

Richard James Beamish

C.M., O.B.C., Ph.D., D.Sc., F.R.S.C.
Pacific Biological Station, Fisheries and Oceans Canada
Nanaimo, British Columbia V9T 6N7
Tel: (250) 756-7029
Richard.Beamish@dfo-mpo.gc.ca

Personal

Born 1942, Toronto, Canada
Married, two children, two grandchildren

Education

Ph.D. University of Toronto, Zoology, 1970

Experience and Recognition

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
1993-2011	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
1995-2011	Advisor for Canada - Committee on Scientific Research and Statistics, the North Pacific Anadromous Fish Commission

Richard James Beamish page 2

- 1996-2010 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
- 2008-2011 President of the American Institute of Fishery Research Biologists

Richard James Beamish page 3

- 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
- 2011 Retired from Fisheries & Oceans Canada and became an Emeritus Scientist at the Pacific Biological Station

Publications

Reviewed Publications

- Beamish, R.J., C. Neville, R.Sweeting and K. Lange. 2012. A synchronous failure in juvenile Pacific salmon and herring production in the Strait of Georgia in 2007 and the poor return of sockeye salmon to the Fraser River in 2009. *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science* 4(1):403-414.
- Thomson, R., R.J. Beamish, T.D. Beacham, M. Trudel, P.H. Whitfield, and R.A.S. Hourston. 2012. Anomalous ocean conditions may explain the recent extreme variability in Fraser River sockeye salmon production. *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science* 4(1):415-437.
- Preikshot, D., R. Beamish, R.M. Sweeting, C.M. Neville and T.D. Beacham. 2012. The residence time of juvenile Fraser River sockeye salmon (*Oncorhynchus nerka*) in the Strait of Georgia. *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science* 4(1):438-449.
- Beamish, R.J., Sweeting, R.M., Neville, C.M., Lange, K.L., Beacham, T.D., and Preikshot, D. 2012. Wild chinook salmon survive better than hatchery salmon in a period of poor production. *Environmental Biology of Fishes* 91:135-148. doi: 10.1007/s10641-011-9783-5
- Beamish, R.J. 2012. Observations and speculations on the reasons for recent increases in pink salmon production. Extended abstract for NPAFC Technical Report 8.
- Jones, S.R.M, and Beamish, R.J. 2011. *Lepeophtheirus salmonis* on salmon in the northeast Pacific coast. Pages 307-329 in S.R.M. Jones and R.J. Beamish (editors), *Salmon Lice in Coastal Ecosystems*. Blackwell Publishing.
- Jones, S.R.M, and Beamish, R.J. (Editors) 2011. *Salmon Lice in Coastal Ecosystems*. Blackwell Publishing.
- 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.
- Beamish, R.J., and Noakes, D.J. 2004. Global warming, aquaculture, and commercial fisheries. Pages 25-47 *in* K. M. Leber, S. Kitada, H.L. Blankenship, T. Svasand (editors) Stock Enhancement and Sea Ranching: developments, pitfalls and opportunities, Blackwell Publishing Ltd., Oxford, U.K.
- 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.
- Beckman, B.R., Fairgrieve, W., Cooper, K.A., Mahnken, C.V.W., and Beamish, R.J. 2004. Evaluation of endocrine indices of growth in individual postsmolt coho salmon. *Transactions of the American Fisheries Society* 133:1057-1067.
- Sweeting, R.M., Beamish, R.J., and Neville, C.M. 2004. Crystalline otoliths in teleosts: Comparisons between hatchery and wild coho salmon (*Oncorhynchus kisutch*) in the Strait of Georgia. *Reviews in Fish Biology and Fisheries* 14:361-369.
- Gao, Y.W., Beamish, R.J., and Brand, U. 2004. Yearly stable isotopic and ¹⁰⁰⁰Sr/Ca ration analyses in otoliths of Pacific hake (*Merluccius productus*) and walleye pollock (*Theragra chalcogramma*) from Georgia Strait, British Columbia. Pages 69-77 *in* S.R. Li, J.F. Shen, &

- H. Xu (editors) Mineralogy and Geochemistry: Resources, Environment and Life. Geological Publishing House, Beijing.
- Beamish, R.J. 2003. Introduction to Bulletin No. 3. North Pacific Anadromous Fish Commission Bulletin 3:v-x.
- Beamish, R.J., and Neville, C.M. 2003. The importance of establishing Bowie Seamount as an experimental research area. Pages 652-663 in J. Beumer, A. Grant, and D. Smith (editors) Aquatic Protected Areas - What works best and how do we know? Proceedings of the World Congress on Aquatic Protected Areas, Cairns, Australia, August, 2002.
- Beamish, R.J., Noakes, D.J., Noakes, D.L.G., and Beamish, F.W.H. 2003. William Edwin Ricker, OC, FRSC, LLD, DSc. Canadian Journal of Fisheries and Aquatic Sciences 60:iii-v.
- Beamish, R.J., Pearsall, I.A., and Healey, M.C. 2003. A history of the research on the early marine life of Pacific salmon off Canada's Pacific coast. North Pacific Anadromous Fish Commission Bulletin 3:1-40.
- Gao, Y., and Beamish, R.J. 2003. Stable isotope variations in otoliths of Pacific halibut (*Hippoglossus stenolepis*) and indications of the possible 1990 regime shift. Fisheries Research 60:393-404.
- Gao, Y., and Beamish, R.J. 2003. Stable isotopic composition of otoliths from tagged halibut, *Hippoglossus stenolepis*. Environmental Biology of Fishes 67:253-261.
- Sweeting, R.M., Beamish, R.J., Noakes, D.J., and Neville, C.M. 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.
- Beamish, R.J. 2002. Obituary. William Edwin Ricker OC, FRSC, LLD, DSc. Journal of Fish Biology 60: 285-287
- Beamish, R.J. 2002. Obituary. William Edwin Ricker 1908-2001. Proceedings of the Royal Society of Canada, Seventh Series, Vol. 1.
- Beamish, R.J. 2002. Obituary. Leo Margolis 1927-1997. Proceedings of the Royal Society of Canada, Seventh Series, Vol. 1.
- Beamish, R.J., and Noakes, D.J. 2002. The role of climate in the past, present, and future of Pacific salmon fisheries off the west coast of Canada. Pages 231-244 in N.A. McGinn (editor) Fisheries in a Changing climate. American Fisheries Society Symposium 32. Bethesda, Maryland.
- Beamish, R.J., Neville, C., Sweeting, R., Poier, K., and Khan, R. 2002. Recent increases in coho production in the Strait of Georgia are related to changes in climate. Pages 10-19 in T. Droscher (editor) 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.

- Beamish, R.J., Neville, C.M., Sweeting, R.M., Poier, K.L., and McFarlane, G.A. 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 (editors) *Speaking for the Salmon: Hatcheries and the protection of wild salmon*. Continuing Studies in Science, Simon Fraser University, British Columbia.
- Hay, D.E., Beamish, R.J. Boehlert, G.W., Radchenko, V.I., Tang, Q.-S., Wada, T., Ware, D.W., and Zhang, C.-I. 2002. Ten years FIS in PICES: An introspective, retrospective, critical and constructive review in *Fishery Science in PICES*. Pages 43-54 in R.I. Perry, P. Livingston and A.C. Bychkov (editors) *PICES Science: the first ten years a look to the future*. PICES Scientific Report No. 22. PICES Secretariat / Publisher.
- Beamish, R.J. 2001. Updated status of the Vancouver Island Lake Lamprey, *Lampetra macrostoma*, in Canada. *Canadian Field-Naturalist* 115(1):127-130.
- Beamish, R.J., and Mahnken, C. 2001. A critical size and period hypothesis to explain natural regulation of salmon abundance and the linkage to climate and climate change. *Progress in Oceanography* 49:423-437.
- Beamish, R.J., and Neville, C.M. 2001. Predation-based mortality on juvenile salmon in the Strait of Georgia. Pages 11-13 in R. Beamish, Y. Ishida, V. Karpenko, P. Livingston, and K. Myers (editors) *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.
- Beamish, R.J., Youson, J.H., and Chapman, L.A. 2001. Status of the Morrison Creek western brook lamprey, *Lampetra richardsoni*, in Canada. *Canadian Field-Naturalist* 115(4):573-578.
- Beamish, R.J., McFarlane, G.A. Neville, C.M., and Pearsall, I. 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 (editors) *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.
- Beamish, R.J., McFarlane, G.A., and Schweigert, J. 2001. Is the production of coho salmon in the Strait of Georgia linked to the production of Pacific herring? Pages 37-50 in F. Funk, J. Blackburn, D. Hay, A.J. Paul, R. Stephenson, R. Toresen, and D. Witherell (editors) *Herring: expectations for a new millennium*. Alaska Sea Grant College Program, Fairbanks, Alaska
- Gitay, H., Brown, S., Easterling, W., Jallow, B., Antle, J., Apps, M., Beamish, R., Chapin, T., Cramer, W., Frangi, J., Laine, J., Erda, L., Magnuson, J., Noble, I., Price, J., Prowse, T., Root, T., Schulze, E., Sirotenko, O., Sohngen, B., Soussana, J., Bugmann, H., Egorov, C., Finlayson, M., Fleming, R., Fraser, W., Hahn, L., Hall, K., Howden, M., Hutchins, M., Ingram, J., Hui, J., Masters, G., Megonigal, P., Morgan, J., Myers, N., Neilson, R., Page, S., Parmesan, C., Rieley, J., Roulet, N., Takle, G., van Minnen, J., Williams, D., Williamson, T., and Wilson, K. 2001. Ecosystems and their goods and services. Pages 235-342 in J.J. McCarthy, O.F. Canziani, N.A. Leary, D.J. Dokken, and K.S. White (editors) *Climate change 2001: impacts, adaptation, and vulnerability*. Contribution of Working Group II to the Third

Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK.

- King, J.R., McFarlane, G.A., and Beamish, R.J. 2001. Incorporating the dynamics of marine systems into the stock assessment and management of sablefish. *Progress in Oceanography* 49:619-639.
- McFarlane, G.A., and Beamish, R.J. 2001. The re-occurrence of sardines off British Columbia characterises the dynamic nature of regimes. *Progress in Oceanography* 49:151-165.
- McFarlane, G.A., Beamish, R.J., and Schweigert, J. 2001. Common factors have opposite impacts on Pacific herring in adjacent ecosystems. Pages 51-67 in F. Funk, J. Blackburn, D. Hay, A.J. Paul, R. Stephenson, R. Toresen, and D. Witherell (editors) *Herring: expectations for a new millennium*. Alaska Sea Grant College Program, AK-SG-01-04. Fairbanks, Alaska.
- McLean, R.F., Tsyban, A., Burkett, V., Codignotto, J.O., Forbes, D.L., Mimura, N., Beamish, R.J., and Ittekkot, V. 2001. Coastal zones and marine ecosystems. Pages 343-379 in J.J. McCarthy, O.F. Canziani, N.A. Leary, D.J. Dokken, and K.S. White (editors) *Climate change 2001: impacts, adaptation, and vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, UK.
- Beamish, R.J., and McFarlane, G.A. 2000. Re-evaluation of the interpretation of annuli from otoliths of a long-lived fish, *Anoplopoma fimbria*. *Fisheries Research* 46:105-111.
- Beamish, R.J., McCaughran, D., King, J.R., Sweeting, R.M., and McFarlane, G.A. 2000. Estimating the abundance of juvenile coho salmon in the Strait of Georgia by means of surface trawls. *North American Journal of Fisheries Management* 20:369-375.
- Beamish, R.J., McFarlane, G.A., and King, J.R. 2000. Fisheries climatology: understanding decadal scale processes that naturally regulate British Columbia fish populations. Pages 94-145 in P.J. Harrison and T.R. Parsons (editors) *Fisheries Oceanography: An Integrative Approach to Fisheries Ecology and Management*. Blackwell Science, Oxford, UK.
- Beamish, R.J., Noakes, D.J., McFarlane, G.A., Pinnix, W., Sweeting, R., and King, J. 2000. Trends in coho marine survival in relation to the regime concept. *Fisheries Oceanography* 9:114-119.
- Hollowed, A.B., Bax, N., Beamish, R., Collie, J., Fogarty, M., Livingston, P., Pope, J., and Rice, J.C. 2000. Are multispecies models an improvement on single-species models for measuring fishing impacts on marine ecosystems? *ICES Journal of Marine Science* 57:707-719.
- King, J.R., and Beamish, R.J. 2000. Diet comparisons indicate a competitive interaction between ocean age-0 chum and coho salmon. *North Pacific Anadromous Fish Commission Bulletin Number 2:65-74*.
- King, J.R., McFarlane, G.A., and Beamish, R.J. 2000. Decadal-scale patterns in the relative year class success of sablefish (*Anoplopoma fimbria*). *Fisheries Oceanography* 9:62-70.

- McFarlane, G.A., King, J.R., and Beamish, R.J. 2000. Have there been recent changes in climate? Ask the fish. *Progress in Oceanography* 47:147-169.
- Noakes, D.J., Beamish, R.J., and Kent, M.L. 2000. On the decline of Pacific salmon and speculative links to salmon farming in British Columbia. *Aquaculture* 183:363-386.
- Noakes, D.J., Beamish, R.J., Sweeting, R., and King, J. 2000. Changing the balance: interactions between hatchery and wild Pacific coho salmon in the presence of regime shifts. *North Pacific Anadromous Fish Commission Bulletin* 2:155-163.
- Zhang, Z., and Beamish, R.J. 2000. Use of otolith microstructure to study life history of juvenile chinook salmon in the Strait of Georgia in 1995 and 1996. *Fisheries Research* 46:239-250.
- Beamish, R.J. 1999. Shifting regimes in fisheries science and salmon management. *The International Journal of Salmon Conservation* 1(3):12-16.
- Beamish, R.J. 1999. Editorial. An introduction to the PICES symposium on the ecosystem dynamics in the Eastern and Western Gyres of the subarctic Pacific. *Progress in Oceanography* 43:157-161.
- Beamish, R.J. 1999. Climate, salmon, and preparing for the future. Pages 85-98 in G.A. Bisbal (editor) Symposium on ocean conditions and the management of Columbia River salmon: proceedings of the July 1, 1999 symposium in Portland, Oregon. Northwest Power Planning Council, Portland, OR.
- Beamish, R.J., K.D. Leask, O.A. Ivanov, A.A. Balanov, A.M. Orlov, and B. Sinclair. 1999. The ecology, distribution, and abundance of midwater fishes of the Subarctic Pacific gyres. *Progress in Oceanography* 43:399-442.
- Beamish, R.J., G.A. McFarlane, and R.E. Thomson. 1999. Recent declines in the recreational catch of coho salmon (*Oncorhynchus kisutch*) in the Strait of Georgia are related to climate. *Canadian Journal of Fisheries and Aquatic Sciences* 56:506-515.
- Beamish, R.J., D.J. Noakes, G.A. McFarlane, L. Klyashtorin, V.V. Ivanov, and V. Kurashov. 1999. The regime concept and natural trends in the production of Pacific salmon. *Canadian Journal of Fisheries and Aquatic Sciences* 56:516-526.
- Docker, M.F., J.H. Youson, R.J. Beamish, and R.H. Devlin. 1999. Phylogeny of the lamprey genus *Lampetra* inferred from mitochondrial cytochrome b and ND3 gene sequences. *Canadian Journal of Fisheries and Aquatic Sciences* 56:2340-2349.
- Ferreira, L.C.G., R.J. Beamish, and J.H. Youson. 1999. Macroscopic structure of the fin-rays and their annuli in pectoral and pelvic fins of chinook salmon, *Oncorhynchus tshawytscha*. *Journal of Morphology* 239:297-320.
- Gao, Y.W., and R.J. Beamish. 1999. Isotopic composition of otoliths as a chemical tracer in population identification of sockeye salmon (*Oncorhynchus nerka*). *Canadian Journal of Fisheries and Aquatic Sciences* 56:2062-2068.

- Beamish, R.J., and M. Folkes. 1998. Recent changes in the marine distribution of juvenile chum salmon off Canada. North Pacific Anadromous Fisheries Commission Bulletin Number 1:443-453.
- Freeland, H.J., and R. Beamish. 1998. The changing Pacific. Canadian Meteorological and Oceanographic Society Bulletin 26(6):155-160.
- McFarlane, G.A., and R.J. Beamish. 1999. Sardines return to British Columbia waters. Pages 77-82 in H.J. Freeland, W.T. Peterson, and A. Tyler (editors) Proceedings of the 1998 Science Board Symposium on the impacts of the 1997/98 El Niño event on the North Pacific Ocean and its marginal seas. North Pacific Marine Science Organization. PICES Scientific Report No. 10.
- Beamish, R., D. Noakes, G. McFarlane, and J. King. 1998. The regime concept and recent changes in Pacific salmon abundance. Pages 1-3 in K. Myers (editor) Workshop on climate change and salmon production, Vancouver, March 26-27, 1998. North Pacific Anadromous Fish Commission Technical Report 1.
- Noakes, D.J., R.J. Beamish, L. Klyashtorin, and G.A. McFarlane. 1998. On the coherence of salmon abundance trends and environmental factors. North Pacific Anadromous Fish Commission Bulletin Number 1:454-463.
- 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.
- 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.
- Yin, K., R.H. Goldblatt, P.J. Harrison, M.A. St. John, P.J. Clifford, and R.J. Beamish. 1997. Importance of wind and river discharge in influencing nutrient dynamics and phytoplankton production in summer in the central Strait of Georgia. Marine Ecology Progress Series 161:173-183.
- Yin, K., P.J. Harrison, and R.J. Beamish. 1997. Effects of a fluctuation in Fraser River discharge on primary production in the central Strait of Georgia, British Columbia, Canada. Canadian Journal of Fisheries and Aquatic Sciences 54:1015-1024.
- Yin, K., P.J. Harrison, R.H. Goldblatt, M.A. St. John, and R.J. Beamish. 1997. Factors controlling the timing of the spring bloom in the Strait of Georgia estuary, British Columbia, Canada. Canadian Journal of Fisheries and Aquatic Sciences 54:1985-1995.
- McFarlane, G.A., R.J. Beamish, and L.M. Zverkova. 1996. An examination of age estimates of walleye pollock (*Theragra chalcogramma*) from the Sea of Okhotsk using the burnt otolith method and implications for stock assessment and management. Proceedings of the Workshop on the Okhotsk Sea and Adjacent Areas. North Pacific Marine Science Organization PICES Scientific Report No. 6:278-285.

- Yin, K., P.J. Harrison, R.H. Goldblatt, and R.J. Beamish. 1996. Spring bloom in the central Strait of Georgia: interactions of river discharge, winds and grazing. *Marine Ecology Progress Series* 138:255-263.
- Beamish, R.J. 1995. Response of anadromous fish to climate change in the North Pacific. Pages 123-136 in D.L. Peterson and D.R. Johnson (editors) *Human ecology and climate change: people and resources in the far north*. Taylor & Francis, Washington, D.C.
- Beamish, R.J. (editor). 1995. Climate change and northern fish populations. *Canadian Special Publication of Fisheries and Aquatic Sciences* 121. 739p.
- Beamish, R.J. 1995. Introduction. The need to understand the relationship between climate and the dynamics of fish populations. Pages 1-2 in R. J. Beamish (editor) *Climate Change and Northern Fish Populations*. *Canadian Special Publication of Fisheries and Aquatic Sciences* 121.
- Beamish, R.J., and D.R. Bouillon. 1995. Marine fish production trends off the Pacific coast of Canada and the United States. Pages 585-591 in R.J. Beamish (editor) *Climate Change and Northern Fish Populations*. *Canadian Special Publication of Fisheries and Aquatic Sciences* 121.
- Beamish, R.J., and G.A. McFarlane. 1995. A discussion of the importance of aging errors, and an application to walleye pollock: the world's largest fishery. Pages 545-565 in D.H. Secor, J.M. Dean, and S.E. Campana (editors), *Recent developments in fish otolith research*. The Belle W. Baruch Library in Marine Science 19. University of South Carolina Press, Columbia, South Carolina.
- 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 ayresi*). *Canadian Journal of Fisheries and Aquatic Sciences* 52:644-650.
- 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.
- McFarlane, G.A., and R.J. Beamish. 1995. Validation of the otolith cross-section method of age determination for sablefish (*Anoplopoma fimbria*) using oxytetracycline. Pages 319-329 in D.H. Secor, J.M. Dean, and S.E. Campana (editors), *Recent developments in fish otolith research*. The Belle W. Baruch Library in Marine Science 19. University of South Carolina Press, Columbia, South Carolina.
- Yin, K., P.J. Harrison, S. Pond, and R.J. Beamish. 1995. Entrainment of nitrate in the Fraser River estuary and its biological implications. **I.** Effects of the salt wedge. *Estuarine, Coastal and Shelf Science* 40:505-528.
- Yin, K., P.J. Harrison, S. Pond, and R.J. Beamish. 1995. Entrainment of nitrate in the Fraser River estuary and its biological implications. **II.** Effects of spring vs. neap tides and river discharge. *Estuarine, Coastal and Shelf Science* 40:529-544.

- Yin, K., P.J. Harrison, S. Pond, and R.J. Beamish. 1995. Entrainment of nitrate in the Fraser River estuary and its biological implications. **III**. Effects of winds. *Estuarine, Coastal and Shelf Science* 40:545-558.
- Zhang, Z., R.J. Beamish, and B.E. Riddell. 1995. Differences in otolith microstructure between hatchery-reared and wild chinook salmon (*Oncorhynchus tshawytscha*). *Canadian Journal of Fisheries and Aquatic Sciences* 52:344-352.
- Beamish, R.J. 1994. Long-term abundance trends in pacific fisheries and their relationship to the environment. Pages 255-264 in *Proceedings: Third Pacific Rim Fisheries Conference: business development in the information age, March 8-10, 1994, Beijing, People's Republic of China*. University of Alaska Anchorage, Alaska Center for International Business; Ministry of Agriculture, Bureau of Aquatic Products, Beijing, People's Republic of China.
- Beamish, R.J., and M. Hunter. 1994. Fisheries policy for business development Canada industry review. Pages 61-72 in *Proceedings: Third Pacific Rim Fisheries Conference: business development in the information age, March 8-10, 1994, Beijing, People's Republic of China*. University of Alaska Anchorage, Alaska Center for International Business; Ministry of Agriculture, Bureau of Aquatic Products, Beijing, People's Republic of China.
- Beamish, R.J., C.-E.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.
- Beamish, R.J. 1993. Climate and exceptional fish production off the west coast of North America. *Canadian Journal of Fisheries and Aquatic Sciences* 50:2270-2291.
- Beamish, R.J., and D.R. Bouillon. 1993. Pacific salmon production trends in relation to climate. *Canadian Journal of Fisheries and Aquatic Sciences* 50:1002-1016.
- St. John, M.A., S.G. Marinone, J. Stronach, P.J. Harrison, J. Fyfe, and R. J. Beamish. 1993. A horizontally resolving physical-biological model of nitrate concentration and primary productivity in the Strait of Georgia. *Canadian Journal of Fisheries and Aquatic Sciences* 50:1456-1466.
- Whyte, J.N.C., R.J. Beamish, N.G. Ginther, and C.-E. 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.
- Beamish, R.J. 1992. The importance of accurate ages in fisheries sciences. Pages 8-15 in D.A. Hancock (editor) *The measurement of age and growth in fish and shellfish*. Australian Society for Fish Biology Workshop, Lorne, Victoria, 22-23 August 1990. Proceedings No. 12. Bureau of Rural Resources, Canberra.
- Beamish, R.J., and C.-E. M. Neville. 1992. The importance of size as an isolating mechanism in lampreys. *Copeia* 1992(1):191-196.

- Beamish, R.J., B.L. Thomson, and G.A. McFarlane. 1992. Spiny dogfish predation on chinook and coho salmon and the potential effects on hatchery-produced salmon. *Transactions of the American Fisheries Society* 121:444-455.
- McFarlane, G.A., and R.J. Beamish. 1992. Climatic influence linking copepod production with strong year-classes in sablefish, *Anoplopoma fimbria*. *Canadian Journal of Fisheries and Aquatic Sciences* 49:743-753.
- Polat, N., and R.J. Beamish. 1992. Annulus formation on anatomical structures of Siraz (*Capoeta capoeta*) in Altinkaya Dam Lake. *Ondokuz Mayıs Universitesi, Fen Dergisi* 4(1):70-88.
- Richards, L.J., J.T. Schnute, A.R. Kronlund, and R. J. Beamish. 1992. Statistical models for the analysis of ageing error. *Canadian Journal of Fisheries and Aquatic Sciences* 49:1801-1815.
- St. John, M.A., J.S. Macdonald, P.J. Harrison, R.J. Beamish, and E. Choromanski. 1992. The Fraser River plume: some preliminary observations on the distribution of juvenile salmon, herring, and their prey. *Fisheries Oceanography* 1:153-162.
- Beamish, R.J., and C.D. Levings. 1991. Abundance and freshwater migrations of the anadromous parasitic lamprey, *Lampetra tridentata*, in a tributary of the Fraser River, British Columbia. *Canadian Journal of Fisheries and Aquatic Sciences* 48:1250-1263.
- Youson, J.H., and R.J. Beamish. 1991. Comparison of the internal morphology of adults of a population of lampreys that contains a nonparasitic life-history type, *Lampetra richardsoni*, and a potentially parasitic form, *L. richardsoni* var. *marifuga*. *Canadian Journal of Zoology* 69:628-637.
- Beamish, R.J., and L. Margolis. 1990. Obituary. Dr. W. E. (Wally) Johnson, 1923-1989. *Canadian Journal of Fisheries and Aquatic Sciences* 47:1478-1479.
- Beamish, R.J., G.A. McFarlane, and A.V. Tyler. 1990. A comparison of the length frequency and fin-ray methods of estimating the age of Pacific cod. *International North Pacific Fisheries Commission Bulletin Number* 50:25-35.
- Cass, A.J., R.J. Beamish, and G.A. McFarlane. 1990. Lingcod (*Ophiodon elongatus*). *Canadian Special Publication of Fisheries and Aquatic Sciences* 109. 40p.
- McFarlane, G.A., and R.J. Beamish. 1990. An examination of age determination structures of walleye pollock (*Theragra chalcogramma*) from five stocks in the Northeast Pacific Ocean. *International North Pacific Fisheries Commission Bulletin Number* 50:37-56.
- McFarlane, G.A., and R.J. Beamish. 1990. Effect of an external tag on growth of sablefish (*Anoplopoma fimbria*), and consequences to mortality and age at maturity. *Canadian Journal of Fisheries and Aquatic Sciences* 47:1551-1557.
- Saunders, M.W., G.A. McFarlane, and R.J. Beamish. 1990. Factors that affect the recapture of tagged sablefish off the west coast of Canada. *American Fisheries Society Symposium* 7:708-713.

- Beamish, R.J., and G.A. McFarlane (editors). 1989. Effects of ocean variability on recruitment and an evaluation of parameters used in stock assessment models. Canadian Special Publication of Fisheries and Aquatic Sciences 108. 379p. (also published as Bulletin Number 49 of the International North Pacific Fisheries Commission (in Japanese).)
- Beamish, R.J., and T.G. Northcote. 1989. Extinction of a population of anadromous parasitic lamprey, *Lampetra tridentata*, upstream of an impassable dam. Canadian Journal of Fisheries and Aquatic Sciences 46:420-425.
- Beamish, R.J., G.A. McFarlane, and W.S. Wooster. 1989. Introduction. The need for interdisciplinary research in fisheries and oceans sciences. Pages 1-3 in R. J. Beamish and G. A. McFarlane (editors) Effects of ocean variability on recruitment and an evaluation of parameters used in stock assessment models. Canadian Special Publication of Fisheries and Aquatic Sciences 108.
- Tyler, A.V., R.J. Beamish, and G.A. McFarlane. 1989. Implications of age determination errors to yield estimates. Pages 27-35 in R. J. Beamish and G. A. McFarlane (editors) Effects of ocean variability on recruitment and an evaluation of parameters used in stock assessment models. Canadian Special Publication of Fisheries and Aquatic Sciences 108.
- Beamish, R.J., and G.A. McFarlane. 1988. Resident and dispersal behaviour of adult sablefish (*Anaplopoma fimbria*) in the slope waters off Canada's west coast. Canadian Journal of Fisheries and Aquatic Sciences 45:152-164.
- Clarke, W.C., and R.J. Beamish. 1988. Response of recently metamorphosed anadromous parasitic lamprey (*Lampetra tridentata*) to confinement in fresh water. Canadian Journal of Fisheries and Aquatic Sciences 45:42-47.
- Youson, J.H., W.M. Elliott, R.J. Beamish, and D.W. Wang. 1988. A comparison of endocrine pancreatic tissue in adults of four species of lampreys in British Columbia: a morphological and immunohistochemical study. General and Comparative Endocrinology 70:247-261.
- Beamish, R.J. 1987. Evidence that parasitic and nonparasitic life history types are produced by one population of lamprey. Canadian Journal of Fisheries and Aquatic Sciences 44:1779-1782.
- Beamish, R.J. 1987. Status of the Lake Lamprey, *Lampetra macrostoma*, in Canada. Canadian Field-Naturalist 101(2):186-189.
- Beamish, R.J., and G.A. McFarlane. 1987. Current trends in age determination methodology. Pages 15-42 in R. C. Summerfelt and G. E. Hall (editors) Age and growth of fish. Iowa State University Press, Ames, Iowa.
- Beamish, R.J., and J.H. Youson. 1987. Life history and abundance of young adult *Lampetra ayresi* in the Fraser River and their possible impact on salmon and herring stocks in the Strait of Georgia. Canadian Journal of Fisheries and Aquatic Sciences 44:525-537.

- McFarlane, G.A., and R.J. Beamish. 1987. Validation of the dorsal spine method of age determination for spiny dogfish. Pages 287-300 in R. C. Summerfelt and G. E. Hall (editors) Age and growth of fish. Iowa State University Press, Ames, Iowa.
- McFarlane, G.A., and R.J. Beamish. 1987. Selection of dosages of oxytetracycline for age validation studies. Canadian Journal of Fisheries and Aquatic Sciences 44:905-909.
- Russell, J.E., F.W.H. Beamish, and R.J. Beamish. 1987. Lentic spawning by the Pacific lamprey, *Lampetra tridentata*. Canadian Journal of Fisheries and Aquatic Sciences 44:476-478.
- Beamish, R.J., and G.A. McFarlane. 1986. Pacific hake stocks off the west coast of Vancouver Island. International North Pacific Fisheries Commission Bulletin Number 45:393-412.
- Beamish, R.J., and R.E. Withler. 1986. A polymorphic population of lampreys that may produce parasitic and nonparasitic varieties. Pages 31-49 in T. Uyeno, R. Arai, T. Taniuchi, and K. Matsuura (editors) Indo-Pacific Fish Biology: Proceedings of the Second International Conference on Indo-Pacific Fishes. The Ichthyological Society of Japan, Tokyo.
- McFarlane, G.A., and R.J. Beamish. 1986. A tag suitable for assessing long-term movements of spiny dogfish and preliminary results from use of this tag. North American Journal of Fisheries Management 6:69-76.
- McFarlane, G.A., and R.J. Beamish. 1986. Biology and fishery of Pacific hake (*Merluccius productus*) in the Strait of Georgia. International North Pacific Fisheries Commission Bulletin Number 45:365-392.
- McFarlane, G.A., and R.J. Beamish. 1986. Production of strong year-classes of sablefish (*Anoplopoma fimbria*) off the west coast of Canada. International North Pacific Fisheries Commission Bulletin Number 47:191-202.
- Youson, J.H., and R.J. Beamish. 1986. Morphological comparison of organs in several species of lampreys on the west coast of Canada. Page 926 in T. Uyeno, R. Arai, T. Taniuchi, and K. Matsuura (eds.) Indo-Pacific Fish Biology: Proceedings of the Second International Conference on Indo-Pacific Fishes. The Ichthyological Society of Japan, Tokyo.
- Beamish, R.J. 1985. Freshwater parasitic lamprey on Vancouver Island and a theory of the evolution of the freshwater parasitic and nonparasitic life history types. Pages 123-140 in R. E. Foreman, A. Gorbman, J.M. Dodd, and R. Olsson (editors) Evolutionary biology of primitive fishes. Plenum Press, New York. NATO ASI Series A: Life Sciences:103.
- Beamish, R.J., and G.A. McFarlane. 1985. Annulus development on the second dorsal spine of the spiny dogfish (*Squalus acanthias*) and its validity for age determination. Canadian Journal of Fisheries and Aquatic Sciences 42:1799-1805.
- Beamish, R.J., and G.A. McFarlane. 1985. Pacific whiting, *Merluccius productus*, stocks off the west coast of Vancouver Island, Canada. Marine Fisheries Review 47(2):75-81.

- McFarlane, G.A., and R.J. Beamish. 1985. Biology and fishery of Pacific whiting, *Merluccius productus*, in the Strait of Georgia. *Marine Fisheries Review* 47(2):23-34.
- Farlinger, S.P., and R.J. Beamish. 1984. Recent colonization of a major salmon-producing lake in British Columbia by Pacific lamprey (*Lampetra tridentata*). *Canadian Journal of Fisheries and Aquatic Sciences* 41:278-285.
- Leaman, B.M., and R.J. Beamish. 1984. Ecological and management implications of longevity in some northeast Pacific groundfishes. *International Fisheries Commission Bulletin Number* 42:85-97.
- Beamish, R.J., and G.A. McFarlane. 1983. The forgotten requirement for age validation in fisheries biology. *Transactions of the American Fisheries Society* 112:735-743.
- Cass, A.J., and R.J. Beamish. 1983. First evidence of validity of the fin-ray method of age determination for marine fishes. *North American Journal of Fisheries Management* 3:182-188.
- Mason, J.C., R.J. Beamish, and G.A. McFarlane. 1983. Sexual maturity, fecundity, spawning, and early life history of sablefish (*Anoplopoma fimbria*) off the Pacific coast of Canada. *Canadian Journal of Fisheries and Aquatic Sciences* 40:2126-2134.
- Beamish, R.J. 1982. *Lampetra macrostoma*, a new species of freshwater parasitic lamprey from the west coast of Canada. *Canadian Journal of Fisheries and Aquatic Sciences* 39:736-747.
- Beamish, R.J., and D.E. Chilton. 1982. Preliminary evaluation of a method to determine the age of sablefish (*Anoplopoma fimbria*). *Canadian Journal of Fisheries and Aquatic Sciences* 39:277-87.
- Chilton, D.E., and R.J. Beamish. 1982. Age determination methods for fishes studied by the Groundfish Program at the Pacific Biological Station. *Canadian Special Publication of Fisheries and Aquatic Sciences* 60. 102p.
- Richards, J.E., R.J. Beamish, and F.W.H. Beamish. 1982. Descriptions and keys for ammocoetes of lampreys from British Columbia, Canada. *Canadian Journal of Fisheries and Aquatic Sciences* 39:1484-1495.
- Beamish, R.J. 1981. Use of fin-ray sections to age walleye pollock, Pacific cod, and albacore, and the importance of this method. *Transactions of the American Fisheries Society* 110:287-299.
- Beamish, R.J., and D.A. Fournier. 1981. A method for comparing the precision of a set of age determinations. *Canadian Journal of Fisheries and Aquatic Sciences* 38:982-983.
- Beamish, R.J. 1980. Adult biology of the river lamprey (*Lampetra ayresi*) and the Pacific lamprey (*Lampetra tridentata*) from the Pacific coast of Canada. *Canadian Journal of Fisheries and Aquatic Sciences* 37:1906-1923.

- Foucher, R.P., and R.J. Beamish. 1980. Production of nonviable oocytes by Pacific hake (*Merluccius productus*). Canadian Journal of Fisheries and Aquatic Sciences 37:41-48.
- Mills, K.H., and R.J. Beamish. 1980. Comparison of fin-ray and scale age determinations for lake whitefish (*Coregonus clupeaformis*) and their implications for estimates of growth and annual survival. Canadian Journal of Fisheries and Aquatic Sciences 37:534-544.
- Beamish, R.J. 1979. Differences in the age of Pacific hake (*Merluccius productus*) using whole otoliths and sections of otoliths. Journal of the Fisheries Research Board of Canada 36:141-151.
- Beamish, R.J. 1979. New information on the longevity of Pacific ocean perch (*Sebastes alutus*). Journal of the Fisheries Research Board of Canada 36:1395-1400.
- Wood, C.C., K.S. Ketchen, and R.J. Beamish. 1979. Population dynamics of spiny dogfish (*Squalus acanthias*) in British Columbia waters. Journal of the Fisheries Research Board of Canada 36:647-656.
- Beamish, R.J., and D. Chilton. 1977. Age determination of lingcod (*Ophiodon elongatus*) using dorsal fin rays and scales. Journal of the Fisheries Research Board of Canada 34:1305-1313.
- Beamish, R.J., and E.J. Crossman. 1977. Validity of the subspecies designation for the dwarf white sucker (*Castostomus commersoni utawana*). Journal of the Fisheries Research Board of Canada 34:371-378.
- Beamish, R.J., and R.R. Miller. 1977. Cytotaxonomic study of gila trout, *Salmo gilae*. Journal of the Fisheries Research Board of Canada 34:1041-1045.
- Beamish, R.J., and J.C. Van Loon. 1977. Precipitation loading of acid and heavy metals to a small acid lake near Sudbury, Ontario. Journal of the Fisheries Research Board of Canada 34:649-658.
- Van Loon, J.C., and R.J. Beamish. 1977. Heavy-metal contamination by atmospheric fallout of several Flin Flon area lakes and the relation to fish populations. Journal of the Fisheries Research Board of Canada 34:899-906.
- Beamish, R.J. 1976. Acidification of lakes in Canada by acid precipitation and the resulting effects on fishes. Water, Air and Soil Pollution 6: 501-14. (also published in the Proceedings of the First International Symposium on Acid Precipitation and the Forest Ecosystem. USDA Forest Service General Technical Report NE-23, 1976.)
- Beamish, R.J., W.L. Lockhart, J.C. Van Loon, and H.H. Harvey. 1975. Long-term acidification of a lake and resulting effects on fishes. Ambio 4:98-102.
- Beamish, R.J. 1974. Growth and survival of white suckers (*Catostomus commersoni*) in an acidified lake. Journal of the Fisheries Research Board of Canada 31:49-54.

- Beamish, R.J. 1974. Loss of fish populations from unexploited remote lakes in Ontario, Canada as a consequence of atmospheric fallout of acid. *Water Research* 8:85-95.
- Beamish, R.J. 1973. Design of a trapnet with interchangeable parts for the capture of large and small fishes from varying depths. *Journal of the Fisheries Research Board of Canada* 30:587-590.
- Beamish, R.J. 1973. Determination of age and growth of populations of the white sucker (*Catostomus commersoni*) exhibiting a wide range in size at maturity. *Journal of the Fisheries Research Board of Canada* 30:607-616.
- Beamish, R.J. 1972. Lethal pH for the white sucker *Catostomus commersoni* (Lacépède). *Transactions of the American Fisheries Society* 101:355-358.
- Beamish, R.J., and H.H. Harvey. 1972. Acidification of the La Cloche Mountain Lakes, Ontario, and resulting fish mortalities. *Journal of the Fisheries Research Board of Canada* 29:1131-1143.
- White, W.J., and R.J. Beamish. 1972. A simple fish tag suitable for long-term marking experiments. *Journal of the Fisheries Research Board of Canada* 29:339-341.
- Beamish, R.J., M.J. Merrilees, and E.J. Crossman. 1971. Karyotypes and DNA values for members of the suborder Esocoidei (Osteichthyes: Salmoniformes). *Chromosoma* 34:436-447.
- Beamish, R.J., and H. Tsuyuki. 1971. A biochemical and cytological study of the longnose sucker (*Catostomus catostomus*) and large and dwarf forms of the white sucker (*Catostomus commersoni*). *Journal of the Fisheries Research Board of Canada* 28:1745-1748.
- Beamish, R.J., and H.H. Harvey. 1969. Age determination in the white sucker. *Journal of the Fisheries Research Board of Canada* 26:633-638.
- Beamish, R.J., and W.B. Scott. 1969. Asymmetry in the trunk vertebrae of *Lota lota lacustris* (Walbaum). *Canadian Journal of Zoology* 47:537-538.

Non-Peer Reviewed and Technical Reports

- Beamish, R.J., K.L. Lange, C.E. Neville, R.M. Sweeting and T.D. Beacham. 2011. Structural patterns in the distribution of ocean- and stream-type juvenile chinook salmon populations in the Strait of Georgia in 2010 during the critical early marine period. NPAFC Doc. 1354, 27 pp. (Available at www.npafc.org)
- Beamish, R.J., R.M. Sweeting, T.D. Beacham, K.L. Lange, and C.M. Neville. 2010. A late ocean entry life history strategy improves the marine survival of chinook salmon in the Strait of Georgia. NPAFC Doc. 1282. 14 pp. (Available at www.npafc.org)
- Beamish, R.J., K.L. Lange, C.M. Neville, R.M. Sweeting, T.D. Beacham and D.Preikshot. 2010. Late ocean entry of sea type sockeye salmon from the Harrison River in the Fraser River drainage results in improved productivity. NPAFC Doc. 1283. 30 pp. (Available at www.npafc.org)

- Beamish, R.J., R.M. Sweeting, C.M. Neville, and K.L. Lange. 2010. Competitive interactions between pink salmon and other juvenile Pacific salmon in the Strait of Georgia. NPAFC Doc. 1284. 26 pp. (Available at www.npafc.org)
- Preikshot, D., R.J. Beamish, and R.M. Sweeting. 2010. Changes in the diet composition of juvenile sockeye salmon in the Strait of Georgia from the 1960s to the early 21st Century. NPAFC Doc. 1285. 17 pp. (Available at www.npafc.org)
- Neville, C.M., R.J. Beamish, and C.M. Chittenden. 2010. The use of acoustic tags to monitor the movement and survival of juvenile chinook salmon in the Strait of Georgia. NPAFC Doc. 1286. 19 pp. (Available at www.npafc.org)
- Sweeting, R., Lange, K., Neville, C., and Beamish, R. 2010. Juvenile salmon surveys in the Strait of Georgia. Pages 133-134 *in* W.R. Crawford and J.R. Irvine (editors) State of physical, biological, and selected fishery resources of Pacific Canadian marine ecosystems in 2009. DFO Canadian Science Advisory Secretariat Research Document 2010/053. .
- Beamish, R., Sweeting, R., Neville, C., Lange, K., and Preikshot, D. 2009. Juvenile salmon in the Strait of Georgia. Pages 118-119 *in* W.R. Crawford and J.R. Irvine (editors) State of physical, biological, and selected fishery resources of Pacific Canadian marine ecosystems. DFO Canadian Science Advisory Secretariat Research Document 2009/022.
- 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.
- Okey, T.A., A.B. Hollowed, M.J. Schirripa and R.J. Beamish. 2008. Forecasting climate impacts on marine life and fisheries: the 2035 marine impacts modelling challenge. ICES Journal of Marine Science International Symposium on the Effects of Climate Change on the World Oceans.
- Riddell, B.E., R.J. Beamish, L.J. Richards, and J.R. Candy. 2008. Technical Comment on “Declining wild salmon populations in relation to parasites from farm salmon. *Science* 322:1790b; doi:10.1126/science.1156341
- Sweeting, R.M., Beamish, R.J., Neville, C.M., Gordon, E., and Lange, K. 2008. State of Georgia juvenile salmon: The same in 2007, only different. Pages 102-105 *in* B. Crawford and J. Irvine (editors) State of physical, biological, and selected fishery resources of Pacific Canadian marine ecosystems. DFO Canadian Science Advisory Secretariat Research Document 2008/013.
- Beamish, R.J., Sweeting, R.M., and Lange, K.L. 2007. A preliminary interpretation of coded wire tag recoveries from juvenile coho and chinook salmon released into the Strait of Georgia and Puget Sound from 1997 to 2006. Georgia Basin Puget Sound Research Conference Proceedings. 14p. Available at http://www.engr.washington.edu/epp/psgb/2007psgb/2007proceedings/papers/8b_beam.

- Beamish, R.J., et al. 2007. Canadian Aquaculture R&D Review. "Incorporating natural cycles of sea lice production into management for sustainable aquaculture." "Tallying pinks in the Broughton." "Sea lice potpourri." Reports on projects.
- 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. 7p. Available at http://www.engr.washington.edu/epp/psgb/2007psgb/2007proceedings/papers/7b_nevil.
- Sweeting, R.M., Beamish, R.J., and Cooper, C. 2007. Comparison of juvenile salmon diets in the Strait of Georgia and Puget Sound 1997-2006. Georgia Basin Puget Sound Research Conference Proceedings. 12p. Available at http://www.engr.washington.edu/epp/psgb/2007psgb/2007proceedings/papers/2b_sweet.
- 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. 21p.
- 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.
- Farley, Jr., E.V., Moss, J.H., and Beamish, R.J. 2006. A review of the critical size, critical period hypothesis for juvenile Pacific salmon. Auke Bay Laboratory, Alaska Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, United States Department of Commerce, 11305 Glacier Highway, Juneau, AK 99801-8626 USA.
- Beamish, R.J., C.M. Neville, R.M. Sweeting, N. Ambers, and E.K. Gordon. 2005. Adult Pacific salmon are a major source of sea lice in coastal ecosystems. Extended abstract. Pages. 127-128 in *Lessons from the Past to Optimize the Future*. Aquaculture Europe 2005, Trondheim, Norway, August 5-9, 2005.
- Beamish, R.J. 2005. 100 years of fishing off Canada's Pacific coast. Pages 4-5 in W.S. Wooster (editor) *Improving Fishery Management: Melding Science and Governance*. Summary Proceedings. U. Wash. Nov 15-16, 2004. Publ. by School of Marine Affairs, U. Wash., Seattle.
- Beamish, R.J. 2005. Fisheries Off the Pacific Coast of Canada. Pages 8-15 in *Proceedings of the Seventh North Pacific Rim Fisheries Conference*, May 2004, Busan, Korea. Pacific Rim Fisheries Program of Alaska Pacific University, NOAA Award No. NA04NMF4540155, 313 pp.
- Beamish, R.J., N. Ambers, and K.L. Hunter. 2005. Sea lice counts on Pacific salmon caught in the Central North Pacific Ocean and Bering Sea aboard the *R/V Waketake maru* using gillnets and long line gear in July 2005. NPAFC Doc. 873. 12p. Fisheries and Oceans Canada,

Science Branch - Pacific Region, Pacific Biological Station, Nanaimo, B.C. Canada V9T 6N7.

- Beamish, R.J. N. Ambers, K.L. Hunter, and C. Neville. 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. NPAFC Doc. 874. 15p. Fisheries and Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, B.C. Canada V9T 6N7.
- Beamish, R.J., R.M. Sweeting, C.M. Neville, and K. Lange. 2005. Changing trends in the rearing capacity of the Strait of Georgia ecosystem for juvenile Pacific salmon. October 2005. NPAFC Doc. 875. 15p. Fisheries & Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, B.C. Canada V9T 6N7.
- 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., C.M. Neville, and R.M. Sweeting. 2004. Sea lice counts on Adult Pacific salmon caught in the Central Coast of British Columbia using trawl and troll gear. NPAFC Doc. 819. 17p. Fisheries & Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9T 6N7.
- Beamish, R.J., C.M. Neville, and R. Sweeting. 2004. 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. In T.W. Droscher and D.A. Fraser (editors) Proceedings of the 2003 Georgia Basin/Puget Sound Research Conference.
- King, J.R., G.A. McFarlane, R.J. Beamish, and C.J. Low. 2004. Factors Influencing the Abundance and Distribution of Lingcod Egg Masses in the Nearshore Waters Adjacent to the West Coast of Vancouver Island During January 17-March 15, 1979. Canadian Technical Report of Fisheries and Aquatic Sciences 2557.13 pp.
- Sweeting, R.M., R.J. Beamish, and C.M. Neville. 2004. The continuation of the productive regime in the Strait of Georgia. NPAFC Doc. 818. 24p. Fisheries & Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9T 6N7.
- Beamish, R.J., S. Dawe, R.M. Sweeting, E. Gordon, N. Ambers, A. Hurst, C.M. Neville. 2003. Surveys of Pacific salmon in the major inlets of British Columbia. NPAFC Doc. 708. 21p. Fisheries and Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9T 6N7.
- 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. Pages 13-18 in N.J. Valette-Silver and D. Scavia (editors) Ecological Forecasting: New tools for coastal and ecosystem management. NOAA Technical Memorandum NOS NCCOS 1. 116 p.
- Riddell, B.E. and Beamish, R.J. 2003. Distribution and Monitoring of Pink Salmon (*Oncorhynchus gorbuscha*) in British Columbia, Canada – a contribution to the development of a Pink

- Salmon Watch. NPAFC Doc. 707. 33p. Fisheries and Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9T 6N7.
- Beamish, R.J. 2002. North Pacific Anadromous Fish Commission Address by Dr. Richard Beamish, Chairman of the Committee on Scientific Research and Statistics. NPAFC Doc. 659. Records of the Tenth Annual Meeting, October 6-11, 2002, Vladivostok, Russia. pp. 47-49. Fisheries and Oceans Canada, Sciences Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9T 6N7.
- Beamish, R.J. 2002. Recent returns of Pink salmon to the Fraser River indicate the importance of relating stock to recruitment on a regime scale. NPAFC Doc. 633. 24p. Fisheries and Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9T 6N7.
- Beamish, R.J., and McDermott, H.K. 2002. COSEWIC Status Report Copper River. Committee on the Status of Endangered Wildlife in Canada, Ottawa.
- Beamish, R.J., and McDermott, H.K. 2002. COSEWIC Status Report on Skidegate Lake Lamprey. Committee on the Status of Endangered Wildlife in Canada, Ottawa. iv + 17p.
- Beamish, R.J., and McDermott, H.K. 2002. COSEWIC Status Report on Two undescribed and possibly rare species of lamprey from the Nass River, British Columbia. Committee on the Status of Endangered Wildlife in Canada, Ottawa. iv + 21p.
- Noakes, D.J., Beamish, R.J., and Gregory, R. 2002. British Columbia's commercial salmon industry. NPAFC Doc. 642.13p. Fisheries and Oceans Canada, Sciences Branch – Pacific Region, Pacific Biological Station, Nanaimo, British Columbia, Canada, V9T 6N7.
- Sweeting, R.M., and Beamish, R.J. 2002. Results of the July survey in the Strait of Georgia, British Columbia, indicate that 2002 may be a year of cool temperatures and reduced productivity for juvenile Pacific salmon. NPAFC Doc. 635. 17p. Fisheries and Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, B.C., Canada, V9T 6N7.
- Beamish, R.J. 2001. Effects of global climate change on the fisheries off the west coast of Canada. A report presented to the Pacific Resource Conservation Council. 4p.
- Beamish, R.J., Neville, C.M. Sweeting, R.M., and Poier, K.L. 2001. Persistence of the improved productivity of 2000 in the Strait of Georgia, British Columbia, Canada, through to 2001. NPAFC Doc. 565. 19p. Dept. of Fisheries and Oceans, Sciences Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6.
- Beamish, R.J., Poier, K.L., and Mahnken, C. 2001. Evidence of the validity of the critical size and critical period hypothesis. NPAFC Doc. 564. 16p. Fisheries and Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6. National Marine Fisheries Service, Port Orchard, WA, USA, 98366.

- Noakes, D.J., and Beamish, R.J. 2001. Influence of decadal scale climate change on flows in the Fraser River, British Columbia. 15th Canadian Hydrotechnical Conference of the Canadian Society for Civil Engineering, May 30 – June 2, 2001, Victoria, British Columbia. 5p.
- Beamish, R.J. 2000. Impacts of global warming on British Columbia salmon... the urgent need for a strategy to manage salmon in a changing climate. Second report of the Pacific Fisheries Resource Conservation Council, May 2000.
- Beamish, R.J., Poier, K.L. Sweeting, R.M. and Neville, C.M. 2000. An abrupt increase in the abundance of juvenile salmon in the Strait of Georgia. NPAFC Doc. 473. 21p. Fisheries and Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC, Canada, V9R 5K6.
- Beamish, R. 1999. Why a strategy for managing salmon in a changing climate is urgently needed. Pages 14-16 *in* Conference: climate change and salmon stocks, Vancouver, BC, October 27, 1999. Pacific Fisheries Resource Conservation Council.
- Beamish, R.J., and Mahnken, C. 1999. Taking the next step in fisheries management. Pages 1-21 *in* Ecosystem approaches for fisheries management. Alaska Sea Grant College Program, AK-SG-99-01. Fairbanks, Alaska.
- Beamish, R.J., and McFarlane, G.A. 1999. Applying ecosystem management to fisheries in the Strait of Georgia. Pages 637-664 *in* Ecosystem approaches for fisheries management. Alaska Sea Grant College Program, AK-SG 99-01. Fairbanks, Alaska.
- Beamish, R.J., and Sweeting, R.M. 1999. Patterns in the recapture rates among release locations of coded-wire tagged juvenile coho salmon in the Strait of Georgia. NPAFC Doc. 436. 25p. Fisheries and Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6.
- Leask, K.D., and Beamish, R.J. 1999. Review of the fisheries and biology of the Pacific Hagfish (*Eptatretus stoutii*) in British Columbia, with recommendations for biological sampling in a developmental fishery. Canadian Stock Assessment Secretariat Research Document 99/205. 48p.
- McFarlane, G.A., King, J.R., and Beamish, R.J. 1999. Linkages between a composite Pacific climate-ocean index and fluctuations in British Columbia salmon and other fish populations. NPAFC Doc. 434. 12p. + 6 figs. Fisheries and Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6.
- Neville, C.-E.M., and Beamish, R.J. 1999. Comparison of the diets of ocean age 0 hatchery and wild chinook salmon. NPAFC Doc. 435. 14p. Fisheries and Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6.
- Beamish, R.J. 1998. Updated COSEWIC status report on the lake lamprey, *Lampetra macrostoma*. Committee on the Status of Endangered Wildlife in Canada, Ottawa, Ontario. 11p.

- Beamish, R.J., and C. Mahnken. 1998. Natural regulation of the abundance of coho and other species of Pacific salmon according to the critical size and critical period hypothesis. NPAFC Doc. 319. 28p. Fisheries and Oceans Canada, Science Branch - Pacific Region, Pacific Biological Station, Nanaimo, B.C., Canada, V9R 5K6. National Marine Fisheries Service, 7305 Beach Drive East, Port Orchard, WA, USA, 98366
- Beamish, R.J., M. Folkes, and R. Sweeting. 1998. Intra-annual changes in the abundances of coho, chinook, and chum salmon in Puget Sound in 1997. Pages 531-541 *in* R. Strickland, A.E. Copping, and N.J. Lerner (editors) Puget Sound Research 1998: Proceedings of the 1998 Puget Sound Research Conference, March 12-13 1998, Seattle, Washington. Puget Sound Water Quality Action Team, Olympia, WA.
- Beamish, R.J., J.R. King, D. Noakes, G.A. McFarlane, and R.M. Sweeting. 1998. Evidence of a new regime starting in 1996 and the relation to Pacific salmon catches. NPAFC Doc. 321. 21p. Fisheries and Oceans Canada, Science Branch - Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6.
- Beamish, R.J., D. Noakes, G. McFarlane, W. Pinnix, R. Sweeting, J. King, and M. Folkes. 1998. Trends in coho marine survival in relation to the regime concept. Canadian Stock Assessment Secretariat Research Document 98/171. 26p.
- Beamish, R.J., R. Sweeting, and Z. Zhang. 1998. Estimating the percentage of hatchery-reared juvenile coho salmon in the Strait of Georgia in 1997. Canadian Stock Assessment Secretariat Research Document 98/93. 14p.
- King, J.R., V.V. Ivanov, V. Kurashov, R.J. Beamish, and G.A. McFarlane. 1998. General circulation of the atmosphere over the North Pacific and its relationship to the Aleutian Low. NPAFC Doc. 318. 18p. Fisheries and Oceans Canada, Science Branch – Pacific Region, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6. Arctic and Antarctic Research Institute, 38 Bering Street, St. Petersburg, Russia, 199397.
- McFarlane, G.A., and Beamish, R.J. 1998. Sardines spawn in British Columbia waters for the first time. *The Westcoast Fisherman*, April issue, 19-20.
- Zhang, Z., R.J. Beamish, and B.E. Riddell. 1998. Change in proportion of hatchery-reared, wild ocean- and stream-type chinook in their first and second ocean years in the Strait of Georgia. Canadian Stock Assessment Secretariat Research Document 98/90. 12p.
- Beamish, R.J. 1997. Protecting plants and animals in the Strait of Georgia – ideas for action. Report of the Work Group on the Protection of Marine Plants and Animals in the Strait of Georgia. 70p. Unpublished document available from Dr. R.J. Beamish, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6.
- Beamish, R.J., and C. 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 (editors) Estuarine and ocean survival of Northeastern Pacific salmon: proceedings of the workshop, March 20-22, 1996, Newport, Oregon. NOAA Technical Memorandum NMFS-NWFSC-29.

- Beamish, R.J., M. Henderson, and H.A. Regier. 1997. Impacts of climate change on the fishes of British Columbia. Pages 12-1-12-16 in E.M. Taylor and B.G. Taylor (editors) Responding to global climate change in British Columbia and Yukon. Volume 1 of the Canada Country Study: climate impacts and adaptation. Environment Canada, Pacific and Yukon Region; British Columbia Ministry of Environment, Lands, and Parks, Vancouver, British Columbia.
- Beamish, R.J., G.A. McFarlane, D. Noakes, M. Folkes, V.V. Ivanov, and V. Kurashov. 1997. A comparison of the Aleutian Low Pressure Index and the Atmospheric Circulation Index as indices of Pacific salmon abundance trends. NPAFC Doc. 289. 24p. Department of Fisheries and Oceans, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6.
- Beamish, R.J. 1996. Synchrony of abundance trends of chinook and coho populations off Oregon, Washington and in the Strait of Georgia in comparison with the trends in all-nation catches of Pacific salmon. NPAFC Doc. 199. 24p. Dept. of Fisheries and Oceans, Biological Sciences Branch, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6.
- Beamish, R.J., and Z. Zhang. 1996. The relationship between time of ocean entry and residence in the Strait of Georgia for three chinook salmon rearing types. NPAFC Doc. 200. 18p. Dept. of Fisheries and Oceans, Biological Sciences Branch, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6.
- Beamish, R.J., and Z. Zhang. 1996. Biology of ocean age 0 hatchery, wild ocean, and wild stream type chinook in the Strait of Georgia. NPAFC Doc. 202. 25p. Dept. of Fisheries and Oceans, Biological Science Branch, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6.
- Rice, J., B. Leaman, L. Richards, R.J. Beamish, G.A. McFarlane, and G. Thomas (editors). 1996. Pacific Stock Assessment Review Committee (PSARC) Annual Report for 1995. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2383. iv + 242p.
- 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, BC Canada V9R 5K6.
- 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.
- 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.
- Beamish, R.J., B.L. Thomson, and C.-E. M. Neville. 1994. Inshore lingcod. PSARC Document G94-2A.
- 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, BC Canada V9R 5K6.

- British Columbia / Washington Marine Science Panel. 1994. The shared marine waters of British Columbia and Washington: a scientific assessment of current status and future trends in resource abundance and environmental quality in the Strait of Juan de Fuca, Strait of Georgia, and Puget Sound. Report to the British Columbia / Washington Environmental Cooperation Council. British Columbia / Washington Marine Science Panel. 119p.
- Copping, A., R. Beamish, C. Ebbesmeyer, C. Garrett, B. McCain, and T. Pedersen. 1994. Shared waters: the vulnerable inland sea of British Columbia and Washington. British Columbia / Washington Marine Science Panel. Washington Sea Grant Program, Seattle, WA. 24p.
- Welch, D.W., and R.J. Beamish. 1994. Possible approaches for co-operative Pacific salmon research. NPAFC Doc. 95. 8p. Dept. of Fisheries and Oceans, Biological Sciences Branch, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6.
- Wilson, R.C.H., R.J. Beamish, F. Aitkens, and J. Bell (editors). 1994. Review of the marine environment and biota of Strait of Georgia, Puget Sound and Juan de Fuca Strait: proceedings of the BC/Washington Symposium of the Marine Environment, January 13&14, 1994. Canadian Technical Report of Fisheries and Aquatic Sciences 1948. 390p.
- Zhang, Z. and R.J. Beamish. 1994. Use of otolith microstructure to identify hatchery-reared and wild Pacific salmon. NPAFC Doc. 90. 27p. Dept. of Fisheries and Oceans, Biological Sciences Branch, Pacific Biological Station, Nanaimo, BC Canada V9R 5K6.
- Beamish, R.J., and C.M. Neville. 1993. Hagfish. Pages 360-378 *in* B.M. Leaman and M. Stocker (editors) 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.
- Beamish, R.J. 1992. Preliminary summary of a report on Russian research studies of Pacific halibut. (Book by N. P. Novikov translated by E. Elliott and summarized for International Pacific Halibut Commission meetings, January 1992).
- Neville, C.M., and R.J. Beamish. 1992. Hagfish. Pages 267-280 *in* B.M. Leaman (editor) 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.
- Beamish, R.J., and K.L. Francis. 1991. Canada's Pacific fisheries. Bulletin of Far Eastern Branch, USSR Academy of Science.
- Beamish, R.J. 1989. Fisheries science and fisheries management. Pages 127-128 *in* Conference Proceedings on Pacific Rim Fisheries: Business Development & Policy, University of Alaska, Anchorage, Alaska, USA, March 13-15, 1989.
- Beamish, R.J., F. Bernard, K. Francis, B. Hargreaves, S. McKinnell, L. Margolis, and B. Riddell. 1989. A preliminary summary of the impact of the squid driftnet fishery on salmon, marine mammals, and other marine animals. Pages 73-95 *in* North Pacific Driftnet Conference: Proceedings, volume 1, July 17-19, 1989, Victoria, British Columbia, Canada.

- Beamish, R.J. 1986. COSEWIC status report in the lake lamprey, *Lampetra macrostoma*, in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa, Ontario. 14p.
- Cass, A.J., R.J. Beamish, and M.S. Smith. 1984. Study of the biology of lingcod off the west coast of Vancouver Island, *M/V Arctic Harvester*, November 22-December 2, 1977. Canadian Data Report of Fisheries and Aquatic Sciences No. 461. 73p.
- McFarlane, G.A., R.J. Beamish, and R.L. Demory. 1984. Additional information on the validity of the ageing technique for sablefish developed by Beamish and Chilton (1982). 14p. Report submitted to INPFC Canadian National Section, October 1984.
- McFarlane, G.A., R.J. Beamish, M.W. Saunders, M.S. Smith, and T. Butler. 1984. Data for the biology and diet studies of spiny dogfish (*Squalus acanthias*) in Hecate Strait, B. C., August 1977 and June 1978. Canadian Data Report of Fisheries and Aquatic Sciences 443. 410p.
- Beamish, R.J., and A.J. Cass. 1983. Lingcod. Underwater World Fact Sheet. Fisheries and Oceans Canada, Ottawa. 6p.
- Beamish, R.J., and G.A. McFarlane. 1983. Summary of results of the Canadian sablefish tagging program. Pages 147-183 in Proceedings of the International Sablefish Symposium, March 29-31, 1983, Anchorage, Alaska. Alaska Sea Grant Report 83-8.
- Beamish, R.J., and G.A. McFarlane. 1983. Validation of age determination estimates: the forgotten requirement. Pages 29-33 in On age determination of ocean pelagic fishes: tunas, billfishes, and sharks. NOAA Technical Report NMFS 8.
- Beamish, R.J., G.A. McFarlane, and D.E. Chilton. 1983. Use of oxytetracycline and other methods to validate a method of age determination for sablefish. Pages 95-116 in Proceedings of the International Sablefish Symposium, March 29-31, 1983, Anchorage, Alaska. Alaska Sea Grant Report 83-3.
- Beamish, R.J., G.A. McFarlane, R. Scarsbrook, D. Chilton, I. Barber, K. Best, A. Cass, and W. Shaw. 1983. A summary of sablefish tagging and biological studies conducted during 1980, and 1981 by the Pacific Biological Station. Canadian Manuscript Report of Fisheries and Aquatic Sciences 1732. iv + 135p.
- Mason, J.C., R.J., Beamish, and G.A. McFarlane. 1983. Sexual maturity, fecundity, spawning, and early life history of sablefish (*Anoplopoma fimbria*) in waters off the Pacific coast of Canada. Pages 137-140 in Proceedings of the International Sablefish Symposium, March 29-31, 1983, Anchorage, Alaska. Alaska Sea Grant Report 83-8.
- McFarlane, G.A., and R.J. Beamish. 1983. Biology of adult sablefish (*Anoplopoma fimbria*) in waters off western Canada. Pages 59-80 in Proceedings of the International Sablefish Symposium, March 29-31, 1983, Anchorage, Alaska. Alaska Sea Grant Report 83-8.
- McFarlane, G.A., and R.J. Beamish. 1983. Overview of the fishery and management strategy for sablefish (*Anoplopoma fimbria*) off the west coast of Canada. Pages 13-35 in Proceedings of

- the International Sablefish Symposium, March 29-31, 1983, Anchorage, Alaska. Alaska Sea Grant Report 83-8.
- McFarlane, G.A., and R.J. Beamish. 1983. Preliminary observations on the juvenile biology of sablefish (*Anoplopoma fimbria*) in waters off the west coast of Canada. Pages 119-135 in Proceedings of the International Sablefish Symposium, March 29-31, 1983, Anchorage, Alaska. Alaska Sea Grant Report 83-8.
- McFarlane, G.A., W. Shaw, and R.J. Beamish. 1983. Observations on the biology and distribution of Pacific hake, walleye pollock, and spiny dogfish in the Strait of Georgia February 20-May 2 and July 3, 1981. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 1722. vi + 109p.
- Shaw, W., G.A. McFarlane, and R.J. Beamish. 1983. An examination of the biology and distribution of Pacific hake, walleye pollock, and spiny dogfish in the Strait of Georgia. *R/V G. B. REED*, May 25-June 18, 1976. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 1697. 240p.
- Shaw, W., G.A. McFarlane, and R.J. Beamish. 1983. Biological study of Pacific hake, walleye pollock and spiny dogfish in the Strait of Georgia. *R/V G. B. REED*, March 22-April 2, 1976. Canadian Data Report of Fisheries and Aquatic Sciences No. 398. iv + 76p.
- Beamish, R.J., G.A. McFarlane, K.R. Weir, M.S. Smith, J.R. Scarsbrook, A.J. Cass, and C.C. Wood. 1982. Observations on the biology of Pacific hake, walleye pollock and spiny dogfish in the Strait of Georgia, Juan de Fuca Strait and off the west coast of Vancouver Island and the United States. *Arctic Harvester* July 13-24, 1976. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 1651. v + 150p.
- McFarlane, G.A., R.J. Beamish, M.S. Smith, V. Egan, and D. Brown. 1982. Results of spiny dogfish (*Squalus acanthias*) tagging in the Strait of Georgia, Queen Charlotte Sound, Hecate Strait, and Dixon Entrance, during 1980. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 1646. iv + 123p.
- McFarlane, G.A., R.J. Beamish, and K.R. Weir. 1982. Study of the biology and distribution of Pacific hake during the first commercial fishery conducted in the Strait of Georgia by the *M/V Callistratus* February 16-17, March 10-April 3, and May 12, 1979. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 1650. iv + 111p.
- Beamish, R.J. 1981. A preliminary report of Pacific hake studies conducted off the west coast of Vancouver Island. Canadian Manuscript Report of Fisheries and Aquatic Sciences 1610. 43p.
- Beamish, R.J., M.S. Smith, V. Egan, D. Brown, and G. McFarlane. 1981. Results of spiny dogfish (*Squalus acanthias*) tagging in the Strait of Georgia in 1979. Canadian Data Report of Fisheries and Aquatic Sciences No. 262. 73p.
- Beamish, R.J., C. Houle, and R. Scarsbrook. 1980. A summary of sablefish tagging and biological studies conducted during 1979 by the Pacific Biological Station. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 1588. 194p.

- Cass, A.J., R.J. Beamish, M.S. Smith, and K. Weir. 1980. Hake and pollock study, Strait of Georgia cruise, *G.B. Reed*, January 13-28, 1976. Canadian Data Report of Fisheries and Aquatic Sciences No. 225. 88p.
- Beamish, R.J. 1979. The use of sections of fin rays to determine the age of pollock (*Theragra chalcogramma*), Pacific cod (*Gadus macrocephalus*), albacore tuna (*Thunnus alalunga*), and comments on the importance of the fin ray method for the determination of age of fishes. International North Pacific Fisheries Commission Document No. 2209. 41p.
- Beamish, R.J., C. Houle, C. Wood, and R. Scarsbrook. 1979. A summary of sablefish tagging and exploratory trapping studies conducted during 1978 by the Pacific Biological Station. Canadian Data Report of Fisheries and Aquatic Sciences No. 162. 113p. (also published as INPFC Doc. No. 2208).
- Beamish, R.J., and J.R. Scarsbrook. 1979. Data for the study of the distribution and feeding habits of lampreys in the surface waters of the Gulf Islands and in the vicinity of the Fraser River, British Columbia. Fisheries and Marine Service Data Report 136. 353p.
- Beamish, R.J., and J.R. Scarsbrook. 1979. The distribution and feeding habits of lampreys in the surface waters of the Gulf Islands and in the vicinity of the Fraser River, British Columbia. Fisheries and Marine Service Manuscript Report No. 1512. 353p.
- Brown, D.R., L.G. (Van) Egan, M.S. Smith, and R.J. Beamish. 1979. Results of spiny dogfish (*Squalus acanthias*) tagging in the Strait of Georgia in 1978. Fisheries and Marine Service Data Report No. 141. 33p.
- Sigmund, N., R.J. Beamish, J. Fargo, G. Kingston, and M. Stocker. 1979. Exploratory bottom trawling for sablefish southwest of Vancouver Island, 1978. Fisheries and Marine Service Manuscript Report No. 1517. 45p.
- Thompson, J.M., and R.J. Beamish. 1979. An examination of the biology and distribution of walleye pollock in Dixon Entrance, Hecate Strait, the mainland inlets off Queen Charlotte Sound, and in the Strait of Georgia during March 14-April 21, 1978. Canadian Data Report of Fisheries and Aquatic Sciences No. 173. 188p.
- Beamish, R.J., and T. Uyeno. 1978. Karyotype of *Hiodon tergisus* and DNA values of *Hiodon tergisus* and *Hiodon alosoides*. Proceedings of Japan Academy. Chromosome Information Service No. 24:5-8.
- Beamish, R.J., M. Smith, and R. Scarsbrook. 1978. Hake and pollock study, Strait of Georgia cruise, *G.B. Reed* January 6-February 21, 1975. Fisheries and Marine Service Data Report 48. 206p.
- Beamish, R.J., K.R. Weir, J.R. Scarsbrook, and M.S. Smith. 1978. Growth of young Pacific hake, walleye pollock, Pacific cod, and lingcod in Stuart Channel, British Columbia in 1976. Fisheries and Marine Service Manuscript Report 1518. 111p.

- Beamish, R.J., C. Wood, and C. Houle. 1978. A summary of sablefish tagging studies conducted during 1977 by the Pacific Biological Station. Fisheries and Marine Service Data Report 77. 103p.
- Low, C.J., and R.J. Beamish. 1978. A study of the nesting behavior of lingcod (*Ophiodon elongatus*) in the Strait of Georgia, British Columbia. Fisheries and Marine Service Technical Report 843. 27p.
- Weir, K., R.J. Beamish, M.S. Smith, and J.R. Scarsbrook. 1978. Hake and pollock study, Strait of Georgia bottom trawl cruise *G.B. Reed*, February 25-March 13, 1975. Fisheries and Marine Service Data Report 71. 153p.
- Cass, A.J., R.J. Beamish, M.S. Smith, and J.R. Scarsbrook. 1977. Hake and pollock study, Strait of Georgia cruise, *G.B. Reed*, March 17-24, 1975. Fisheries and Marine Service Data Report 50. 66p.
- Foucher, R.P., and R.J. Beamish. 1977. A review of oocyte development in fishes with special reference to Pacific hake (*Merluccius productus*). Fisheries and Marine Service Technical Report 755. 16p.
- Beamish, R.J. 1976. Initial examination of Pacific hake and walleye pollock populations southwest of Vancouver Island September, 1975. Fisheries Research Board of Canada Manuscript Report Series No. 1375. 36p.
- Beamish, R.J. 1976. Pacific hake and walleye pollock study Strait of Georgia cruise, *A.P. Knight*, November 18-20, 1974. Fisheries Research Board of Canada Manuscript Report Series No. 1379. 16p.
- Beamish, R.J. 1976. Pacific hake and walleye pollock study Strait of Georgia cruise *A.P. Knight*, October 3-9, 1974. Fisheries Research Board of Canada Manuscript Report Series No. 1378. 22p.
- Beamish, R.J., and M.S. Smith. 1976. A preliminary report on the distribution, abundance, and biology of juvenile spiny dogfish (*Squalus acanthias*) in the Strait of Georgia and their relationship with other fishes. Fisheries and Marine Service Research and Development Technical Report No. 629. 44p.
- Beamish, R.J., and N.E. Williams. 1976. A preliminary report on the effects of river lamprey (*Lampetra ayresii*) predation on salmon and herring stocks. Fisheries and Marine Service Research and Development Technical Report No. 611. 26p.
- Beamish, R.J., L.M. Blouw, and G.A. McFarlane. 1976. A fish and chemical study of 109 lakes in the Experimental Lakes Area (ELA), northwestern Ontario, with appended reports on lake whitefish ageing errors and the northwestern Ontario baitfish industry. Fisheries and Marine Service Research and Development Technical Report No. 607. 116p.

- Beamish, R.J., D. Davenport, and J.R. Scarsbrook. 1976. Pacific hake and walleye pollock study Strait of Georgia Cruise, *A.P. Knight* July 29-31, 1974. Fisheries Research Board of Canada Manuscript Report Series No. 1374. 28p.
- Beamish, R.J., D. Eftoda, R. Scarsbrook, and M. Smith. 1976. Pacific hake and walleye pollock study Strait of Georgia cruise A. P. Knight, April 7-18, 1975. Fisheries Research Board of Canada Manuscript Report Series No. 1380. 40p.
- Beamish, R.J., D. Eftoda, M. Smith, R. Scarsbrook, and R. U'ren. 1976. Pacific hake and walleye pollock study Strait of Georgia cruise, *A.P. Knight* May 5-14, 1975. Fisheries Research Board of Canada Manuscript Report Series No. 1381. 25p.
- Beamish, R.J., F.P. Jordan, J.R. Scarsbrook, and R. Page. 1976. An initial study of fishes inhabiting the surface waters of the Strait of Georgia. *M.V. Caligus* July-August, 1974. Fisheries Research Board of Canada Manuscript Report Series No. 1377. 37p.
- Beamish, R.J., J.R. Scarsbrook, and F.P. Jordan. 1976. A bottom trawl study of Pacific hake and walleye pollock along the inshore areas adjacent to Vancouver Island in the Strait of Georgia. Fisheries and Marine Service Data Record No. 4. 67p.
- Beamish, R.J., M. Smith, R. Scarsbrook, and C. Wood. 1976. Hake and pollock study, Strait of Georgia cruise G. B. Reed, June 16-27, 1975. Fisheries and Marine Service Data Records No. 1. 174p.
- Beamish, R.J., K.R. Weir, J.R. Scarsbrook, and M.S. Smith. 1976. Growth of young Pacific hake, walleye pollock, Pacific cod and lingcod in Stuart Channel in 1975. Fisheries Research Board of Canada Manuscript Report Series No. 1399. 28p.
- Beamish, R.J., G.A. McFarlane, J.C. VanLoon, and J. Lichwa. 1975. An examination of the possible effects of Sudbury nickel mining and smelting operations on fishes and the water chemistry of lakes within the Whitefish Lake Indian Reserve. Fisheries and Marine Service Research and Development Technical Report No. 579. 52p.
- Beamish, R.J. 1974. *A.P. Knight* groundfish cruise no. 74-1, May 21-24, 1974 (Data Record). Fisheries Research Board of Canada Manuscript Report Series No. 1318. 9p.
- Beamish, R.J. 1972. Design of a trapnet for sampling shallow-water habitats. Fisheries Research Board of Canada Technical Report No. 305. 14p.
- Beamish, R.J., and H.H. Harvey. 1971 July 16. Why trout are disappearing in La Cloche Lakes. *The Globe and Mail*. 7p.
- Beamish, R.J. 1970. Factors affecting the age and size of the white sucker *Catostomus commersoni* at maturity. Ph.D. Thesis. University of Toronto, Toronto, Ontario. 170p.