake by Corn, Presented at the 75th Annual Meeting of the Air Pollution Control Association, New Orleans, 1982, June.

Experiments in the Development of Marine Weather Forecasting Techniques off the East Coast,

Presented at the 18th Annual Congress of the Canadian Meteorological and Oceanographic Society, 1 Halifax, 1984, June (Co-author).

Urban Air Quality and Vehicle Emissions. Presented at the First Sino-Canadian Workshop on Climate Change, Beijing, April 1999.

Software Design for the Development of Marine Weather Forecast Techniques, Presented at the 18th Annual Congress of the Canadian Meteorological and Oceanographic Society, Halifax, 1984, June (Co-author).

PAH in the Air of Sydney, Nova Scotia. Presented at the Conference of Chemical Institute of Canada, Atlantic Chapter, 1993.

Pollution Prevention in Action: Green Industry Analysis of a Guelph Industry. 40th Ontario Conference on the Environment, June 1993, (Co-author).

Urban Air Quality, Greenhouse Gases, and Motor Vehicle Emissions. Proceedings Sino-Canadian Workshop on Climate Change, Beijing, April 12-13, 1999.

Motor Vehicle Control Strategies for Urban Air Quality Management. Presented at the International Conference on Urban Pollution Control Technology, Hong Kong, 13-15 October, 1999.

Competition and Compromise – Environmental Factors in Waste Management. Presented at the 22<sup>nd</sup> Canadian Waste Management Conference, Halifax, 25-27 September, 2000.

Air Quality Monitoring Programs at the Onshore Facilities of Sable Offshore Energy Inc. Presented at the Offshore Technology Association of Nova Scotia, October 6, 2000.

Comparison of AERMOD, ISC3 and CALPUFF in the Environmental Assessment of a Sour Gas Plant (coauthor). Presented at the Guideline on Air Quality Models Conference (US EPA/AWMA) Mystic Connecticut, October 2003.

**CURRICULUM VITAE**

*( last revised in 1991 )*

**NAME** Charles R. Watrall  
**BIRTHPLACE** New York City, New York  
**DATE OF BIRTH** January 1, 1944  
**CURRENT ADDRESS** P.O. Box 446  
Bridgetown, N.S. B0S 1C0  
**PHONE** 902 665 4164  
**CURRENT APPOINTMENT** Associate Professor, Department of Anthropology,  
University of Regina, Saskatchewan,  
Retired.

**APPOINTMENTS**

January - June 1992 Acting Head, Department of Anthropology  
1986 - 1991 Instructor. Introduction to Silver-smithing,  
Neil Balkwell Civic Arts Centre.  
Summer 1983 - 1991 Summer Instructor. Nipissing University College,  
North Bay, Ontario  
1976 Associate Professor, University of Regina  
Summer 1976 Instructor. University of Brandon  
1978 -79 Post Doctoral Research Associate  
Anthropology Department, University of Minnesota  
1973 Assistant Professor, University of Regina  
1971 Special Lecture, University of Regina  
1971 Instructor. Lakewood Jr. College, White Bear, Minnesota  
1970 Instructor. Macalaster College, St. Paul, Minnesota  
1968 Instructor. Extension Division, University of Minnesota  
1965 Teaching Assistantship. University of Minnesota

## **EDUCATION**

- 1961 ÿ 1965 Hunter College of the City University of New York.  
1965 ÿ 1970 University of Minnesota ÿ Resident.  
1970 ÿ 1976 University of Minnesota ÿ Thesis only.

## **DEGREES**

- 1965 B.A., Anthropology, Hunter College.  
1968 M.A., Anthropology, University of Minnesota.  
1970 Ph.D., Candidate, Anthropology, University of Minnesota.  
1976 Ph.D., Conferred, University of Minnesota.

## **AWARDS**

- 1961 ÿ 1965 New York State Regents College Scholarship.  
1983 Transportation Funding, President's Fund,  
University of Regina.

## **FIELDWORK**

- 1963 ÿ 1964 Three weeks part-time archaeological excavation on  
Several Woodland sites in New Jersey and one Archaic ÿ Early  
Woodland site in western coastal Long Island.
- Summer 1965 Eight weeks field experience in Posey Co., Indiana, on the  
Mann Site, a Middle Woodland-Middle Mississippian  
habitation site. Excavation under the direction of Dr. James H.  
Kellar, Anthropology Department, University of Indiana
- Summer 1965 Eight weeks excavation on the Orwell Site, Otter Tail  
County, Minnesota, under the direction of Dr. Elden Johnson,  
Anthropology Department, University of Minnesota.

**FIELDWORK cont**

- Three weeks archaeological site survey, Grant County, Minnesota, after completion of excavation on the Orwell Site.
- Summer 1966 Six weeks excavation as Archaeological Field Assistant on the Cooper Site (21-ML-9), a Late Woodland-Early Historic habitation site in Mille Lacs County, Minnesota, under the direction of Prof. Elden Johnson, Anthropology Department, University of Minnesota.
- Summer 1967 Twelve weeks excavation as Field Director in charge of archaeological operations at Fort Snelling, Hennepin County, Minnesota. This project consisted of the total excavation of refuse material in the Hexagonal Tower and in the determination of the foundation location of one other large building of this 1829<sup>s</sup> stone fort.
- Summer 1968 Four months Project Director of the Minnesota Highway Archaeological Reconnaissance Program. This project consisted of the initial formulation of a program of archaeological survey of proposed State and Federal Highway construction projects.
- October 1968 ÿ July 1969 Part-time appointment as Project Archaeologist, Minnesota Highway Archaeological Reconnaissance Program.
- Summer 1969 Archaeological survey conducted in Savanna River Portage State Park, Aitkin County, Minnesota. Recommendations made for preservation, reconstruction, and constructional activities within the Park.
- June 1969 Project Director, Minnesota Highway Archaeological Reconnaissance Program.
- July ÿ August 1969 Archaeological Field Director, University of Minnesota Archaeological project. Excavation of a Middle and Late Woodland habitation site, the Maplewood Site, Otter Tail County, Minnesota. Archaeological survey conducted in the surrounding area to provide data for regional chronological interpretations.
- July 1970 ÿ Fall 1973 Intermittent archaeological survey on prehistoric sites in southern Saskatchewan. Such surveys will form the basis for future research on cultural adaptation to ecotone ecologies.

**FIELDWORK cont**

- February 2-13, 1972 Anthropology consultant for proposed Department of Northern Affairs in Saskatchewan under the direction of Mr. Ted Bowerman. Observations made in a variety of Chipewyan, Cree and Métis communities (Walliston Lake, Paturnak, etc.). Responsibilities consisted of acting in an advisory capacity only.
- 1974 Saskatchewan Timber Harvesting Project Archaeological Component Phase I - Short-term field study of proposed timbering areas in Northern Saskatchewan and timbering methodology. Initial report on archaeological component Phase I submitted to Saskatchewan Department of the Environment through Schultz International Co., British Columbia.
- Summer 1975 Director, Saskatchewan Timber Harvesting Project Archaeological component - Environmental impact study in proposed clear-cut timber harvesting project. Final report submitted to Saskatchewan Department of the Environment through Schultz International Co., British Columbia.
- Summer 1976 Six weeks intensive excavation at the Stott Site, southwest Manitoba, as Field Director for Brandon University, Department of Anthropology and Sociology, for "Field Methods in Archaeology". Continued analysis and involvement with the results derived from this Blackduck phase village site will be utilized as evidence for a generic interpretation of Plains Periphery prehistoric adaptation patterns.
- Summer 1977 Six weeks investigation of Lake Midden Site (EfNgö1), a Late Prehistoric bison processing, fall-winter habitation site near Bulyea Saskatchewan. Initial investigations begun under "Quappelle Basin Archaeological Project" title at the Lake Midden Site included establishment of datum and grid, initial test excavations, soil sampling, botanical inventory, and initial areal survey. Photographic documentation of ceramic materials from the Lake Midden Site in the collections of the National Museum of Canada was also completed during this initial investigation period.

**FIELDWORK cont**

- Summer 1978 Six weeks investigation at a variety of southern Saskatchewan sites (i.e. Medicine Wheels, Teepee Rings, Habitation Sites, etc.). These investigations will be conducted in conjunction with a class: Introduction to Field Methods in Archaeology (Anthropology 399). A portion of this class will be spent with continuing excavations at the Lake Midden Site.
- Summer 1981 Touchwood Hills, Provincial Park, Saskatchewan Archaeological Impact Study. Duration one week.
- Summer 1981 Bar G Ranch Project, White City, Saskatchewan Archaeological Impact Study. Duration one week.
- Spring 1982 Dallas Valley Ranch Project. Archaeological Impact Study near Lumsden, Saskatchewan. Duration one week.
- Summer 1982 Ducks Unlimited Saskatchewan Archaeological Impact Studies 1) Neale-Edmonds Basin Lloydminster; 2) Dumas, Saskatchewan. Project A and B; 3) Wellington Marshes. Duration four weeks.
- Summer 1990 Archaeological Survey of Iron Island Lake Nipissing, Ontario. Duration 2 days.

**PAPERS**

- November 1966 ýSite 21-ML-9, A Late Woodland-Early Historic Site in Mille Lacs County, Minnesotaü, 24<sup>th</sup> Plains Conference, Lincoln, Nebraska.
- April 1967 ýDeer and the Buffer Zone in the Late Prehistoric Period in Minnesotaü, Minnesota Academy of Science Annual Meeting.
- Spring 1968 ýAnalysis of the Unmodified Stone Materials from the Cambria Siteü, Minnesota Academy of Science Annual Meeting.
- Fall 1969 ýPreliminary Report on the Maplewood Siteü, Council for Minnesota Archaeology Annual Meeting.

**PAPERS cont**

- Fall 1970 Chairman, Council for Minnesota Archaeology Meeting.
- Spring 1972 ýPhysical Anthropology ad Archaeologyü, Annual Meeting, Regina Archaeological Society.
- Spring 1973 ýThe Social Consequences of Early Food Productionü, Biology Department Colloquia, University of Regina.
- Spring 1974 ýThe Arts of the Japanese Swordü, Opening Address for exhibit (same title), Norman MacKenzie Art Gallery, Regina.
- Spring 1975 ýPrehistoric Adaptation Strategies in the Ecotone Regina of West Central Minnesotaiü, University of Regina Anthropological Mini-Conference (also Conference Chairman).
- Spring 1976 ýArchaeological Survey of Northern Saskatchewanü, Annual Meeting of Regina Archaeological Society.
- Fall 1976 ýImplications of Ecotone Adaptations Strategies in the North-East Plains Periphery Regionü, Plains Conference.
- Fall 1976 ýThe 1976 Field Season at the Stott Siteü Annual Meeting of Professional Archaeologists of Manitoba.
- Fall 1977 ýQuþAppelle Basin Archaeological Project: Initial Investigations at the Lake Midden Siteü, QuþAppelle Basin Citizens Advisory Board.
- Fall 1977 Participant, Northern Plains Ceramic Symposium ý Lake Midden Ceramics. Plains Conference, Lincoln, Nebraska.
- Spring 1978 ýRecent Investigations at the Lake Midden Siteü, Regina Archaeology Society.
- Spring 1978 ýRecent Investigations at the Lake Midden Siteü, Annual Meeting, Saskatchewan Archaeological Society, Saskatoon, Saskatchewan.
- Spring 1979 ýMimbres Potteryü, University of Minnesota Fine Arts Gallery, Minneapolis.





**PAPERS cont**

- October 1984                      ýIntroduction to Japanese Potteryü, Art Education Dept., University of Regina.
- 1984                                    ýPublic Interpretation of the Anthropology Communityü, WASA Conference, Opening lecture, Regina, Saskatchewan.
- 1984                                    ýAnthropology and the Concept of Cultureü, Regina Police College, University of Regina (4 hour lecture).
- Fall 1990                            ýAnthropology and the Concept of Cultureü, Regina Police College, University of Regina (4 hour lecture).
- Fall 1990                            ýPrehistoric Dakota Cultureü, Saskatchewan and Early Historic, Saskatchewan Indian Federated College (4 hour lecture).
- Winter 1991                        ýAnthropology and the Concept of Cultureü, Regina Police College, University of Regina (4 hour lecture).

**PUBLICATIONS AND REPORTS**

- 1966                                    A Late Woodland-Early Historic Site in Mille Lacs County, Minnesota Archaeological Newsletter Nos. 10-11, Minneapolis, Minnesota.
- 1967                                    A Late Woodland-Early Historic Site in Mille Lacs County, Minnesota. Plains Anthropologist 12-36, Lincoln, Nebraska.
- 1968a                                    Virginia Deer and the Buffer Zone in the Late Prehistoric-Early Protohistoric Periods in Minnesota. Plains Anthropologist 13-40, Lincoln, Nebraska.
- 1968b                                    Analysis of the Bone, Stone and Shell Materials from the Cambria Focus. Unpublished M.A. Thesis, Department of Anthropology, University of Minnesota.
- 1968c                                    Analysis of Unmodified Stone Materials from the Cambria Site. Journal of the Minnesota Academy of Science, Vol. 35(1), Minneapolis, Minnesota.

**PUBLICATIONS AND REPORTS cont**

- 1969a Final Report of the Commissioner 1968-69 for the Minnesota Highway Archaeological Reconnaissance Program. Printed by the Minnesota Historical Society for distribution to highway departments with Archaeological salvage programs in the U.S.
- 1969b Highway Archaeological Reconnaissance Program 1968-69. Archaeological Survey, Savanna River, Portage State Park, 1969, Minnesota Archaeological Newsletter, Minneapolis, Minnesota.
- 1974a The Arts of the Japanese Sword, Exhibition Catalogue, Norman MacKenzie Art Gallery, Regina, Saskatchewan.
- 1974b Subsistence Pattern Change at the Cambria Site - A Review and Hypothesis. In: Aspects of Upper Great Lakes Anthropology - Papers in Honour of Lloyd A. Wilford, Minnesota Prehistoric Archaeology Series, Minnesota Historical Society.
- 1975a Introductory Remarks, Conference Schedule, University of Regina Anthropological Mini-Conference.
- 1975b Recent Activities of the Anthropology Department, University of Regina, Saskatchewan Archaeological Newsletter.
- 1975c Initial Report, Saskatchewan Timber Harvesting Project Phase I - Manuscript submitted to Saskatchewan Department of the Environment.
- 1976a Final Report - Saskatchewan Timber Harvesting Project, Archaeological Component Phase II - Manuscript submitted to Saskatchewan Department of the Environment.
- 1976b Ecotones and Environmental Adaptation Strategies in the Prehistory of North Western Minnesota. Unpublished Ph.D. Thesis, Department of Anthropology, University of Minnesota

**PUBLICATIONS AND REPORTS cont**

- 1976c Implication of Ecotone Adaptation Strategies in the North East Plains Periphery Region, Plains Conference Abstracts 1976.
- 1976d Abstract ý The 1976 Field Season of the Stott Site ý Archae Facts, Journal of the Archaeological Society of South West Manitoba.
- 1976e A Note on the Souris Gravels. Archae Facts: Journal of the Archaeological Society of South-Western Manitoba, Vol. 4(2), Brandon, Manitoba.
- 1976f The Stott Site: 1976 Field Report. Archae Facts: Journal of the Archaeological Society of South-Western Manitoba, Vol. 4(2), Brandon, Manitoba.
- 1977a Lorraine Malach: Saskatchewan Muralist. Arts West, Vol. 2(4), Calgary, Alberta.
- 1977b Randy Woolsey, Potter. Arts West, Vol. 2(5), Calgary, Alberta.
- 1978 A Note on the Japanese Spearhead From the Ruins of the Government Museum at Nagasaki. Central States Archaeological Journal, Missouri.
- 1979a Photo credits ýEzo Fittings Part Iü, Bushido, Vol. I (1), July 1979.
- 1979b Photo credits ýEzo Fittings Part IIü, Bushido, Vol.I (2)
- 1979c Lake Midden Preliminary Report ý Prepared for Saskatchewan Department of Culture and Youth.
- 1980a Lake Midden Site Preliminary Report. Saskatchewan Archaeologist.
- 1980b Review: Kodogu Exhibit, Dunlop Gallery, Regina, Saskatchewan. Bushido, Vol. II.
- 1980c ýCorn Ezo Menuki: a Commentaryü. Bushido.

- 1981a Archaeological Impact Study: Touchwood Hills Provincial Park, Saskatchewan. Report submitted to Saskatchewan Department of Highways and Saskatchewan Department of Culture and Youth, Heritage Division.
- 1981b Archaeological Impact Study: Bar G Ranch Estates. Report submitted to Saskatchewan Department of Culture and Youth, Heritage Division.
- 1982a Archaeological Impact Study: Dallas Valley Ranch Project. Report submitted to Saskatchewan Department of Culture, Heritage Division.
- 1982b Archaeological Impact Study: Neale-Edmonds Basin, Lloydminster, Saskatchewan. Report prepared for Ducks Unlimited Saskatchewan. Submitted to Saskatchewan Department of Culture, Heritage Division.
- 1982c Archaeological Impact Study: Dumas Saskatchewan Project A and B. Report prepared for Ducks Unlimited Saskatchewan. Submitted to Saskatchewan Department of Culture, Heritage Division.
- 1982d Archaeological Impact Study: Wellington Marshes. Report prepared for Ducks Unlimited Saskatchewan. Submitted to Saskatchewan Department of Culture, Heritage Division.
- 1983 ýMimbres Pottery from the Galaz Site, N. Mexico; A Community Assessmentü, Chocmool Conference Abstracts, University of Calgary.
- 1983 / 85 ýA Structural Comparison of the Maplewood, Stott, and Lake Midden Sitesü, UNIC III Conference, University of Minnesota. Reprints in Anthropology, Vol.31, J. and L. Reprint Co. Lincoln, Neb. (original publication, not reprint).
- 1990 ýEnvironmental Impact Statement: A Brief Archaeological Survey of Iron Island, Lake Nipissing, Ontario.

### **PAPERS AND PUBLICATIONS IN PREPARATION AND ONGOING RESEARCH PROJECTS**

- Revision of "Ecotone Adaptation Strategies"
- Analysis of Fish Scales from the Maplewood and Stott Sites
- A note on Blackduck Double Mouth Mortuary Vessels
- A Reconstructed Ceramic Vessel from the Maplewood Site
- Re-Analysis of the Non-Ceramic Materials from the Cambria Site
- Analysis of Japanese Swords and Sword Fittings of Higo Province.
- In Preparation "A Note on Some Brief Investigations and Lithic Analysis at the Gompf Site"
- Analysis of Mimbres pottery from the Galaz Site
- Bibliography of Oriental Ceramics published in European Languages

### **MAJOR RESEARCH INTERESTS AND AREAS OF EXPERTISE**

- Ecological Analysis of Human Adaptation Patterns "ecological and subsistence pattern changes and their relationships to levels of socio-cultural integration, social stratification, craft and vocational specialization, etc."
- Ethnology and Archaeology of North America "especially Plains, Plains Periphery and North Eastern North America. Emphasis on analysis and theoretical frameworks of archaeological materials derived from ecotone environments, i.e., transitional ecotones in Wisconsin, Minnesota, Manitoba and Saskatchewan."
- Ethnology and Prehistory of Japan and China.
- North American Lithic Technology
- Ceramic Technology "North American and Far Eastern Focus"
- Contemporary North American and Asian Studio and Folk Ceramics and Arts and Crafts.
- Ethnobotany: especially non-subsistence plant exploitation.
- Research Methodology.

### **SPECIAL SKILLS**

- Ceramic Technology and Analysis
- Archaeological Faunal Analysis
- Geology ÿ especially Paleontology

### **CONSULTATION ACTIVITY**

- See Fieldwork Activities, February 1972, consultation duties for Department of Northern Saskatchewan.
- Fall 1972 ÿ Member of Yoyogi Museum of Tokoyo KBTHK Cultural Attribution Board (Shinsa).
- Consultation on a continuing basis with Museum of Natural History, Regina, Saskatchewan, concerning both display and research activities.
- Consultation activities initiated Fall 1973 with Wild Animal Park, Moose Jaw, Saskatchewan. Consultative activities concerning acquisition, care and display of various primate species.
- Archaeological Consultant ÿ Minnesota Historical Society / Minnesota Highway
- Department Consultation for Identification and Appraisal of Asian and North American Archaeological and Ethnographic Materials ÿ Ongoing.
- Research Advisor, Saskatchewan Falconry Association, 1972-73.
- J.A.C. Struthers and Associates, January ÿ June 1973.
- QuþAppelle Basin Study ÿ Archaeological and Historic Component, 1974-75, Saskatchewan Department of Tourism and Renewable Resources.
- 1975-76 Archaeological Consultant to Saskatchewan Department of the Environment (Subcontract through C.D. Schultz and Co., British Columbia).
- 1976 Consultant to University of Brandon ÿ Stott Site.
- 1977 Director ýQuþAppelle Basin Archaeological Projectü.
- 1978 Consultant to Saskatchewan Department of Culture and Youth ÿ assessment contract for Lake Midden Site.

## **PROFESSIONAL AND PUBLIC SERVICE**

- 1983-84      President Elect Ÿ Anthropology Section Western Anthropology and Sociology Association
- 1984          WASA - Anthropology Section symposium organizer for WASA annual conference, Regina
- Liaison consulting between Anthropology Department, U of R and Regina Archaeology Society.
- Member Regina Philatelic Society
- Special consultant to RCMP and coroner's office:  
                a)      identification and analysis of restricted animal parts;  
                b)      special (forensic and) consultant on autopsy work of coroners department (Fall 1983 Ÿ homicide victim analysis).
- Fall 1983      Southern Iron: Joint Coordinator Kyushu Kodogu Exhibit joint JSSUS Ÿ Token Study Group Annual Meeting.
- 1986          Anthropology Liaison to Saskatchewan Indian Federated College Health Care Program.
- 1990-91      Anthropology representative to Saskatchewan Indian Federated College Ÿ Joint Department Curriculum Development Museology Certificate Program.

## **PROFESSIONAL AND COMMUNITY ASSOCIATIONS**

- Token Kenkyukai Shinsa Conference, Dallas Texas, 1972.
- Ex. Japanese Sword Society of the United States.
- Nihon Bijutsu Token Hozan Kyokai (Society for the Preservation of Japanese Swords).
- Midwest Token Group.
- Saskatchewan Weapons Collector Association.
- Council for Minnesota Archaeology.
- Ex. Society for American Archaeology.
- Sioux Archaeological Society (Honorary Member).
- Ex. Current Anthropological Association.
- Saskatchewan Archaeological Society.
- Plains Anthropological Society.
- University of Regina Faculty Association.
- Ex. Saskatchewan Falconry Association.



**PROFESSIONAL AND COMMUNITY ASSOCIATIONS cont**

- Regina Archaeological Society.
- Saskatchewan Archaeologists' Professional Group (Founding Member).

**DEPARTMENTAL, UNIVERSITY AND COMMUNITY ACTIVITIES**

- Social Science Faculty Colloquia, University of Regina, 1971
- ŷBü Member, Department of Sociology, University of Regina, 1971-72
- Chairman, Committee for Open House Arrangements, University of Regina Anthropology Department 1971.
- Shinsa Cultural Attribution Member, Token Kenkyukai, Dallas, Texas 1972
- Bijutsu Submissions Token KenKyukai, Dallas, Texas, 1972.
- Organizer, gallery exhibit, ŷThe Arts of the Japanese Swordü Norman MacKenzie Art Gallery, Regina, Saskatchewan, 1974
- Participant, Anthropology in Saskatchewan ŷ Conference of Anthropology Departments, University of Regina and University of Saskatchewan, 1974
- Search Committee for Associate Dean of Arts ŷ Anthropology Department member, University of Regina, 1974
- Chairman 1974-75-76, University of Regina Anthropology Department Seminar Colloquium
- Member, Library Committee, 1972-present, Department of Anthropology, University of Regina
- Laboratory Supervisor, 1972-present, Department of Anthropology, University of Regina
- Chairman and Co-ordinator, University of Regina, Anthropological Mini-Conference, 1975
- Alternate Member, Executive Committee, Division of Social Sciences, University of Regina
- Chairman, Anthropology Department Subcommittee on Anthropological Displays, 1974-75
- Member, Faculty of Arts Review Committee, 1977-present
- Saskatchewan Professional Archaeologist Group
  - Founding Member
  - Member, Subcommittee, General Information
  - Member, Subcommittee, Antiquity and Heritage Legislation
- Committee on Admission and Studies, University of Regina, 1979-82

**REFERENCES**

George W. Arthur  
3177 Pearks Road  
Victoria, BC V9C 2L7

O. Elden Johnson  
Department of Anthropology  
University of Minnesota  
Minneapolis, Minnesota USA 55455

Roman Brozowski  
Dean of Arts  
Nipissing University College  
North Bay, Ontario

C. Thomas Shay  
Department of Anthropology  
University of Manitoba  
Winnipeg, Manitoba

Leigh Simms  
Curator of Anthropology  
Museum of Man  
Winnipeg, Manitoba

## TEACHING EXPERIENCE

Teaching Assistant for Introductory Physical Anthropology and Archaeology (1A) and Introductory Cultural Anthropology (2A) 1965-66, 1966-67, 1967-69, 1969-70 (Total of twelve quarters at the University of Minnesota).

Research Assistant, Fall 1968 ÿ Spring 1969.

### University of Minnesota

- Fall 1968 - Anthropology 1A Semester ÿ U of Minnesota
- Spring 1969 - Anthropology 1A Semester ÿ U of Minnesota
- Fall 1969 - Anthropology 1A Semester ÿ U of Minnesota
- Fall 1969 - Anthropology 1A Quarter ÿ U of Minnesota
- Spring 1970 - Anthropology 1A Semester ÿ U of Minnesota
- Spring 1970 - Anthropology 90 (North Archaeology) Semester
- Spring 1970 - Anthropology 2A Quarter
- Fall 1970 - Anthropology 1-001 (Introduction Physical Anthropology and Archaeology) Quarter, U of Minnesota
- Anthropology and Archaeology (Quarter, U of Minnesota)
- Ethnology of North America (Quarter, U of Minnesota)
- Cultural Ecology (Semester, Macalaster College, St. Paul, Minnesota)
- Winter 1971 - Anthropology 1-001 (Quarter, U of Minnesota)
- Introductory Cultural Anthropology (Quarter, Lakewood Jr. College, White Bear, Minnesota)
- Spring 1971 - Cultural Ecology (Semester, Macalaster College)
- Old World Archaeology (Quarter, U of Minnesota)

### Department of Anthropology, University of Regina

- Fall 1971 - Anthropology 100 (Introduction of Anthropology)
- Anthropology 250 (Introduction to Physical Anth)
- Spring 1972 - Anthropology 100 (Introduction to Anthropology)
- Anthropology 232 (Ethnology of Oceania)
- Anthropology 290 (Reading Class ÿ Ethno-Ornithology)
- Summer 1972 - Anthropology 231 (Ethnology of North America)
- Fall 1972 - Anthropology 100 (Introduction to Anthropology)
- Anthropology 250 (Introduction to Physical Anth)
- Anthropology 390 (Reading Class)
- Spring 1973 - Anthropology 100 (Introduction to Anthropology)
- Anthropology 232 (Ethnology of Japan)
- Anthropology 390 (Reading Class, Paleo-ethnology of Australopithecenes)

CURRICULUM VITAE  
CHARLES R. WATRALL  
PAGE 18  
ADDENDUM

- Spring 1973 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 232 (Ethnology of Japan)  
- Anthropology 390 (Reading Class, Paleo-ethnology of Australopithecenes)
- Spring 1973 - Anthropology 100 (Introduction to Anthropology)  
Fall 1973 - Anthropology 233 (Ethnology of North America)  
- Anthropology 250 (Introduction to Physical Anth)  
- Anthropology 391 (Reading Class, Australopithecinae)  
- Anthropology 490 (Reading Class, North American Ethnology)
- Spring 1974 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 232 (Ethnology of Japan)  
- Anthropology 390 (Reading Class)
- Summer 1974 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 250 (Introduction to Physical Anth)  
- Anthropology 233 (Ethnology of Oceania)
- Spring 1975 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 322 (Theory and Method in Archaeology)  
- Anthropology 304 (Partial Theory in Anthropology)  
- Anthropology 490 (Directed Reading Class)
- Summer 1975 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 250 (Introduction to Physical Anth)  
- Anthropology 226 (Archaeology of China, Korea, Japan)  
- Anthropology 492 (Directed Reading Class)  
- Anthropology 496 (Directed Reading Class)  
- Anthropology 498 ÿ 499 (Honours Thesis)
- Spring 1976 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 239 (Ethnology of Japan)  
- Anthropology 499 (Honours Thesis)
- Summer 1976 - Field Methods in Archaeology ÿ Brandon University  
Fall 1976 - Anthropology 250 (Introduction to Physical Anth)  
- Anthropology 234 (Introduction to North American Ethnology)  
- Anthropology 390 (Reading Class)
- Spring 1976 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 232 (Archaeology of Eastern North America)  
- Anthropology 250 (Introduction to Physical Anthropology)  
- Social Studies 491 (Reading Class)
- Spring 1977 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 232 (Eastern North American Archaeology)  
- Anthropology 390 (Reading Class)
- Summer 1977 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 390 (Reading Class)  
- Anthropology 397 (Field Methods in Archaeology)

CURRICULUM VITAE  
CHARLES R. WATRALL  
PAGE 19  
ADDENDUM

- Fall 1977 - Anthropology 221 (Introduction to Prehistory in the Americas)  
- Anthropology 226 (Archaeology of China, Korea, Japan)  
- Anthropology 390 (Reading Class)
- Spring 1977 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 239 (Ethnology of Japan)  
- Anthropology 390 (Reading Class)  
- Anthropology 890 (Graduate Reading Class)
- Spring 1978 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 239 (Ethnology of Japan)  
- Anthropology 390 (Reading Class)  
- Anthropology 399 (Introduction to Archaeological Field Methods)
- Fall 1979 - Anthropology 208 (Art and Culture)  
- Anthropology 250 (Human Evolution and Development)
- Spring 1980 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 239 (Ethnology of Japan)  
- Anthropology 390 (Reading Class, Ethnozoology)
- Fall 1980 - Anthropology 208 (Art and Culture)  
- Anthropology 226 (Archaeology of China, Korea, Japan)  
- Anthropology 391 (Analysis of Prehistoric Fish Remains)  
- Anthropology 490 (Reading Class)
- Winter 1981 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 209 (Pre-Industrial Agriculture)  
- Anthropology 392 (Reading Class)  
- Anthropology 498 (Honours Thesis)
- Fall 1981 - Anthropology 208 (Art and Culture)  
- Anthropology 250 (Human Evolution and Development)  
- Anthropology 392 (Reading Class)  
- Anthropology 499 (Honours Thesis)
- Winter 1982 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 239 (Ethnology of Japan)  
- Anthropology 390 (Reading Class)  
- Anthropology 490 (Reading Class)  
- Anthropology 499 (Honours Thesis)
- Fall 1982 - Anthropology 391 (Reading Class)  
- Anthropology 400 (Seminar)  
- Anthropology 498 (Honours Thesis)
- Winter 1983 - Anthropology 100 (Introduction to Anthropology)  
- Anthropology 208 (Art and Culture)  
- Anthropology 499 (Honours Thesis)
- Fall 1983 - Anthropology 208 (Art and Culture)  
- Anthropology 250 (Human Evolution)  
- Anthropology 390 (Reading Class)  
- Anthropology 400 (Seminar)

CURRICULUM VITAE  
 CHARLES R. WATRALL  
 PAGE 20  
 ADDENDUM

- Anthropology 490 (Reading Class)
- Anthropology 498 (Honours Thesis)
- Winter 1984
  - Anthropology 100 (Introduction to Anthropology)
  - Anthropology 226 (Archaeology of China, Korea, Japan)
  - Anthropology 390 (Reading Class)
  - Anthropology 491 (Reading Class)
  - Anthropology 499 (Honours Thesis)
- Summer 1984
  - Anthropology 397 (Reading Class)
- Fall 1984
  - Anthropology 100 (Introduction to Anthropology)
  - Anthropology 239 (Ethnology of Japan)
  - Anthropology 392 (Reading Class)
- 
- Winter 1985
  - Anthropology 490 (Reading Class)
  - Anthropology 208 (Art and Culture)
  - Anthropology 322 (Theory & Method in Archaeology)
  - Anthropology 498 (Honours Thesis)
  - Anthropology 499 (Honours Thesis)
- Fall 1985
  - Anthropology 100 (Introduction to Anthropology)
  - Anthropology 250 (Human Evolution & Development)
  - Anthropology 491 (Reading Class)
  - Anthropology 492 (Reading Class)
  - Anthropology 498 (Honours Thesis)
- Winter 1986
  - Anthropology 100 (Introduction to Anthropology)
  - Anthropology 208 (Arts and Culture)
  - Anthropology 499 (Honours Thesis)
- Fall 1986
  - Sabbatical Leave
- Winter 1987
  - Anthropology 100 (Introduction to Anthropology)
  - Anthropology 239 (Tradition Japanese Society)
  - Anthropology 491 (Reading Class)
- Fall 1987
  - Anthropology 208 (Art and Culture)
  - Anthropology 250 (Human Evolution & Development)
  - Anthropology 491 (Reading Class)
- Winter 1988
  - Anthropology 100 (Introduction to Anthropology)
  - Anthropology 226 (Archaeology of China, Korea, Japan)
  - Anthropology 491 (Reading Class)
  - Anthropology 493 (Reading Class)
- Fall 1988
  - Anthropology 221 (Intro to Prehistory of North America)
  - Anthropology 239 (Traditional Japanese Society)
  - Anthropology 390 (Reading Class)
  - Anthropology 493 (Reading Class)
- Winter 1989
  - Anthropology 100 (Introduction to Anthropology)
  - Anthropology 209 (Pre-Industrial Agriculture)
  - Anthropology 499 (Honours Thesis)

- |             |   |                                                       |
|-------------|---|-------------------------------------------------------|
| Fall 1989   | - | Anthropology 208 (Art and Culture)                    |
|             | - | Anthropology 250 (Human Evolution & Development)      |
|             | - | Anthropology 400 (Seminar)                            |
|             | - | Anthropology 490 (Reading Class)                      |
|             | - | Anthropology 498 (Honours Thesis)                     |
|             | - | Anthropology 499 (Honours Thesis)                     |
| Winter 1990 | - | Anthropology 100 (Introduction to Anthropology)       |
|             | - | Anthropology 226 (Archaeology of China, Korea, Japan) |
|             | - | Anthropology 491 (Reading Class)                      |
|             | - | Anthropology 499 (Honours Thesis)                     |
| Fall 1990   | - | Anthropology 239 (Traditional Japanese Society)       |
|             | - | Anthropology 250 (Human Evolution & Development)      |
|             | - | Anthropology 390 (Reading Class)                      |
|             | - | Anthropology 498 (Honours Thesis)                     |
| Winter 1991 | - | Anthropology 100 (Introduction to Anthropology)       |
|             | - | Anthropology 208 (Art and Culture)                    |
|             | - | Anthropology 394 (Reading Class)                      |
|             | - | Anthropology 492 (Reading Class)                      |
|             | - | Anthropology 499 (Honours Thesis)                     |

### **Directed Reading and Research Classes**

- Ethno-Ornithology
- Paleo-Ethnology of Australopithecenes
- Australopithecinea
- Ethnology of Chippewya and Plains Cree
- Saskatchewan Ethnology
- Advanced Economic Anthropology
- Ecology in Anthropology
- Statistical Techniques of Ceramic Analysis
- Introduction to Primatology
- Soils Analysis and Archaeology
- Northern Plains Ceramics
- China / Japan Pottery

### **Courses in Preparation**

- |           |   |                                             |
|-----------|---|---------------------------------------------|
| 200 level | - | Anthropology and Science Fiction Literature |
|           | - | European Archaeology of Egypt               |
| 300 level | - | Introductory Ethnobotany                    |





**Other Teaching**

- Summer 1983 - Nipissing College University, North Bay, Ontario  
Introduction Cultural Anthropology yPeoples of the Worldü
- 1984 - Introduction to Physical Anthropology and Human Evolution  
- Introduction to Archaeology
- 1985 - Human Evolution  
- North American Indians
- 1986 - Peoples of the World  
- Introduction to Archaeology
- 1987 - Introduction to Physical Anthropology and Human Evolution  
- North American Indians
- 1988 - Peoples of the World  
- Introduction to Archaeology
- 1989 - Peoples of the World  
- Introduction to North American Indians
- 1990 - Peoples of the World  
- Introduction to Archaeology