



Gary E. Johnson, M.S.

Senior Scientist

Mr. Johnson has over 35 years of experience managing research projects related to the environmental effects of hydroelectric energy production. Mr. Johnson was the technical manager for hydroacoustic monitoring and evaluation studies during the development of the surface flow bypass system at the Wells Dam from 1983 – 1992. He served as manager of the Technical Services Division at BioSonics, Inc. before moving to the Bonneville Power Administration as a fisheries biologist. At BPA, Mr. Johnson worked to integrate needs for safe fish passage with hydroelectric generation. This led to Mr. Johnson being hired at PNNL to manage fish passage evaluations and bioengineering projects on the Columbia and Snake rivers. He continued this type of work for BioAnalysts, Inc. before returning to PNNL to work on estuarine and fish passage studies. At PNNL, Mr. Johnson managed projects related to research, monitoring, and evaluation in the lower Columbia River and estuary, as well as research for the Department of Energy's Water Power Program. Since 2009, Mr. Johnson has facilitated the Expert Regional Technical Group for ecosystem restoration in the Columbia River estuary. In 2020, Mr. Johnson retired from PNNL and went to work part-time for BioAnalysts, Inc.

Experience and Expertise

Environmental effects of hydropower
Bioengineering for fish protection at dams
Pacific Northwest estuarine and nearshore
ocean ecology
Scientific hydroacoustics
Design of research
Monitoring and evaluation programs
Ecosystem restoration
Facilitation of expert panels.

Education

M.S. Biological Oceanography, Oregon State
University, 1981
B.A. Mathematics and Marine Biology,
University of California at Berkeley, 1976

Research Interests

Environmental effects of hydropower
Bioengineering for fish protection at dams
Pacific Northwest estuarine and nearshore
ocean ecology
Juvenile salmon and steelhead migration
Scientific hydroacoustics
Research, monitoring and evaluation strategy
and design

Professional Experience

BioAnalysts, Inc., Boise, ID (2020-present)

Pacific Northwest National Laboratory, Portland, OR (2001–2020)

BioAnalysts, Inc., Boise, ID (1998-2001)

Pacific Northwest National Laboratory, Richland, WA (1994–1998)

Bonneville Power Administration, Portland, OR (1992–1994)

BioSonics, Inc., Seattle, WA (1982–1992)

Select Publications and Reports

Roegner GC, GE Johnson, and AM Coleman. 2021. “Indexing habitat opportunity for juvenile anadromous fishes in tidal-fluvial wetland systems.” *Ecological Indicators* vol 124. DOI: 10.1016/j.ecolind.2021.107422.

Ebberts BD, BD Zelinsky, JP Karnezis, CA Studebaker, S Lopez-Johnston, AM Creason, . Krasnow, GE Johnson, and RM Thom. 2017. “Implementing and institutionalizing adaptive management of the Columbia Estuary Ecosystem Restoration Program.” *Restoration Ecology*. DOI: 10.1111/rec.12562.

Krueger KL, DL Bottom, WG Hood, GE Johnson, KK Jones, and RM Thom. 2017. “An expert panel process to evaluate habitat restoration actions in the Columbia River Estuary.” *Journal of Environmental Management* 188, 357–350. DOI: 10.1016/j.jenvman.2016.11.028.

Diefenderfer HL, GE Johnson, RM Thom, KE Buenau, LA Weitkamp, CM Woodley, AB Borde, and RK Kropp. 2016. “Evidence-based evaluation of the cumulative effects of ecosystem restoration.” *Ecosphere* 7(3):e01242. DOI: 10.1002/ecs2.1242.

Sather NK, GE Johnson, DJ Teel, AJ Storch, JR Skalski and VI Cullinan. 2016. “Shallow Tidal Freshwater Habitats of the Columbia River: Spatial and Temporal Variability of Fish Communities and Density, Size, and Genetic Stock Composition of Juvenile Chinook Salmon.” *Transactions of the American Fisheries Society* 145:4, 734-753. DOI: 10.1080/00028487.2016.1150878.

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- Johnson GE, GP Ploskey, NK Sather, and DJ Teel. 2015. "Residence times of juvenile salmon and steelhead in off-channel tidal freshwater habitats, Columbia River, USA." *Canadian Journal of Fisheries and Aquatic Sciences* 72:684–696. DOI: 10.1139/cjfas-2014-0085.
- Johnson GE, NK Sather, JR Skalski, and D Teel. 2014. "Application of Diversity Indices to Quantify Early Life-History Diversity for Chinook Salmon." *Ecological Indicators* 38: 170-180. DOI: 10.1016/j.ecolind.2013.11.005.
- Johnson GE and F Khan. 2013. "Sluiceway operations to pass juvenile salmonids at The Dalles Dam, Columbia River, USA." *North American Journal of Fisheries Management* 33:1000-1012. DOI: 10.1080/02755947.2013.822441.
- Khan F, IM Royer, and GE Johnson. 2013. "Sluiceway operations for adult steelhead downstream migration at The Dalles Dam, Columbia River, USA." *North American Journal of Fisheries Management* 33:1013-1023. DOI: 10.1080/02755947.2013.793629.
- Diefenderfer HL, GE Johnson, JR Skalski, SA Breithaupt, and AM Coleman. 2012. "Application of the diminishing returns concept in the hydroecologic restoration of riverscapes." *Landscape Ecology* 27:671–682. DOI: 10.1007/s10980-012-9713-8.
- Diefenderfer HL, RH Thom, GE Johnson, JR Skalski, KA Vogt, BD Ebberts, GC Roegner, and EM Dawley. 2011. "A Levels-of-Evidence Approach for Assessing Cumulative Ecosystem Response to Estuary and River Restoration Programs." *Ecological Restoration* 29:111-132. <https://www.jstor.org/stable/44743555>.
- Deng Z, RP Mueller, MC Richmond, and GE Johnson. 2010. "Injury and Mortality of Juvenile Salmon Entrained in a Submerged Jet Entering Still Water." *North American Journal of Fisheries Management* 30:623-628. DOI: 10.1577/M09-153.1.
- Smith DL, JM Nestler, GE Johnson, and RA Goodwin. 2010. "Species-Specific Spatial and Temporal Distribution Patterns of Emigrating Juvenile Salmonids in the Pacific Northwest." *Reviews in Fisheries Science* 18:40-64. DOI: 10.1080/10641260903304487.
- Johnson GE, GR Ploskey, JB Hedgepeth, F Khan, RP Mueller, WT Nagy, MC Richmond, and MA Weiland. 2009. "Reducing the Impacts of Hydroelectric Dams on Juvenile Anadromous Fishes: Bioengineering Evaluations Using Acoustic Imaging in the Columbia River, USA." In: Dams: Impacts, Stability and Design, WP Hayes and MC Barnes (editors). ISBN: 978-1-60692-618-5.
- Johnson GE, BD Ebberts, AE Giorgi, KA Kuhn, RT Lee, JH Plump, DA Stensby, and CE Sweeney. 2008. "Outfall Site and Type Selection for a New Surface Flow Outlet to Pass Juvenile Salmonids at Bonneville Dam's Second Powerhouse, Columbia River." *American Fisheries Society Symposium* 61:203-215. DOI: 10.47886/9781934874028.ch13.
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- Johnson GE and DD Dauble. 2006. "Surface Flow Outlets to Protect Juvenile Salmonids Passing through Hydropower Dams." *Reviews in Fisheries Science* 14:213-244. DOI: 10.1080/10641260600864023.
- Johnson GE, SM Anglea, NS Adams, and TO Wik. 2005. "Evaluation of the Prototype Surface Flow Bypass for Juvenile Salmon and Steelhead at the Powerhouse of Lower Granite Dam, Snake River, Washington, 1996-2000." *North American Journal of Fisheries Management* 25(1):138-151. DOI: 10.1577/M04-024.1.
- Johnson GE, J Hedgepeth, J Skalski, and A Giorgi. 2004. "A Markov Chain Analysis of Fish Movements to Determine Entrainment Zones." *Fisheries Research* 69:349-358. DOI: 10.1016/j.fishres.2004.06.007.
- Johnson GE, BD Ebberts, DD Dauble, AE Giorgi, PG Heisey, RP Mueller, and DA Neitzel. 2003. "Effects of Jet Entry at High-Flow Outfalls on Juvenile Pacific Salmon." *North American Journal of Fisheries Management* 23(2):441-449. DOI: 10.1577/1548-8675(2003)023<0441:EOJEAH>2.0.CO;2.
- Johnson GE, NS Adams, RL Johnson, DW Rondorf, DD Dauble, and TY Barila. 2000. "Evaluation of the Prototype Surface Bypass for Salmonid Smolts in Spring 1996 and 1997 at Lower Granite Dam on the Snake River, Washington." *Transactions of the American Fisheries Society* 129(2):381-397. DOI: 10.1577/1548-8659(2000)129<0381:EOTPSB>2.0.CO;2.
- Johnson RL, DS Daly, and GE Johnson. 1998. "Combining Hydroacoustics, Flow Models to Study Fish Behavior." *Hydro Review* XVII(7):40-56.
- Skalski JR, GE Johnson, CM Sullivan, E Kudera, and MW Erho. 1996. "Statistical Evaluation of Turbine Bypass Efficiency at Wells Dam on the Columbia River, Washington." *Can. J. Fish. Aquatic Sci.* 53(10): 2188-2198. DOI: 10.1139/f96-179.
- Johnson GE, JR Skalski, and DJ Degan. 1994. "Statistical Precision of Hydroacoustic Sampling of Fish Entrainment at Hydroelectric Facilities." *North American Journal of Fisheries Management* 14(2): 323-333. DOI: 10.1577/1548-8675(1994)014<0323:SPOHSO>2.3.CO;2.
- Thorne R and GE Johnson. 1993. "A Review of Hydroacoustic Studies for Estimation of Salmonid Downriver Migration Past Hydroelectric Facilities on the Columbia and Snake Rivers in the 1980s." *Reviews in Fisheries Science* 1: 27-56. DOI: 10.1080/10641269309388534.
- Johnson GE, CM Sullivan, and MW Erho. 1992. "Hydroacoustic Studies for Developing a Smolt Bypass System at Wells Dam." *Fisheries Research* 14: 221-237. DOI: 10.1016/0165-7836(92)90055-X.
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