

# Biographical Information

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## PERSONAL

Name: James J. Anderson, Associate Research Professor  
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## EDUCATION

1969 B.S., Oceanography, University of Washington, Seattle, WA  
1977 Ph.D., Oceanography, University of Washington, Seattle, WA  
(Graduate Advisor Francis A. Richards)

## RESEARCH INTERESTS

Biomathematics, biodemography, ecosystem modeling, fisheries, toxicology, fish passage at power plants, fish life cycle modeling, animal and human behavior.

## RECENT PROJECTS

- 1989-2005 Hydro Project: Develops computer models for management of Columbia River hydroelectric and fisheries agencies. The work involves building models and analyzing data on the migration and survival of salmon through the Columbia River system and the harvest of fish in the ocean and rivers. The project maintains computer models and database information accessible through the World Wide Web.
- 1998-2005 NMFS Projects: Support for graduate student research including: migration of salmon smolts through tributaries, upstream migration of adults salmon through the Columbia River, effect of temperature on smolt survival, behavior of salmon predators in the Columbia River, impacts of dam operations on the survival of smolts in dam tailraces and population dynamics of Russian Steller sea lions.
- 1997-2005 Data Access in Real Time (DART): Provides integrated internet based public data on fish passage and environmental conditions in the Columbia River system.
- 1996-2000 PATH Project: Participation in the work group "Plan for Analyzing and Testing Hypotheses (PATH)" which was charged with evaluating the Snake River endangered species recovery actions.

- 1996-2000      U.S. Army Corps of Engineers Project: Developed computer models for the impact of gas bubble disease on migrating salmon. Analyzed the impact of reservoir drawdown on passage and survival of adult and juvenile salmon.
- Individual-based Model: To evaluate the ecology of smolt migration, an individual-based model was developed using the SWARM modeling system.
- 1996-2000      National Marine Fisheries Service Projects: Under this project, a general fisheries lifecycle harvest model was developed. The model is being used in the salmon co-management activities and in evaluating impacts of human activities on endangered species.

#### **RECENT PUBLICATION**

- Zorich, N.A. and J.J. Anderson (accepted) Field swimming speeds of northern pikeminnow using electromyogram telemetry. *Journal of Fish Biology*.
- Salinger, D. H, and J.J. Anderson (in press) Effects of Water Temperature and Flow on Migration Rate of Adult Salmon. *Transactions of the American Fisheries Society*.
- Goodwin, R. A., J. M. Nestler, J. J. Anderson, L. J. Weber, and D. P. Loucks, (in press) Decoding Movement Patterns of Fish for Forecast Simulation Using Individual-based Modeling, *Ecological Modelling*.
- Hyun, S., R. W. Hilborn, J. J. Anderson, and B. Ernst (2005) A statistical model for in-season forecasts of sockeye salmon returns to the Bristol Bay districts, *Canadian Journal of Fisheries and Aquatic Sciences*. 62:1665-1680.
- Springman, K. R., G. Kurath, J. J. Anderson, J. Emlen. (2005) Contaminants Viral Cofactors: Assessing Indirect Population Effects with the Vitality Model. *Aquatic Toxicology* 71, 13-23.
- Anderson J.J. E. Gurarie and R. W. Zabel (2005). Mean free-path length theory of predator-prey interactions: application to juvenile salmon migration. *Ecological Modelling* 186:196-211.
- Goodwin, R. A. J.M. Nestler, J.J. Anderson J. Kim and T. Toney 2005. Evaluation of Wanapum Dam Bypass Configurations for Outmigrating Juvenile Salmon Using Virtual Fish: Numerical Fish Surrogate (NFS) Analysis. U.S. Army Engineer Research and Development Center/Environmental Laboratory. Report # ERDC/EL TR-05-XX May 2005 108 pp.
- Anderson, J.J., R. H. Hinrichsen, C. Van Holmes and K.D. Ham. 2005. Historical Analysis of PIT Tag Data for Transportation of Fish at Lower Granite, Little Goose, Lower Monumental and McNary Dams Task 1: Analysis of In-River Environmental Conditions. FINAL REPORT February 23, 2005 Prepared for U.S. Army Corps of Engineers, Walla Walla District, Walla Walla, Washington Under Biological Services Contract DACW68-02-D-0001 Task Order 0009. Battelle PNWD-3514. pp 200.
- Goodwin, R. A., J. M. Nestler, J. J. Anderson, J. Kim, T. Toney, L. J. Weber, and D. P. Loucks, 2005. Evaluation of Wanapum Dam Bypass Configurations for Outmigrating Juvenile Salmon Using Virtual Fish Numerical Fish Surrogate (NFS) ACOE Analysis. Environmental Research and Development Center Vicksburg VA.

- Lindley, S. T., R. Schick, B. P. May, J. J. Anderson, S. Greene, C. Hanson, A. Low, D. McEwan, R. B. MacFarlane, C. Swanson, and J. G. Williams 2004. POPULATION STRUCTURE OF THREATENED AND ENDANGERED CHINOOK SALMON ESUs IN CALIFORNIA'S CENTRAL VALLEY BASIN NOAA Technical Memorandum NMFS NOAA-TM-NMFS-SWFSC-360.
- Salinger, D. H, and J.J. Anderson and O. Hamel (2003) A parameter fitting routine for the vitality based survival model. *Ecological Modeling* 166(3): 287-294.
- Hamel, O.S. and J.J. Anderson, (2002). The relationship of antigen density to bacterial load in spawning female pacific salmon infected with bacterial kidney disease. *Diseases of Aquatic Organisms* 51:85-92.
- Anderson, J. J. (2002). An event based event drive foraging model. *Natural Resource Modeling*. Volume 15, Number 1, p 55-82.
- Beer, W. N. and Anderson, J. J. (2001). Effects of spawning behavior and temperature profiles on salmon emergence: Interpretations of a growth model for Methow river chinook. *Canadian Journal of Fisheries and Aquatic Sciences*. 58(5):943-949.
- Anderson, J.J. 2000. A vitality based model relating stressors and environmental properties to organism survival. *Ecological Monographs* 70(3) 117-142.
- Anderson, J.J. 2000. Decadal climate cycles and declining Columbia River salmon. *In Sustainable Fisheries Management: Pacific Salmon*. ed. E. Knudsen. CRC Press, Boca Raton. P. 467-484.

## PROFILE

Dr. Anderson is a Research Associate Professor in the School of Aquatic and Fisheries Sciences at the University of Washington. He is the Co-Director of Columbia Basin Research, a group in the School that focuses on salmon issues in the Columbia Basin. His research group has developed models to evaluate the impacts of the Columbia River hydrosystem and fisheries on salmon. These include the CRiSP juvenile and adult salmon passage models and the Coast harvest model. In addition, he heads the Internet database (DART), which contains real-time and historical environmental and fisheries data from the Columbia River. His other interests include biodemography, toxicology, fish behavior, and ecosystem analyses. He has served on a number of national review panels and currently serves on the CALFED Bay-Delta Environmental Water Account Review Committee and the California Central Valley Salmon Technical Recovery Team. His fisheries research spans twenty-five years and has been funded by the Army Corps of Engineers, National Marine Fisheries Service, Bonneville Power Administration, Washington State and private industry. He has over 100 publications on a variety of topics including salmon migration, fish passage at hydroelectric dams, toxicology, fisheries oceanography, fisheries ecology, and decision science. He has given over 70 invited lectures and seminars and has testified numerous times before Congress and state legislatures on salmon issues. He has supervised sixteen graduate students, many of whom are now active fisheries scientists in the Pacific Northwest.