

Richard James Beamish

C.M., O.B.C., Ph.D., D.Sc., F.R.S.C.



Education

Ph.D. University of Toronto, Zoology, 1970

Experience and Recognition

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| 1961 | First prize, Biological Science, Toronto Science Fair |
| 1962 | Third prize, Biological Science, First Cross Canada Science Fair |
| 1965-1967 | National Research Council of Canada, Postgraduate Scholarship |
| 1969 | Discovered the problem of acid rain in North America |
| | Participant in the <i>C.S.S. Hudson</i> cruise first vessel to circumnavigate the Americas |
| 1970-1971 | National Research Council of Canada Postdoctoral Fellowship |
| 1970-1972 | Visiting Scientist at Woods Hole Oceanographic Institute |
| 1972-1974 | Research Scientist at Freshwater Institute, Winnipeg, studying impacts on airborne pollution on fishes |
| 1974-1977 | Research Scientist at the Pacific Biological Station, Nanaimo |
| 1977 | Head, Groundfish Section: discovered fish were much older than previously thought |
| 1980-1993 | Director, Pacific Biological Station |
| 1983 | Chief Scientist for Canada, the International North Pacific Fisheries Commission |
| 1985 | Appointed President of IRIS, organization that provided focus for international recruitment studies in the subarctic Pacific |
| 1990-2000 | Executive Producer of six videos that celebrate Canada's leading fisheries scientists |
| 1991 | Canadian Commissioner, International Pacific Halibut Commission |
| 1993 | Senior Scientist, Pacific Biological Station: discovered that climate and Pacific salmon abundance are linked |
| 1993 | R.E. Foerster Award for outstanding scientific publication in the Pacific Region |
| 1993 | Executive Producer of video on the life of Dr. Bill Ricker, "A passion for science", that received 1 st & 3 rd prizes in Shaw Cable Regional Video Awards Western Canada |
| 1994 | R.E. Foerster Award for outstanding scientific publication in the Pacific Region |
| 1994-1996 | Elected by colleagues and served as one of three Canadians on the International Georgia Basin Marine Science Panel |
| 1995-1996 | Chairman, Groundfish Stock Assessment Review Committee |
| 1995-present | Advisor for Canada - Committee on Scientific Research and Statistics, the North Pacific Anadromous Fish Commission |

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- 1996-present Professor, Department of Fisheries and Aquaculture, Vancouver Island University; instructs upper-level course on west coast fisheries and management issues
- 1997 R.E. Foerster Award for outstanding scientific publication 1997 in the Pacific Region
- 1998 Award for Significant Contribution over the past 20 years to the Field of Population Biology, Bergen, Norway
- 1998 Kas Patalas Award for career contribution in aquatic ecology, Freshwater Institute, Winnipeg, Canada
- 1998 Appointed to represent Fisheries & Oceans Canada on the new Pacific Fisheries Resource Conservation Council, an independent body that advises Federal and Provincial Ministers on the health of salmon stocks and habitat
- 1999 R.E. Foerster Award for outstanding scientific publication in the Pacific Region
- 1999 Presented Key-note Address at American Fisheries Society Annual Meeting
- 1999 Appointed Member of The Order of Canada for discovery of acid rain, contributions on age determination of fishes, and the understanding of climate impacts on fishes
- 1999-2001 Member of the Intergovernmental Panel on Climate Change (Working Groups 5 & 6)
- 1999-2006 Associate Editor, Transactions of the American Fisheries Society
- 2000 Awarded Distinguished Science Lecturer - National Marine Fisheries Service, NOAA
- 2000 Speaker at "Hot Topic" Lecture, Vancouver Aquarium
- 2000 Presented Key-note Address - California Chapter, American Fisheries Society
- 2000 R.E. Foerster Award for outstanding scientific publication in the Pacific Region
- 2000 Presented Key-note Address - Boston Seafood Show
- 2001 Elected to the Royal Society of Canada
- 2001 Presented Key-note Address - Seattle, Puget Sound Conference
- 2001 Chairman, Committee on Scientific Research and Statistics, the North Pacific Anadromous Fish Commission
- 2002 Taught 6-week university course on Marine Fisheries at the Bamfield Marine Station
- 2002 Essential Science Indicators (ESI) identified Beamish's work in fisheries research as gaining the highest percent increase in total citations in the field of Plant and Animal Science from one bimonthly period to the next
- 2002 Awarded the Queen's Golden Jubilee Medal
- 2004 Awarded the Order of British Columbia
- 2005 Awarded the American Fisheries Society Oscar E. Sette Award for sustained excellence in marine fisheries biology
- 2005 First foreign scientist to be made honorary member of TINRO (Pacific Research Fisheries Centre, Vladivostok, Russia)
- 2006-present Editor for Transactions of the American Fisheries Society
- 2007 Awarded Distinction Award by the Assistant Deputy Minister, Fisheries & Oceans Canada, for outstanding national and international climate change research
- 2007 Recognized by International Panel on Climate Change for contributing to the Nobel Peace Prize for 2007
- 2008 Awarded the Prix d'Excellence by Fisheries & Oceans Canada, for valuable contributions to the Department and the Public Service as a whole
- 2008 Recognized by the Department of the Environment for significant contributions to the International Panel on Climate Change, Nobel Prize Laureate
- 2008 Awarded the Professor Kazimierz Demel Medal by the Sea Fisheries Institute in Gdynia, Poland, for outstanding scientific and organizational research achievement, as well as for popularizing knowledge of the sea in the fields of ecology and fisheries
- 2008 Elected President of the American Institute of Fishery Research Biologists 2008-2011

- 2009 Awarded the Prix d'Excellence by Fisheries & Oceans Canada, for valuable contributions to the Department and the Public Service as a whole
- 2009 Awarded an Honourary Doctorate of Science degree from Vancouver Island University
- 2010 Awarded Certificate of Achievement from the American Fisheries Society – Washington / British Columbia Chapter for significant contributions in fisheries conservation, impressive publication record, and exemplary teaching and mentoring of future fisheries scientists

Publications

Reviewed Publications

- Beamish, R.J., Sweeting, R.M., Neville, C.M., Lange, K.L., Beacham, T.D., and Preikshot, D. 2011. Wild chinook salmon survive better than hatchery salmon in a period of poor production. *Environmental Biology of Fishes* 91:XX-XX doi: 10.1007/s10641-011-9783-5
- Jones, S.R.M, and Beamish, R.J. 2011. *Lepeophtheirus salmonis* on salmon in the northeast Pacific coast. Pages XX-XX in S.R.M. Jones and R.J. Beamish (editors), *Salmon Lice in Coastal Ecosystems*. Blackwell Publishing. (In press).
- Jones, S.R.M, and Beamish, R.J. (Editors) 2011. *Salmon Lice in Coastal Ecosystems*. Blackwell Publishing. (In press).
- Beamish, R., Gordon, E., Wade, J., Pennell, B., Neville, C., Lange, K., Sweeting, R., and Jones, S. 2011. The Winter Infection of Sea Lice on Salmon in Farms in a Coastal Inlet in British Columbia and Possible Causes. *Journal of Aquaculture Research and Development* 2:107. doi:10.4172/2155-9546.1000107
- Noakes, D.J., and R.J. Beamish. 2011 Shifting the balance: Towards sustainable salmon populations and fisheries of the future. Pages 23-50 in W.W. Taylor, A.J. Lynch, and M.G. Schechter, editors. *Sustainable fisheries: multi-level approaches to a global problem*. American Fisheries Society, Bethesda, Maryland.
- 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* 2:424-439.
- Duffy, E.J., Beauchamp, D.A., Sweeting, R.M., Beamish, R.J., and Brennan, J.S. 2010. Ontogenetic diet shifts of juvenile chinook salmon in nearshore and offshore habitats of Puget Sound. *Transactions of the American Fisheries Society* 139:803-823.
- Beamish, R.J. 2010. The use of gill pore papillae in the taxonomy of lampreys. *Copeia* 4:618-628.
- Beamish, R.J. and Riddell, B.E. 2009. The future of fisheries science on Canada's Pacific coast is keeping up with the changes. Pages 565-594 in R.J. Beamish and B.J. Rothschild (editors) *The Future of Fisheries Science in North America*. Fish & Fisheries Series, Springer Science + Business Media B.V. Proceedings of the AIFRB Symposium held June 2007, Halifax NS.
- Beamish, R.J. and Sweeting, R.M. 2009. Spiny dogfish in the pelagic waters of the Strait of Georgia and Puget Sound. Pages 101-118 in V.F. Galucci, G.A. McFarlane, and G.G. Bargman (editors) *Biology and Management of Dogfish Sharks*. American Fisheries Society, Bethesda, Maryland.
- Beamish, R.J. and Sweeting, R.M. 2009. The history of surprises associated with Pacific salmon returns signals that critical information is missing from our understanding of their population

- dynamics. Pages 1159-1170 in C.C. Kruger and C.E. Zimmerman (editors) Pacific salmon: ecology and management of western Alaska's populations. American Fisheries Society Symposium 70, Bethesda, Maryland. Proceedings of the AYK SSI Symposium on the Sustainability of the Arctic-Yukon-Kuskokwim Salmon Fisheries held Feb 6-9, 2007, Anchorage AK.
- Beamish, R.J., McFarlane, G.A., Sweeting, R.M. and Neville, C.M. 2009. Keynote Address: The sad history of dogfish management. Pages 1-10 in V.F. Galucci, G.A. McFarlane, and G.G. Bargman (editors) Biology and Management of Dogfish Sharks. American Fisheries Society, Bethesda, Maryland.
- Beamish, R.J., Riddell, B.E., Lange, K.L., Farley Jr., E., Kang, S., Nagasawa, T., Radchenko, V., Temnykh, O., Urawa, S., Azumaya, T., Brodeur, R., Emmett, R., Imai, H., Ishida, Y., Kaeriyama, M., Kim, S., Klyashtorin, L., Koval, M., Kristianson, G., Lee, C.S., Low, L.-L., Melnikov, I., Moss, J., Mundy, P., Myers, K., Naydenko, S., Nazarov, V., Ruggerone, G., Seeb, J., Seki, J., Seong, K.B., Smith, G., Sviridov, V., Templin, B., Trudel, M., Volobuev, V., and Young, S. 2009. A Long-term Research and Monitoring Plan (LRMP) for Pacific salmon (*Oncorhynchus* spp.) in the North Pacific Ocean. North Pacific Anadromous Fish Commission Special Publication, 32 pp.
- Beamish, R.J., Sweeting, R.M., and Neville, C.M. 2009. Planning the management of Pacific salmon in a changing climate. Pp. 155-173 in A. J. Haro, 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.
- Beamish, R., Sweeting, R. and Neville, C. 2009. We are on the right path but it is uphill both ways. Pages 45-62 in E.E. Knudsen and J.H. Michael, Jr. (editors) Pacific Salmon Environmental and Life History Models: Advancing science for Sustainable Salmon in the Future. American Fisheries Society Symposium 71, Bethesda, Maryland.
- Beamish, R., Wade, J., Pennell, W., Gordon, E., Jones, S., Neville, C., Lange, K., and Sweeting, R. 2009. A large, natural infection of sea lice on juvenile Pacific salmon in the Gulf Islands area of British Columbia, Canada. *Aquaculture* 297:31-37.
- Brown, L., Chase, C., Mesa, M., Beamish, R., and Moyle, P. (editors) 2009. Biology, Management and Conservation of Lampreys in North America. American Fisheries Society Symposium 72, Bethesda, Maryland. 321p.
- Chittenden, C.M., Beamish, R.J., Neville, C.M., Sweeting, R.M., and McKinley, R.S. 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* 138:1220-1225.
- Chittenden, C.M., Beamish, R.J., and McKinley, R.S. 2009. A critical review of Pacific salmon marine research relating to climate. *ICES Journal of Marine Science* 66:2195-2204.

- Hollowed, A.B., Bond, N., Wilderbuer, T., Stockhausen, T., A'mar, Z.T., Beamish, R., Schirripa, M., and Overland, J. 2009. A framework for modelling fish and shellfish responses to future climate change. *ICES Journal of Marine Science* 66:1584-1594.
- McFarlane, G.A., Zhang, C.I., King, J.R., Kim, S., Beamish, R.J. and Oh, J.H. 2009. Contrast in life histories of exploited marine fishes and ecosystem structures in coastal waters off West Canada and East Korea. *Ocean Sciences Journal* 44(1):43-60.
- Noakes, D., and Beamish, R.J. 2009. Synchrony of marine fish catches and climate and ocean regime shifts in the North Pacific Ocean. *Marine and Coastal Fisheries* 1:155-168.
- Rothschild, B.J. and Beamish, R.J. 2009. On the future of fisheries science. Pp. 1-12 *in* R.J. Beamish and B.J. Rothschild (editors) *The Future of Fisheries Science in North America*, Fish & Fisheries Series, Springer Science + Business Media B.V.
- Sweeting, R.M. and Beamish, R.J. 2009. A comparison of wild and hatchery coho salmon (*Oncorhynchus kisutch*) diets in the Strait of Georgia. *North Pacific Anadromous Fish Commission Bulletin* 5:255-264.
- Beamish, R.J. (editor) 2008. Impacts of climate and climate change on the key species in the fisheries in the North Pacific. *PICES Scientific Report No. 35*. North Pacific Marine Science Organization (PICES), Secretariat, Sidney BC. 217p.
- Beamish, R.J., and Wade, J. 2008. Critical habitat and the conservation ecology of *Lampetra macrostoma*. *Canadian Field-Naturalist* 122:327-337.
- Beamish, R.J., King, J.R., and McFarlane, G.A. 2008. Canada. Pages 15-56 *in* R.J. Beamish (ed.) *Impacts of climate and climate change on the key species in the fisheries in the North Pacific*. *PICES Scientific Report No. 35*. PICES Working Group on Climate Change, Shifts in Fish Populations, and Fisheries Management. North Pacific Marine Science Organization (PICES), Secretariat, Sidney BC.
- 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.
- Hollowed, A.B., Beamish, R.J., Okey, T.A., and Schirripa, M. J. (Editors). 2008. Forecasting climate impacts on future production of commercially exploited fish and shellfish. *PICES Scientific Report No. 34*. North Pacific Marine Science Organization (PICES), Secretariat, Sidney BC. 101p.
- Beamish, R.J., Farley, Jr., E.V., Irvine, J., Kaeriyama, M., Kang, S., Karpenko, V.I., Nagasawa, T., and Urawa, S. (editors). 2007. *North Pacific Anadromous Fish Commission Technical Report 7*. Proceedings of the Second International Workshop on Factors Affecting Production of Juvenile Salmon: Survival Strategy of Asian and North American Juvenile Salmon in the Ocean, April 26-27, 2006, Sapporo Japan, 135 p.

- 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.
- Beamish, R.J., Trudel, M. and Sweeting, R.M. 2007. Canadian coastal and high seas juvenile Pacific salmon studies. Extended abstract for NPAFC Technical Report 7: 1-4.
- Beamish, R.J. and Radchenko, V. (editors). 2007. North Pacific Anadromous Fish Commission Bulletin Number 4. Proceedings from the International Symposium on the Status of Pacific salmon and their Role in North Pacific Marine Ecosystems, held on Jeju Island, Republic of Korea, Oct 30-Nov 1, 2005. 337 p.
- Beamish, R.J. 2007. Getting the Message Out. NPAFC Bulletin No. 4:1-6.
- Beamish, R.J. 2007. Symposium Summary. North Pacific Anadromous Fish Commission Bulletin 4:335-336.
- 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.
- 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.
- Farley, Jr., E.V., Moss, J.H., and Beamish, R.J. 2007. A review of the critical size, critical period hypothesis for juvenile Pacific salmon. North Pacific Anadromous Fish Commission Bulletin 4:311-317.
- Mathisen, O.A., Fair, L., Beamish, R.J., and Bugaev, V.F. 2007. Density-dependent growth of sockeye salmon in the North Pacific Ocean. North Pacific Anadromous Fish Commission Bulletin 4:299-310.
- Orsi, J.A., Harding, J.A., Pool, S.S., Brodeur, R.D., Haldorson, L.J., Murphy, J.M., Moss, J.H., Farley Jr., E.V., Sweeting, R.M., Morris, J.F.T., Trudel, M., Beamish, R.J., Emmett, R.L. and Fergusson, E.A. 2007. Epipelagic fish assemblages associated with juvenile Pacific salmon in neritic waters of the California Current and the Alaska Current. Pages 105-155 in C.B. Grimes, R.D. Brodeur, L.J. Haldorson and S. M. McKinnell (editors) Ecology of Juvenile Salmon in the Northeast Pacific Ocean: Regional Comparisons. American Fisheries Society Symposium 57.
- Beamish, R.J., and C.M. Neville. 2006. Ecosystem Bill of Rights. Pages 233-245 in Rothwell, D.R. and VanderZwaag, D.L. (editors), Towards Principled Oceans Governance: Australian and Canadian Approaches and Challenges. Routledge, NY, NY.
- Beamish, R.J. and Noakes, D.J. 2006. Bill Ricker: a man of gifted intellect, insatiable curiosity and generous spirit. Environmental Biology of Fishes 75:119-129.

- Beamish, R.J., Jones, S., Neville, C., Sweeting, R., Karreman, G., Saksida, S., and 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.
- Beamish, R.J. McFarlane, G.A., and Benson, A. 2006. Longevity overfishing. *Progress in Oceanography* 68:289-302.
- King, J.R., Ivanov, V.V., Kurashov, V., Beamish, R.J., and McFarlane, G.A. 2006. An index of general circulation of the atmosphere over the North Pacific. *Izvestiya TINRO* 145:220-227. (In Russian)
- Reist, J.D., Wrona, F.J. Prowse, T.D., Power, M., Dempson, J.B., King, J.R. and Beamish, R.J. 2006. An overview of effects of climate change on selected Arctic freshwater and anadromous fishes. *Ambio* #8. ACIA Special Issue.
- Reist, J.D., Wrona, F.J., Prowse, T.D., Power, M., Dempson, J.B., Beamish, R.J., King, J.R., Carmichael, T.J., Sawatsky, C.D. 2006. General effects of climate change on Arctic fishes and fish populations. *Ambio* #8. ACIA Special Issue.
- Beamish, R.J., Neville, C.M., Sweeting, R.M., and Ambers, N.J. 2005. Sea lice on adult Pacific salmon in the coastal waters of Central British Columbia, Canada. *Fisheries Research* 76:198-208.
- Beamish, R., Gibson, J.J., Hobbie, J., Jeppesen, E., King, J., Korhola, A., Macdonald, R., Power, M., Skvortsov, V., Koeck, G., Vincent, W., Levesque, L., (contributing authors) 2005. Impacts of climate change and UV radiation on freshwater Arctic ecosystems, Chapter 8. Pages 354-452 *in* F. Wrona, T. Prowse and J. Reist, (leading authors) *Freshwater Ecosystems and Fisheries ACIA*.
- Beamish, R.J., McFarlane, G.A., and King, J.R. 2005. Migratory patterns of pelagic fishes and possible linkages between open ocean and coastal ecosystems off the Pacific coast of North America. *Deep-Sea Research II* 52:739-755.
- Harrison, P.J., Whitney, F., Mackas, D., Beamish, R., Trudel, M., and Perry, I. 2005. Changes in coastal ecosystems in the NE Pacific Ocean. Pages 17-35 *in*: *Proceedings of the International Symposium on the long-term variations in the coastal environments and ecosystems*, Sep 27-28, Matsuyama, Japan.
- Ricker, W.E., Pogodaev, E.G., Beamish, R.J., and Karpenko, V. 2005. Causes of rapid changes in rate of freshwater growth and in ages of smolting and maturation among sockeye salmon of a small Kamchatka lake. *Izvestiya TINRO* 140:3-17. (In Russian)
- Beamish, R.J. 2004. We are not prepared to manage fisheries in a changing climate. Pages 121-123 *in* L. Taylor & A. Ryall (editors) *Mountains as water towers. Proceedings of the Banff Mountain Summit*, November 2003. Banff Centre, Banff, Alta.

- Beamish, R.J., 2004. An assessment of the relative importance of human and natural impacts on the past and future fisheries off Canada's west coast. (submitted to Russia for translation, Feb. 2004) *Izvestiya TINRO* 137: 45-66.
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- Beamish, R.J., Benson, A.J., Sweeting, R.M., and Neville, C.M. 2004. Regimes and the history of the major fisheries off Canada's west coast. *Progress in Oceanography* 60:355-385.
- Beamish, R.J., Mahnken, C., and Neville, C.M. 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.
- Beamish, R.J., Schnute, J.T., Cass, A.J., Neville, C.M., and Sweeting, R.M. 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.
- Beamish, R.J., Sweeting, R.M., and Neville, C.M. 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.
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