

Chrys-Ellen M. Neville

Personal:

Education:

Post-Secondary: 1
Victoria

1982-1986

University of Victoria
Victoria, British Columbia

Degree: BSc. Biology

Professional Experience

1. Experience in leading projects studying factors regulating the production of marine and freshwater fish species. I have over 20 years experience designing, leading and conducting field research programs on both salmonid and non-salmonid species. This research involves the use of commercial (mid-water trawl, bottom trawl, longline, troll, gillnet, seine, trap) and experimental fishing gear and includes working with both Departmental vessels (W.E. Ricker, Caligus, Clupea) and commercial vessels. In addition, I have designed and conducted studies in freshwater streams using electroshockers, seines, and traps and am experienced in acoustically tagging juvenile salmon.
2. Experience in the development of ecosystem-based approaches for the management of fisheries. I am a co-developer of an ecosystem model for the Strait of Georgia and for Bowie Seamount. The Strait of Georgia model is a key component of the Strait of Georgia Ecosystem Research Initiative. The Bowie Seamount model was developed as part of our contribution to understanding the dynamics of the marine ecosystem at Bowie Seamount during the process of having it listed as a marine protected area.
3. Assessment of the impact of climate and climate change on the structure and function of coastal ecosystems. Current research continues to examine the impacts of climatic regime changes and to develop an understanding of how these changes impact various fish populations, specifically Strait of Georgia salmon populations.
4. Experience in working on politically sensitive issues including the impacts of sea lice on wild Pacific salmon and the factors associated with the extremely poor returns of Fraser River sockeye in 2009. This has included experience communicating hypothesis and results of research with both DFO and non DFO stakeholders by briefing notes, primary publications and presentations.
4. Experience in the preparation and publication of scientific papers. I am co-author on numerous publications that provide recommendations to PSARC, provide annual reports to NPAFC and/or PICES, are published in the primary literature and/or are presented at regional and international conferences and symposia. My publication list is attached.
5. Analysis of biological, oceanographic and climate data. The areas of research I am or have been involved with are varied and as a result I have developed experience in a variety of analytical methods. These include estimations of abundance of fish populations, diet analysis, analysis of climate and physical data and the development of ecosystem models. In most of these cases the issues are complex and require a multi-disciplinary approach to analysis.

6. Experience in presenting research results to both scientific and general audiences. I regularly present the results of research to various audiences both regionally and internationally. This includes presenting results of research on controversial or politically sensitive projects including the impact of sea lice on the marine survival of pink and chum salmon.
7. Experience as member of regional committee. I have participated in several regional committees over the past 15 years. I am currently a member of the review committee for the Strait of Georgia Ecosystem Research Initiative (ERI). As a committee member I review and recommend funding levels for submitted research proposals.
8. Experience with Microsoft Office programs including Word, Power Point, Excel and Access.
9. Management of annual program budgets (>500K). This includes successfully writing proposals for external funding; managing budgets of multiple major programs concurrently including interactions with non-DFO participants of studies; and hiring and supervising term, casual and student employees.
10. Experience in being program manager for work unit. In February and March 2010 I was appointed Acting Program Head for the Strait of Georgia Program (Dr. Richard Beamish on medical leave). During this time I was responsible for representing our program and securing necessary funding for research that was to be conducted in 2010/2011 fiscal year. In addition, I was lead contact for work that had been initiated by our program looking for the factors effecting the marine survival of Fraser River sockeye that went to sea in 2007. In addition, I effectively managed and motivated staff that were shocked after the sudden medical leave of Dr. Richard Beamish.
11. Experience in maintaining good working relationship with other science organizations, with the Fishing and Aquaculture Industry and with NGO's who are interested in or participate in our research programs. Our current research on Cowichan River chinook salmon integrates multiple stakeholders including governmental and community groups involved in the project.
12. Experience in designing and conducting laboratory research on Pacific lamprey species including *Lampetra richardsoni* (var. *maifuga*) and some possible new species of lamprey collected in freshwater streams and lakes from California to British Columbia.
13. Experience in operating boats and vessels including 12-20ft outboard boats to 40ft packer.
14. Experience in management and running of shellfish aquaculture operation. This includes on site maintenance of longline (tray) and beach culture, purchasing seed and sale of product and administration of lease tenures and licenses. In addition, oversaw research activities (funded by BC Science Council) on improvement of substrate habitat for clam culture.

Recognition

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| 1997 | R.E. Foerster Award for outstanding scientific publication for 1997 in the Pacific Region. |
| 2009 | Prix de Excellence Award for work conducted at Bowie Seamount |

Work Experience:

2010-February-March Depa Pacific	Acting Program Head (Bi-04) Salmon Interactions /Strait of Georgia Program rtment of Fisheries and Oceans Biological Station, Nanaimo, B.C.
1993-present Depa Pacific	Research Biologist Salmon Interactions /Strait of Georgia Program rtment of Fisheries and Oceans Biological Station, Nanaimo, B.C.

1992-1999	Co-owner operator shellfish tenure San Mateo Shellfish, San Mateo Bay Barkley Sound Oyster and clam tenures
1988-1993	Research Technician Strait of Georgia Program Department of Fisheries and Oceans Pacific Biological Station, Nanaimo, B.C.
1987	Research Technician Marine Mammal Research Program Department of Fisheries and Oceans Pacific Biological Station, Nanaimo, B.C.
1986	Research Assistant Westcoast Whale Research Kona, Hawaii
1985	Student (Technician) Shellfish Section Department of Fisheries and Oceans Pacific Biological Station, Nanaimo, B.C.

Publications

1. Beamish, R.J., and C.M. Neville. 1992. The importance of size as an isolating mechanism in lampreys. *Copeia* 1992(1): 191-196.
2. Neville, C.M., and R.J. Beamish. 1992. Hagfish. Pages 267-280 in B.M. Leaman (ed.) Groundfish stock assessments for the west coast of Canada in 1991 and recommended yield options for 1992. Canadian Technical Report of Fisheries and Aquatic Sciences 1866.
3. Beamish, R.J., and C.M. Neville. 1993. Hagfish. Pages 360-378 in B.M. Leaman and M. Stocker (eds.) Groundfish stock assessments for the west coast of Canada in 1992 and recommended yield options for 1993. Canadian Technical Report of Fisheries and Aquatic Sciences 1919.
4. Whyte, J.N.C., R.J. Beamish, N.G. Ginther, and C.M. Neville. 1993. Nutritional condition of the Pacific lamprey (*Lampetra tridentata*) deprived of food for periods of up to two years. *Canadian Journal of Fisheries and Aquatic Sciences* 50: 591-599.
5. Beamish, R.J., C.M. Neville, B.L. Thomson, P.J. Harrison, and M. St. John. 1994. A relationship between Fraser River discharge and interannual production of Pacific salmon (*Oncorhynchus* spp.) and Pacific herring (*Clupea pallasii*) in the Strait of Georgia. *Canadian Journal of Fisheries and Aquatic Sciences* 51: 2843-2855.
6. Beamish, R.J., B.L. Thomson, and C.-E. M. Neville. 1994. Inshore lingcod. PSARC Document G94-2A.
7. Beamish, R., Z. Zhang, and C.-E. Neville. 1994. Delayed high seas migration by chum salmon. (NPAFC Doc. 91). 14p. Dept. of Fisheries and Oceans, Biological Sciences Branch, Pacific Biological Station, Nanaimo, B.C. Canada. V9R 5K6.
8. Beamish, R.J., and C.M. Neville. 1995. Coastal shifts in salmon carrying capacity. (NPAFC Doc. 161) 13p. Department of Fisheries & Oceans, Science Branch, Pacific Biological Station. Nanaimo, B.C. V9R 5K6, Canada.
9. Beamish, R.J., and C.-E.M. Neville. 1995. Pacific salmon and Pacific herring mortalities in the Fraser River plume caused by river lamprey (*Lampetra ayresii*). *Canadian Journal of Fisheries and Aquatic Sciences* 52: 644-650.
10. Beamish, R.J., C.-E. Neville, J. Rice, and Z. Zhang. 1995. Factors affecting the marine survival of Coho salmon in the Strait of Georgia. PSARC Working Paper S95-4. 32p. + 7 figs.
11. Beamish, R.J., B.E. Riddell, C.-E.M. Neville, B.L. Thomson, and Z. Zhang. 1995. Declines in chinook salmon catches in the Strait of Georgia in relation to shifts in the marine environment. *Fisheries Oceanography* 4: 243-256.
12. Beamish, R.J., B.L. Thomson, C.-E.M. Neville, B.E. Riddell, and Z. Zhang. 1995. Evidence of a possible relationship between changes in chinook salmon catches in the Strait of Georgia and shifts in the marine environment. PSARC Working Paper S95-2. 40p. + 13 figs.
13. Beamish, R.J., C. Mahnken, and C.M. Neville. 1997. Hatchery and wild production of Pacific salmon in relation to large-scale, natural shifts in the productivity of the marine environment. *ICES Journal of Marine Science* 54: 1200 - 1215.
14. Beamish, R.J., and C. M. Neville. 1997. Climate-ocean changes and the impacts on young salmon in the Strait of Georgia. Pages 213-220 in R.L. Emmett and M.H. Schiewe (eds.) Estuarine and ocean survival of Northeastern Pacific salmon: proceedings of the workshop, March 20-22, 1996, Newport, Oregon. NOAA Technical Memorandum NMFS-NWFSC-29.

15. Beamish, R.J., C.-E.M. Neville, and A.J. Cass. 1997. Production of Fraser River sockeye salmon (*Oncorhynchus nerka*) in relation to decadal-scale changes in the climate and the ocean. *Canadian Journal of Fisheries and Aquatic Sciences* 54: 543-554.
16. Beamish, R.J., and C.-E.M. Neville. 1999. Large-scale climate-related changes in the carrying capacity for salmon in the Strait of Georgia and northern North Pacific ecosystems. Pages 27-41 in K. Sherman and Q. Tang (eds.) *Large marine ecosystems of the Pacific Rim: a assessment, sustainability, and management*. Blackwell Science, Malden, Massachusetts.
17. Neville, C.-E.M., and R.J. Beamish. 1999. Comparison of the diets of ocean age 0 hatchery and wild chinook salmon. (NPAFC Doc. 435). 14p. Dept. of Fisheries and Oceans, Pacific Biological Station, Nanaimo, B.C. Canada. V9R 5K6.
18. Beamish, R.J., K.L. Poier, R.M. Sweeting, and C.M. Neville. 2000. An abrupt increase in the abundance of juvenile salmon in the Strait of Georgia. (NPAFC Doc. 473) Pacific Biological Station, Nanaimo, B.C. 21p.
19. Beamish, R.J., G.A. McFarlane, C.M. Neville, and I. Pearsall. 2001. Changes in the Strait of Georgia ECOPATH model needed to balance the abrupt increases in productivity that occurred in 2000. Pages 5-9 in G.A. McFarlane, B.A. Megrey, B.A. Taft, and W.T. Peterson (eds.) *PICES-GLOBEC International Program on Climate Change and Carrying Capacity: Report of the 2000 Bass, Model, Monitor and Rex Workshops, and the 2001 Bass/Model Workshop*. PICES Scientific Report No. 17.
20. Beamish, R.J., and C.M. Neville. 2001. Predation-based mortality on juvenile salmon in the Strait of Georgia. Pages 11-13 in R. Beamish, Y. Ishida, V. Krpenko, P. Livingston, and K. Myers (eds.) *Workshop on factors affecting production of juvenile salmon: comparative studies on juvenile salmon ecology between the east and west North Pacific Ocean*. North Pacific Anadromous Fish Commission Technical Report 2.
21. Beamish, R.J., C.M. Neville, R.M. Sweeting, and K.L. Poier. 2001. Persistence of the improved productivity of 2000 in the Strait of Georgia, British Columbia, Canada, through to 2001. (NPAFC Doc. 565). Fisheries and Oceans Canada, Science Branch –Pacific Region, Pacific Biological Station, Nanaimo, B.C., Canada V9R 5K6. 19pp.
22. Benson, A.J., C.M. Neville, and G.A. McFarlane. 2001. An update for the British Columbia experimental fishery for Pacific herring (*Eptatretus sto utii*). *Canadian Science Advisory Secretariat Research Document* 2001/149. 25p.
23. Beamish, R.J., C. Neville, R. Sweeting, K. Poier, and R. Khan. 2002. Recent increases in coho production in the Strait of Georgia are related to changes in climate. Pages 10-19 in T. Droscher (ed.) *Proceedings of the 2001 Puget Sound Research Conference*. Plenary Session and Panel Discussion: The challenges facing Puget Sound and Georgia Basin scientists. Puget Sound Action Team. Olympia, Washington.
24. Beamish, R.J., C.M. Neville, R.M. Sweeting, K.L. Poier, and G.A. McFarlane. 2002. Changes in the dynamics of coho in the Strait of Georgia in the last decade. Pages 56-64 in C. Orr, P. Gallagher, and J. Penikett (eds.) *Speaking for the salmon: hatcheries and the protection of wild salmon*. Continuing Studies in Science, Simon Fraser University, British Columbia.
25. Beamish, R.J., R.M. Sweeting, C.E. Neville, and K. Poier. 2002. A climate related explanation for the natural control of Pacific salmon abundance in the first marine year. *North Pacific Anadromous Fish Commission Technical Report* 4: 9-11.

26. Beamish, R.J., C.M. Neville, and R. Sweeting. 2003. Ecosystem Based Management should include an assessment of the impacts of Pacific salmon escapements and enhancement on the juvenile salmon that rear in the Strait of Georgia. Georgia Basin/Puget Sound Research Conference 2003.
27. Beamish, R.J., S. Dawe, R.M. Sweeting, E. Gordon, N. Ambers, A. Hurst and C. M. Neville. 2003. Surveys of Pacific salmon in the major inlets of British Columbia. NPAFC Doc. 708.
28. Beamish, R.J., and C.M. Neville. 2003. The importance of establishing Bowie Seamount as an experimental research area. Pp 652-663 In A. Grant, D. Smith, and J. Beumer (eds.) Aquatic protected areas – what works best and how do we know? Proceedings of the World Congress on Aquatic Protected Areas, Cairns, Australia, August, 2002. University of Queensland Press, Queensland, Australia.
29. Beamish, R.J., C.M. Neville, and R.M. Sweeting. 2003. The importance of incorporating information on climate related marine ecosystem changes into fisheries management. Proceedings of conference on ecosystem-based management.
30. Sweeting, R.M., R.J. Beamish, D.J. Noakes, and C.M. Neville. 2003. Replacement of wild coho salmon by hatchery-reared coho salmon in the Strait of Georgia over the past three decades. North American Journal of Fisheries Management 23: 492-502.
31. Beamish, R.J., A.J. Benson, R.M. Sweeting, and C.M. Neville. 2004. Regimes and the history of the major fisheries off Canada's west coast. Progress in Oceanography 60: 355-385.
32. Beamish, R.J., C. Mahnken, and C.M. Neville. 2004. Evidence that reduced early marine growth is associated with lower marine survival of coho salmon. Transactions of the American Fisheries Society 133: 26-33.
33. Beamish, R.J., J.T. Schnute, A.J. Cass, C.M. Neville, and R.M. Sweeting. 2004. The influence of climate on the stock and recruitment of pink and sockeye salmon from the Fraser River, British Columbia, Canada. Transactions of the American Fisheries Society 133: 1396-1412.
34. Beamish, R.J., R.M. Sweeting, and C.M. Neville. 2004. Improvement of juvenile Pacific salmon production in a regional ecosystem after the 1998 regime shift. Transactions of the American Fisheries Society 133: 1152-1164.
35. Sweeting, R.M., Beamish, R.J., and Neville, C.M. 2004. The continuation of the productive regime in the Strait of Georgia. (NPAFC Doc. 818). Fisheries & Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC, Canada, V9T 6N7.
36. Beamish, R.J., Neville, C.M., and Sweeting, R.M. 2004. Sea lice counts on Adult Pacific salmon caught in the Central Coast of British Columbia using trawl and troll gear. (NPAFC Doc. 819), Fisheries & Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC, Canada, V9T 6N7.
37. Beamish, R.J., C.M. Neville, R.M. Sweeting, and N. Ambers. 2005. Sea lice on adult Pacific salmon in the coastal waters of Central British Columbia, Canada Fisheries Research 76: 198-208.
38. Beamish, R.J., Neville, C.M., Sweeting, R.M., Ambers, N. & Gordon, E.K. 2005. Adult Pacific Salmon are a Major Source of Sea lice in Coastal Ecosystems. Extended abstract. In Lessons from the Past to Optimize the Future. Aquaculture Europe 2005, Trondheim, Norway, August 5-9, 2005, pp. 127-128.

39. Sweeting, R.M., Beamish, R.J., Neville, C.M. 2005. Crystalline otoliths in teleosts: Comparisons between hatchery and wild coho salmon (*Oncorhynchus kisutch*) in the Strait of Georgia. *Reviews in Fish Biology and Fisheries*. (2004), 14: 361-369.
40. Beamish, R.J. Ambers, N., Hunter, K., Neville, C. 2005. A comparison of sea lice on individually caught adult Pacific salmon in the coastal waters of British Columbia in August of 2004 and 2005. October 2005. NPAFC Doc. 874. Fisheries & Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC V9T 6N7, Canada.
41. Beamish, R.J., Sweeting, R.M., Neville, C.M., Lange, K. 2005. Changing trends in the rearing capacity of the Strait of Georgia ecosystem for juvenile Pacific salmon. October 2005. NPAFC Doc. 875. Fisheries & Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC V9T 6N7, Canada.
42. Beamish, R. Gordon, E., Neville, C. and Sweeting, R. 2006. Evidence of a linkage between fall-winter ocean conditions and the critical size hypothesis for a study of pink salmon in the central coast area of British Columbia. NPAFC Doc. 982. Fisheries and Oceans Canada, Science Region - Pacific Biological Station, Nanaimo BC, Canada V9T 6N7. 14p.
43. Beamish, R.J., Jones, S., Neville, C., Sweeting, R., Karreman, G., Saksida, S., Gordon, E. 2006. Exceptional marine survival of pink salmon that entered the marine environment in 2003 suggests that farmed Atlantic salmon and Pacific salmon can coexist successfully in a marine ecosystem on the Pacific coast of Canada. *ICES Journal of Marine Science*. 63: 1326-1337.
44. Beamish, R.J., and C.M. Neville. 2006. Ecosystem Bill of Rights. Pp. 233-245 In D.R. Rothwell and D.L. Van derZwaag (eds.) *Towards principled oceans governance: Australian and Canadian experiences and challenges*. Routledge. New York. pp 233-245.
45. Beamish, R.J., Sweeting, R.M., Neville, C.M. and Lange, K. 2006. Hatchery and wild percentages of coho salmon in the Strait of Georgia are related to shifts in species dominance. NPAFC Doc. 981. Fisheries & Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC V9T 6N7, Canada. 21 p.
46. Saksida, S., Constantine, J., Karreman, G.A., Neville, C. Sweeting, R. and Beamish, R. 2006. Evaluation of sea lice, *Lepeophtheirus salmonis*, abundance levels on farmed salmon in British Columbia, Canada. In *The Proceedings from the International Symposium on Veterinary Epidemiology and Economics XI*, Cairns, Australia.
47. Beamish, R.J., Neville, C.M, Sweeting, R.M., Jones, S.R.M., Ambers, N., Gordon, E.K., Hunter, K.L., McDonald, T.E., and Johnson, S.C. 2007. A proposed life history strategy for the salmon louse, *Lepeophtheirus salmonis*, in the subarctic Pacific. *Aquaculture* 264: 428-440.
48. Beamish, R.J., Neville, C.M., and Sweeting, R.M. 2007. Response to Dr. Neil Frazer's comment on "Sea lice on adult Pacific salmon in the coastal waters of British Columbia, Canada" R.J. Beamish et al. 2005. *Letter to the Editor, Fisheries Research* 85: 346-347.
49. Beamish, R.J., Sweeting, R.M., Neville, C.M. and Lange, K. 2007. Ocean changes in the Strait of Georgia indicate a need to link hatchery programs, fishing strategies and early marine studies of ocean carrying capacity into an ecosystem approach to manage coho salmon. *Extended abstract for NPAFC Technical Report* 7: 49-51.
50. Neville, C.M., and Beamish, R.J. 2007. Diets of larval Pacific hake, walleye pollock and Pacific herring in the Strait of Georgia. *Georgia Basin Puget Sound Research Conference Proceedings*.

51. Beamish, R.J., Sweeting, R.M., Lange, K.L. and Neville, C.M. 2008. Changing trends in the population ecology of hatchery and wild coho salmon in the Strait of Georgia. *Transactions of American Fisheries Society* 137:503-520.
52. Beamish, R.J., R.M. Sweeting, C.M. Neville and K. Lange. 2008. Is changing capacity of the Strait of Georgia to produce more pink and chum salmon and less coho and chinook salmon an indication of a similar trend throughout the subarctic Pacific? Extended abstract for Proceedings of the 23rd Northeast Pacific Pink and Chum Salmon Workshop, Feb 19-21, 2008, Bellingham WA.
53. Beamish, R.J., Sweeting, R. and Neville, C. 2008. We are on the right path but it is uphill both ways. *American Fisheries Society Symposium* 71: XX-XX. Proceedings of the AFS 2005 symposium in Anchorage, AK, Pacific Salmon Life History Models: Advancing Science for Sustainable Salmon in the Future. (in press).
54. Beamish, R.J., McFarlane, G.A., Sweeting, R.M. and Neville, C. 2009. The Sad History of Dogfish Management. Pp. XX-XX In V. Galucci, G. McFarlane, G. Bargman (editors) *Biology and Management of Spiny Dogfish*. American Fisheries Society Publication. (in press).
55. Beamish, R.J., Sweeting, R.M., and Neville, C.M. 2009. Planning the management of Pacific salmon in a changing climate. Pp. XX-XX In: Haro, A. J., K. L. Smith, R. A. Rulifson, C. M. Moffitt, R. J. Klauda, M. J. Dadswell, R. A. Cunjak, J. E. Cooper, K. L. Beal, and T. S. Avery, editors. *Challenges for Diadromous Fishes in a Dynamic Global Environment*. American Fisheries Society, Symposium 69, Bethesda, Maryland. [June 18-21, Halifax, Nova Scotia. (in press)]
56. Chittenden, C.M., R.J. Beamish, C.M. Neville, R.M. Sweeting and R.S. McKinley. 2009. The use of acoustic tags to determine the timing and location of the juvenile coho salmon migration out of the Strait of Georgia, Canada. *Transactions of American Fisheries Society* XX:XX-XX. (accepted May 2009).
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62. Beamish, R.J., R.M. Sweeting, K.L. Lange, D.J. Noakes, D. Preikshot, and C.M. Neville. 2010. Early marine survival of coho salmon in the Strait of Georgia declines to very low levels. *Marine and Coastal Fisheries* XX: XX-XX (accepted Aug 2010, in press)

63. Beamish, R.J., Sweeting, R.M., Neville, C.N., Lange, K.L., Beacham, T.D., and Preikshot, D. 2010. Wild chinook salmon survive better than hatchery salmon in a period of poor production. *Environmental Biology of Fishes - Ecological Interactions Special Issue* (submitted Aug 2010)
64. Beamish, R., Sweeting, R., Lange, K., Neville, C., Preikshot, D., Thomson, R., Beacham, T., and Trudel, M. 2010. The ecology of juvenile sockeye salmon in the Strait of Georgia and an explanation for the poor return of sockeye salmon to the Fraser River in 2009. (report in progress)