NRC
NATURAL RESOURCES CONSULTANTS, INC.

4039 21ST AVENUE WEST, SUITE 404
SEATTLE, WASHINGTON 98199, U.S.A.
TELEPHONE: (206) 285-3480
FAX: (206) 283-8263
EMAIL: GRuggerone@nrccorp.com

CURRICULUM VITAE

GREGORY T. RUGGERONE

EDUCATION

Ph.D. Fisheries, University of Washington, 1989.
M.S. Fisheries, University of Washington, 1981.
B.S. Biological Sciences, University of California, Irvine, 1978.

EXPERIENCE

1993-present Vice-President, Fisheries Scientist, Natural Resources Consultants, Inc. Responsible for salmon investigations in the Pacific Northwest and Alaska.

1990-1993. Principal Fisheries Biologist. University of Washington, Fisheries Research Institute. Project Leader/ Co-PI, Alaska Salmon Program. Responsible for directing several research projects at FRI's Alaska field stations and supervision of graduate students.

1989-1990. Senior Fisheries Biologist. University of Washington, Fisheries Research Institute. Project Leader for the Alaska Salmon Program (see above responsibilities).

1984-1989. Predoctoral Research Associate. University of Washington, Fisheries Research Institute. Project Leader for the Chignik Lakes Salmon Research Program. Responsible for directing research projects and supervision of students.

1982-1984. Fisheries Biologist. Jones & Stokes Associates, Inc. Responsible for environmental studies related to fish and fisheries in Alaska, Washington and California.

1982. Consultant. BioSonics, Inc. Examined juvenile salmon migration at a Columbia River dam using hydroacoustic techniques.

1979-1981. Research Assistant. University of Washington, Fisheries Research Institute. Field research on salmon at the Wood River lakes, Alaska.

1978-1979. Biologist. California Department of Fish and Game. Assisted several marine fisheries projects, including the annual CALCOFI anchovy survey.

1978. Biologist. University of California, Irvine. Department of Ecology and Evolutionary Biology. Received Student-Originated-Studies grant from the National Science Foundation to examine the effects of groundwater removal on natural spring communities in the Owens Valley, CA.

1977-1978. Lab Technician. University of California, Irvine. Department of Ecology and Evolutionary Biology. Field biologist for rocky intertidal studies.

PROFESSIONAL SERVICE

Committees

Science Technical Committee, Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative
Chignik Regional Aquaculture Association, Scientific Advisor
Independent Scientific Advisory Board, Columbia River
Expert Panel: Klamath River dam removal

Society Memberships

American Institute of Fishery Research Biologists, NW District Director (1993-1994), Regional Director (1994-1995)
American Fisheries Society

Scientific Referee

Aquatic Living Resources
Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative
American Fisheries Society
Canadian Journal of Fisheries and Aquatic Sciences
Environmental Biology of Fishes
First International Symposium on GIS in Fishery Science
Fisheries Oceanography
Fishery Bulletin
Fourth World Fisheries Congress, American Fisheries Society
Gulf of Alaska Ecosystem Monitoring Program (GEM)
Gut Shop 1993
Journal of Fish Biology
Marine Stewardship Council
National Science Foundation
Nature
North American Journal of Fisheries Management
North Pacific Research Board
North Pacific Anadromous Fish Commission
Ohio Sea Grant College Program
Pacific Salmon and Their Ecosystems: Status and Future Options
PICES
Reviews in Fish Biology and Fisheries
Transactions of the American Fisheries Society
West Coast National Undersea Research Center, NOAA

AWARDS AND SCHOLARSHIPS

American Institute Fisheries Research Biologists, Research Award, 1992
John Cobb Memorial Scholarship, 1989
American Institute Fisheries Research Biologists, Research Award, 1988
Seattle Poggie Club (Fisheries) Scholarship, 1986
National Science Foundation Student-Originated-Studies Grant, 1978
University of California, Irvine President's Council Grant, 1977
Dean's Honor List: 1974, 1975, 1976, 1977

SUPERVISION OF GRADUATE STUDENT RESEARCH

Griffiths, J. 2012. Assessing the implications of changing geomorphology and climate on the habitat characteristics of Black Lake, Alaska. Ph.D. University of Washington, Seattle.

Westley, P. 2007. Biocomplexity and rapid natural habitat change in the Chignik Lake system, Alaska. M.S. Thesis. University of Washington, Seattle.

Chasco, B. 2004. Inseason run size forecasting of Chignik sockeye salmon. M.S. Thesis. University of Washington, Seattle.

Harvey, C.J. 1994. Upstream migration of fishes in Black River, Chignik Lakes, Alaska. M.S. Thesis. University of Washington, Seattle. 154 p.

Bumgarner, J.D. 1993. Long-term trends in the growth of sockeye salmon from the Chignik Lakes, Alaska. M.S. Thesis. University of Washington, Seattle. 86 p.

Hanson, R. 1992. Brown bear (*Ursus arctos*) predation on sockeye salmon spawners in two tributaries of the Wood River Lake system, Bristol Bay, Alaska. M.S. Thesis. University of Washington, Seattle. 124 p.

Berejikian, Barry A.. 1992. Feeding Ecology of Rainbow Trout with Comparisons to Arctic Char in Iliamna Lake, Alaska. M.S. Thesis. University of Washington, Seattle. 72 p.

Zimmermann, M. 1991. Trends in the freshwater growth of sockeye salmon from the Wood River Lakes and Nushagak Bay, Alaska. M.S. Thesis. University of Washington, Seattle. 119 p.

PUBLICATIONS

Journals and Book Chapters

Ruggerone, G.T., R.M. Peterman, B. Dorner, and K.W. Myers. 2010. Magnitude and trends in abundance of hatchery and wild pink, chum, and sockeye salmon in the North Pacific Ocean. Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science. 2:306-328. (http://afsjournals.org/doi/pdf/10.1577/C09-054.1)

Cordell, J.R, J.D. Toft, A. Gray, G.T. Ruggerone, and M. Cooksey. 2010. Functions of restored wetlands for juvenile salmon in an industrialized estuary. Ecological Engineering In press.

Griffiths, J.R., D.E. Schindler, L.S. Balistrieri, and G.T. Ruggerone. 2010. Effects of simultaneous climate change and geomorphic evolution on the thermal characteristics of a shallow Alaskan lake. Limnology and Oceanography 56:193-205.

Ruggerone, G.T., J.L. Nielsen, and B.A. Agler. 2009. Linking marine and freshwater growth in western Alaska Chinook salmon, *Oncorhynchus tshawytscha.* Journal of Fish Biology 75: 1287-1301.

Ruggerone, G.T., J.L. Nielsen, and B.A. Agler. 2009. Climate, growth and population dynamics of Yukon River Chinook salmon. North Pacific Anadromous Fisheries Commission Bulletin 5:279-285.

Ruggerone, G.T., and J.L. Nielsen. 2009. A review of growth and survival of salmon at sea in response to competition and climate change. American Fisheries Society Symposium 70:241-266.

Beamish, R.J, B.E. Riddell, K.L. Lange, E. Farley Jr., S. Kang, T. Nagasawa and 30 other co-authors w/ G. Ruggerone. 2009. A long-term research and monitoring plan (LRMP) for Pacific salmon (*Oncorhynchus* Spp.) in the North Pacific Ocean. NPAFC Special Publication No. 1.

Nielsen, J.L. and G.T. Ruggerone. 2009. Climate change and a dynamic ocean carrying capacity: growth and survival of Pacific salmon at sea. American Fisheries Society Symposium 71.

Mantua, N.J., N.G. Taylor, G.T. Ruggerone, K.W. Myers, D. Preikshot, X. Augerot, N.D. Davis, B. Dorner, R. Hilborn, R.M. Peterman, P. Rand, D. Schindler, J. Stanford, R.V. Walker, and C.J. Walters. 2009. The salmon MALBEC Project: a North Pacific-scale study to support salmon conservation planning. North Pacific Anadromous Fisheries Commission Bulletin 5:333–354.

Westley, P.A.H., D.E. Schindler, T.P. Quinn, G.T. Ruggerone, and R. Hilborn. 2009. Natural habitat change, commercial fishing, climate, and dispersal interact to restructure an Alaskan fish metacommunity. Oecologia 163: 471-484.

Westley, P.A.H., R. Hilborn, T.P. Quinn, G.T. Ruggerone, and D.E. Schindler. 2008. Long-term changes in rearing habitat and downstream movement by juvenile sockeye salmon (*Oncorhynchus nerka*) in an interconnected Alaska lake system. Ecology of Freshwater Fish 17:443-454.

Ruggerone, G.T., J.L. Nielsen, and J. Bumgarner. 2007. Linkages between Alaskan sockeye salmon abundance, growth at sea, and climate, 1955-2002. Deep Sea Research II 54:2776-2793.

Rand, P.S., C.P. Kellon, X. Augerot, M. Goslin, J.R. Irvine, and G.T. Ruggerone. 2007. Comparison of sockeye salmon (*Oncorhynchus nerka*) monitoring in the Fraser River basin, British Columbia, Canada and Bristol Bay, Alaska. North Pacific Anadromous Fish Commission Bulletin 4:271-284.

Ruggerone, G.T. and F. Goetz. 2004. Survival of Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*) in response to climate-induced competition with pink salmon (*O. gorbuscha*). Canadian Journal Fisheries and Aquatic Sciences 61:1756-1770.

Ruggerone, G.T., and J.L. Nielsen. 2004. Evidence for competitive dominance of pink salmon (*Oncorhynchus gorbuscha*) over other salmonids in the North Pacific Ocean. Reviews in Fish Biology and Fisheries. 14:371-390.

Ruggerone, G.T., M. Zimmermann, K.W. Myers, J.L. Nielsen, and D.E. Rogers. 2003. Competition between Asian pink salmon (*Oncorhynchus gorbuscha*) and Alaskan sockeye salmon (*O. nerka*) in the North Pacific Ocean. Fisheries Oceanography. 12:3:209-219.

Nielsen, J. L. and G. T. Ruggerone. 2005. Global change, anthropomorphic effects and nonlinearity in Bering Sea sockeye salmon populations. *In* V.R. Burkett, D. A. Wilcox, R. Stottlemyer, W. C. Barrow, D. B. Fagre, J. Barton, J. Price, J. L. Nielsen, C. Allen, D. L. Peterson, G. Ruggerone, and T. Doyle. Nonlinear dynamics in ecosystem response to climate change: Case studies and resource management implications. Ecological Complexity 2: 357-394.

Ruggerone, G.T., E. Farley, J. Nielsen, and P. Hagen. 2005. Seasonal marine growth of Bristol Bay sockeye salmon (*Oncorhynchus nerka*) in relation to competition with Asian pink salmon (*O. gorbuscha*) and the 1977 ocean regime shift. Fishery Bulletin 103:2:355-370.

Ruggerone, G.T., and D. Rogers. 2003. Multi-year effects of high densities of sockeye salmon spawners on juvenile salmon growth and survival: a case study from the *Exxon Valdez* oil spill. Fisheries Research. 6:379-392.

Quinn, T.P., S.M. Gende, G.T. Ruggerone and D.E. Rogers. 2003. Density dependent predation by brown bears (*Ursus arctos*) on sockeye salmon (*Oncorhynchus nerka*). Canadian Journal of Fisheries and Aquatic Sciences 60: 553-562.

Ruggerone, G.T., J. Nielsen, E. Farley, S. Ignell, P. Hagen, B. Agler, D. Rogers, J. Bumgarner. 2002. Long-term trends in annual Bristol Bay sockeye salmon scale growth at sea in relation to sockeye abundance and environmental trends, 1955-2000. North Pacific Anadromous Fish Commission Tech. Rept. 4:56-58.

Ruggerone, G.T., R. Hansen and D. Rogers. 2000. Selective predation by brown bears (*Ursus arctos*) foraging on spawning sockeye salmon. Canadian Journal of Zoology 78:6:974-981.

Ruggerone, G.T. 2000. Differential survival of juvenile sockeye and coho salmon exposed to low dissolved oxygen during winter. Journal Fish Biology 56:1013-1016.

Mahnken, C., G. Ruggerone, W. Waknitz, and T. Flagg. 1998. A historical perspective on salmonid production from Pacific rim hatcheries. North Pacific Anadromous Fish Commission Bulletin 1:38-53.

Harvey, C.J., G.T. Ruggerone, and D.E. Rogers. 1997. Migrations of three-spined stickleback, nine-spined stickleback, and pond smelt in the Chignik catchment, Alaska. Journal of Fish Biology. 50: 1133-1137.

Ruggerone, G.T and C.J. Harvey. 1995. Age-specific use of habitat by juvenile coho salmon and other salmonids in the Chignik Lakes Watershed, Alaska. Pages 45-60 *in* Salmon Ecosystem Restoration: Myth and Reality (M.L. Keefe, ed.). Proceedings of the 1994 Northeast Pacific Chinook and Coho Salmon Workshop. American Fisheries Society. Eugene, OR.

Rogers, D.E. and G.T. Ruggerone. 1993. Factors affecting the marine growth of Bristol Bay sockeye salmon. Fisheries Research 18: 89-103.

Ruggerone, G.T and D.E. Rogers. 1992. Predation of sockeye salmon fry by juvenile coho salmon in the Chignik Lakes, Alaska: implications for salmon management. North American Journal of Fisheries Management. 12: 87-102.

Ruggerone, G.T. 1992. Threespine stickleback aggregations create potential predation refuge for sockeye salmon fry. Canadian Journal of Zoology 70: 1052-1056.

Ruggerone, G.T. 1992. Predation on sockeye salmon by fish and wildlife in Alaska. Pp. 20-21. In C.D. Levings and G.A. Hunter (eds), An Account of a Workshop on Research Approaches to Predation/Competition Questions in River Fish Communities. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2150.

Rogers, D.E., and G.T. Ruggerone. 1992. FRI forecasts of the 1992 sockeye run to Bristol Bay. Pp. 13-16 *in* 1992 Alaska Salmon Markets, G. Knapp (ed.). University of Alaska, Fairbanks.

Ruggerone, G.T. 1991. Salmon redux (salmon population resilience and habitat in Alaska). BioScience 41: 284.

Ruggerone, G.T. 1991. Partial xanthism in an adult chum salmon (*Oncorhynchus keta*) near Chignik, Alaska. California Fish and Game 77: 55-56.

Ruggerone, G.T, T.P. Quinn, I. McGregor and T.D. Wilkinson. 1990. Horizontal and vertical movements of maturing steelhead trout, *Oncorhynchus mykiss*, in Dean and Fisher channels, British Columbia. Canadian Journal of Fisheries and Aquatic Sciences 47: 1963-1969.

Ruggerone, G.T. 1989. Coho salmon predation on juvenile sockeye salmon in the Chignik Lakes, Alaska. Ph.D. Dissertation. University of Washington, Seattle. 151 p.

Ruggerone, G.T. 1989. Gastric evacuation of single and multiple meals by piscivorous coho salmon, *Oncorhynchus kisutch*. Environmental Biology of Fishes 26: 143-147.

Ruggerone, G.T. 1989. Gastric evacuation rates and daily ration of piscivorous coho salmon (*Oncorhynchus kisutch*) Walbaum. Journal of Fish Biology 34: 451-463.

Ruggerone, G.T. 1986. Consumption of migrating juvenile salmonids by gulls foraging below a Columbia River dam. Transactions of the American Fisheries Society 115: 736-742.

Perkins, D.J., B.N. Carlsen, R.N. Miller, C.M. Rofer, G.T. Ruggerone, M.F. Fredstrom, and C.S. Wallace. 1984. Effects of groundwater removal on natural spring communities in the Owens Valley, CA. Pp. 515-527 *in* R. E. Warner and K.M. Hendrix, eds. California Riparian Systems: Ecology, Conservation, and Productive Management. University of California Press, Berkeley, CA.

Ruggerone, G.T. and D.E. Rogers. 1984. Arctic char predation on migrating sockeye smolts at Little Togiak River, Alaska. Fishery Bulletin 82: 401-410.

Technical Reports

Rogers, D.E. and G.T. Ruggerone. 1980. Alaska salmon studies: The study of red salmon in the Nushagak District. Ann. Rep. FRI-UW-8019. University of Washington, Seattle. 48 p.

Ruggerone, G.T. 1981. Arctic char predation on migrating sockeye smolts at Little Togiak River, Alaska. M.S. Thesis. Fisheries Research Institute, University of Washington, Seattle. 57 p.

Ruggerone, G.T. 1982. Salmonid habitat quality of 22 creeks in the Mt. Baker/Snoqualmie National Forest, Washington. Prepared for the U.S. Forest Service with Jones & Stokes Associates, Bellevue, WA. 40 p.

Ruggerone, G.T. and R. Denman. 1982. Salmonid spawning and rearing habitat survey: Illabot Creek. Prepared for Seattle City Light with Jones & Stokes Associates, Bellevue, WA. 15 p.

Ruggerone, G.T. 1983. Fishery enhancement potential of the Hanford Reach, Columbia River. Prepared for U.S. Army Corps Engineers, Seattle District, with Jones & Stokes Associates, Bellevue, WA. 64 p.

Van Veldhuizen, H. and G.T. Ruggerone. 1983. Analysis of Ocean Discharge Criteria Evaluation limitations for the St. George Basin (Lease Sale 70, southeastern Bering Sea). Prepared for the Environmental Protection Agency with Jones & Stokes Associates, Bellevue, WA.

Van Veldhuizen, H. and G.T. Ruggerone. 1983. Analysis of Ocean Discharge Criteria Evaluation limitations for Navarin Basin (Lease Sale 83, Bering Sea). Prepared for the Environmental Protection Agency with Jones & Stokes Associates, Bellevue, WA. 37 p.

Van Veldhuizen, H., J. Cabreza, G.T. Ruggerone and others. 1983. Ocean Discharge Criteria Evaluation: Diapir Field OCS Lease Sale 71 (Arctic Ocean). Prepared for the Environmental Protection Agency with Jones & Stokes Associates, Bellevue, WA. 175 p.

Ruggerone, G.T., and M. Green. 1984. San Antonio Creek hydroelectric project: Exhibit E. Application for exemption for a small hydroelectric project from licensing. Prepared for Jones & Stokes Associates, Sacramento, CA. 22 p. 1984.

Ruggerone, G.T. 1984. Review of the Draft EIS (fisheries section) for the Susitna River, Alaska, hydroelectric project. Prepared for the Environmental Protection Agency with Jones & Stokes Associates, Bellevue, WA. 41 p.

Van Veldhuizen, H., R. Denman, G.T. Ruggerone and A. Godbey. 1984. Environmental assessment of alternative seafood waste disposal methods at Akutan Harbor, Alaska. Prepared for the Environmental Protection Agency with Jones & Stokes Associates, Bellevue, WA. 97 p.

Van Veldhuizen, H., J. Cabreza, G.T. Ruggerone and others. 1984. Ocean Discharge Criteria Evaluation: Gulf of Alaska- Cook Inlet OCS Lease Sale 88 and state lease sales located in Cook Inlet. Prepared for the Environmental Protection Agency with Jones & Stokes Associates, Bellevue, WA. 230 p.

Conrad, R.H., and G.T. Ruggerone. 1985. Stock composition of the 1984 sockeye salmon run to the Chignik Lakes estimated using scale patterns and linear discriminant functions. Alaska Dept. Fish and Game Technical Report No. 151. 43 p.

Ruggerone, G.T., and D.E. Rogers. 1986. Chignik Sockeye Studies: Aerial survey of spawning coho salmon along the southern Alaska Peninsula. FRI-UW-8607. University of Washington, Seattle. 40 p.

Ruggerone, G.T., Q. Stober and H. Senn. 1986. An environmental assessment of the resident trout hatchery on the Colville Indian Reservation. Prepared for the Bonneville Power Administration with Jones & Stokes Associates, Bellevue, WA. 59 p. + appendices.

Ruggerone, G.T., B. Smith and S.B. Mathews. 1986. Effects of water flow fluctuations caused by hydropower operations on sport catches of steelhead trout in the Cowlitz River, Washington. Data report prepared for the City of Tacoma.

Van Veldhuizen, H., G.T. Ruggerone and others. 1988. A best professional judgment on Quartz Hill mine tailings disposal in Boca de Quadra, Alaska with reference to Ocean Discharge Criteria. Final Report. Prepared for the Environmental Protection Agency with Jones & Stokes Associates, Bellevue, WA. 125 pp. + appendices.

Ruggerone, G.T., and D.E. Rogers. 1988. Chignik Sockeye Studies: gastric evacuation rates and daily ration of juvenile coho salmon. FRI-UW-8810. University of Washington, Seattle. 27 p.

Ruggerone, G.T., and D.E. Rogers. 1989. Chignik Sockeye Studies: consumption of sockeye salmon fry by juvenile coho salmon in the Chignik Lakes, Alaska: implications for salmon management.. Ann. Rept. to Nat. Mar. Fish. Serv. FRI-UW-8914. University of Washington, Seattle. 31 p.

Ruggerone, G.T., S.B. Mathews, T. Iverson and R.W. Tyler. 1989. Annotated bibliography: predator control programs and methods for capturing northern squawfish. Pp. 319-354 *in* A.A. Nigro, ed. Developing a predation index and evaluating ways to reduce salmonid losses to predation in the Columbia River Basin. Bonneville Power Administration, Portland, OR.

Mathews, S.B., T. Iverson and R.W. Tyler and G.T. Ruggerone. 1989. Evaluation of harvesting technology for potential northern squawfish commercial fisheries in Columbia River reservoirs. Pp. 278-318 *in* A.A. Nigro, ed. Developing a predation index and evaluating ways to reduce salmonid losses to predation in the Columbia River Basin. Bonneville Power Administration, Portland, OR.

Rogers, D.E., and G.T. Ruggerone. 1989. Bristol Bay salmon forecasts for 1990 and statistics of North American salmon. Annual Report to Pacific Seafood Processors Association. University of Washington, Seattle. 21 p.

Ruggerone, G.T., and R. Denman. 1990. Hydrological characterization of lower Alec River and Black Lake near Chignik, Alaska. Progress report to the Chignik Seiners Association. 10 p.

Alverson, D.L., D.E. Rogers, J.A. Crutchfield, D.W. McNair, J.A. June, J.B. Suomala and G.T. Ruggerone. 1990. Preliminary 1987 Cook Inlet oil spill studies. Prepared with Natural Resources Consultants for Faegre and Benson. 136 p.

June, J.A., G.T. Ruggerone and D.E. Rogers. 1990. Report on the upper Cook Inlet 1987 sockeye salmon season. Prepared with Natural Resources Consultants for Faegre and Benson. 56 p.

Rogers, D.E., and G.T. Ruggerone. 1990. Bristol Bay salmon forecasts for 1991 and statistics of North American salmon. Annual Report to Pacific Seafood Processors Association. University of Washington, Seattle. 21 p.

Rogers, D.E., B. Rogers, G. Ruggerone, D. Helton, L. Patterson and M. Zimmermann. 1990. Alaska salmon research. Annual Report (1989) to Pacific Seafood Processors Association. FRI-UW-9002. University of Washington, Seattle. 27 p.

June, J.A., G.T. Ruggerone and D.E. Rogers. 1991. Report on the upper Cook Inlet 1989 sockeye salmon season. Prepared with Natural Resources Consultants for Faegre and Benson. 97 p.

Rogers, D.E., B. Rogers, G. Ruggerone, L. Patterson and M. Zimmermann. 1991. Alaska salmon research. Annual Report (1990) to Pacific Seafood Processors Association. FRI-UW-9101. University of Washington, Seattle. 31 p.

Ruggerone, G.T. 1991. Evidence for morphological and behavioral responses of juvenile sockeye salmon to size-biased predation. Ann. Rept. to Nat. Mar. Fish. Serv. FRI-UW-9107. University of Washington, Seattle. 18 p.

Ruggerone, G.T., D. Helton and D.E. Rogers. 1991. Potential factors influencing the large annual fluctuations of adult sockeye salmon returning to Black Lake, Alaska. FRI-UW-9117. University of Washington, Seattle. 15 p.

Rogers, D.E., and G.T. Ruggerone. 1991. Bristol Bay salmon forecasts for 1992. Annual Report to Pacific Seafood Processors Association. University of Washington, Seattle. 27 p.

Ruggerone, G.T., C. Harvey, J. Bumgarner. and D.E. Rogers. 1992. Investigations of salmon populations, hydrology, and limnology of the Chignik Lakes, Alaska. FRI-UW-9211. University of Washington, Seattle. 30 p.

Ruggerone, G.T. 1992. Winter ecology of sockeye salmon in the Chignik Lakes, Alaska. FRI-UW-9214. University of Washington, Seattle. 33 p.

Ruggerone, G.T. 1993. 1989 Chignik salmon harvest had there been no *Exxon Valdez* oil spill. Prepared for Exxon Plaintiff's Litigation Joint Venture by Natural Resources Consultants, Inc.

Ruggerone, G.T. 1993. 1989 Balboa-Stepovak harvest had there been no *Exxon Valdez* oil spill. Prepared for Exxon Plaintiff's Litigation Joint Venture by Natural Resources Consultants, Inc.

Ruggerone, G.T., C. Harvey, J. Bumgarner. and D.E. Rogers. 1993. Investigations of salmon populations, hydrology, and limnology of the Chignik Lakes, Alaska, during 1992. FRI-UW-9302. University of Washington, Seattle. 59 p.

Rogers, D.E., T. Quinn, B. Rogers, and G. Ruggerone. 1993. Alaska salmon research in 1992: Bristol Bay. FRI-UW-9303. University of Washington, Seattle. 36 p.

Ruggerone, G.T. 1993. Winter investigations of salmon in the Chignik Lakes, Alaska, during 1993. Prepared for the Chignik Regional Aquaculture Association by Natural Resources Consultants, Inc. 41 p.

Ruggerone, G.T., and J. June. 1994. Effects of the *Braer* oil spill on the marine resources of the Shetland Islands. Prepared for the Shetland Seafood Consortium by Natural Resources Consultants, Inc. 120 p.

Denman, R.A., and G.T. Ruggerone. 1994. Effects of beaver colonization on the hydrology and spawning habitat of sockeye salmon in the Chignik Lakes, Alaska. Prepared for the Chignik Regional Aquaculture Association by Natural Resources Consultants, Inc. 56 p.

Ruggerone, G.T., and D.E. Rogers. 1994. Harvest rates of Upper Cook Inlet-bound sockeye salmon in the Kodiak Management Area's commercial salmon fishery. Prepared for the Kodiak Island Borough Salmon Working Group by Natural Resources Consultants, Inc. 46 p.

Ruggerone, G.T. 1994. Investigations of salmon populations, hydrology, and limnology of the Chignik Lakes, Alaska, during 1993. Prepared for the Chignik Regional Aquaculture Association by Natural Resources Consultants, Inc. 111 p.

Ruggerone, G.T. and S. Ralph. 1994. Initial water quality assessment of the Upper Hood Canal Watershed. Prepared for Kitsap County Department of Community Development, Port Orchard, WA. Natural Resources Consultants, Inc. 54 p + appendix.

Ruggerone, G.T., S. Kuchta, D. Bregar, and H. Senn, and G. Morishima. 1995. Database of propagated anadromous Pacific salmon, steelhead and cutthroat trout, 1950-1993. Prepared for the Northwest and Alaska Fisheries Science Center, National Marine Fisheries Service, Seattle, WA.

Ruggerone, G.T. 1995. Investigation of salmon at Enatai Beach Park, Lake Washington. Prepared for the City of Bellevue by Natural Resources Consultants, Seattle, WA. 45 p.

Simpson, P.K., G.T. Ruggerone, M. Freeberg. 1995. Fish return forecasting with neural networks. Phase I Final Report prepared by Scientific Fishery Systems and Natural Resources Consultants for Small Business Innovative Research Program (SBIR), National Science Foundation (DMI-9461197). 29 p.

Ruggerone, G.T. 1995. Preseason forecast of sockeye salmon run timing in Bristol Bay, Alaska, 1995. Prepared for Pacific Seafood Processors Association by Natural Resources Consultants, Seattle, WA. 16 p.

Ruggerone, G.T. 1995. Winter investigations of salmon in the Chignik Lakes, Alaska, during 1995. Prepared for the Chignik Regional Aquaculture Association by Natural Resources Consultants, Seattle, WA. 51 p.

Ruggerone, G.T. 1996. Evaluation of escapement levels to maximize returns of Kenai River sockeye salmon and maintain habitat quality. Prepared for Kenai River Sportfishing Association, Inc. by Natural Resources Consultants, Seattle, WA. 43 p.

Rogers, D.E., B. Rogers, J. Miller, D. Peterson, and G. Ruggerone. 1996. Chignik Lakes Research: Data summary of historical research. FRI-UW-9608. University of Washington, Seattle. 29 p.

Ruggerone, G.T. and J. June. 1996. Pilot Study: survival of chinook salmon captured and released by a purse seine vessel in Southeast Alaska. Prepared for Southeast Alaska Seiners Association and Purse Seine Vessel Owners' Association. Natural Resources Consultants, Inc. 10 p.

Ruggerone, G.T. 1996. Preseason forecast of sockeye salmon run timing in Bristol Bay, Alaska, 1996. Prepared for Bristol Bay salmon processors by Natural Resources Consultants, Seattle, WA. 18 p.

Ruggerone, G.T. 1997. Straying of coho salmon from hatcheries and net pens to streams in Hood Canal and Grays Harbor, Washington. Prepared for Pacific States Marine Fisheries Commission by Natural Resources Consultants, Seattle, WA. 75 p.

Ruggerone, G.T. 1996. Winter investigations of salmon in the Chignik Lakes, Alaska, during 1996. Prepared for the Chignik Regional Aquaculture Association by Natural Resources Consultants, Seattle, WA. 46 p.

Ruggerone, G.T. and D.L. Alverson. 1996. Technical review of sockeye salmon studies associated with water diversion in the Nechako River, Fraser River Basin, British Columbia. Prepared for Private Client. Natural Resources Consultants, Inc. 20 p.

Ruggerone, G.T. 1997. Winter investigations of salmon in the Chignik Lakes, Alaska, during 1997. Prepared for the Chignik Regional Aquaculture Association by Natural Resources Consultants, Seattle, WA.

Ruggerone, G.T. 1997. Preseason forecast of sockeye salmon run timing in Bristol Bay, Alaska, 1997. Prepared for Bristol Bay salmon processors by Natural Resources Consultants, Seattle, WA.

Alverson, D.L., and G.T. Ruggerone. 1997. Escaped farm salmon: environmental and ecological concerns. Prepared for the Environmental Assessment Office, Government of British Columbia, by Natural Resources Consultants, Seattle, WA. 100 p.

Ruggerone, G.T. and J. June. 1997. Pilot Study: survival of chinook salmon captured and released by a purse seine vessel near Sitka, Southeast Alaska. Prepared for Southeast Alaska Seiners Association and Purse Seine Vessel Owners' Association. Natural Resources Consultants, Inc. 15 p.

Ruggerone, G.T. 1997. Genetic Baseline Investigation of Chignik Sockeye Salmon: Operational Plan and Fish Sampling. Prepared for the Chignik Regional Aquaculture Association by Natural Resources Consultants, Seattle, WA. 15 p.

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INVITED PRESENTATIONS

Competition Between Fraser Sockeye Salmon and Pink Salmon. Pacific Salmon Commission workshop on the decline of Fraser River sockeye salmon. June 15-17, 2010. Nanaimo, BC.

Growth, life history, and survival of chinook salmon. The Cowichan Tribes Estuary Workshop. May 2010. Cowichan Bay, BC.

Evidence for competition between salmon at sea. Ecological Interactions between Wild & Hatchery salmon. State of Salmon 2010 Conference. May 4-7, 2010. Portland, OR

Climate, growth, and population dynamics of western Alaska Chinook and coho salmon. Climate Change Effects on Fish and Fisheries: Forecasting impacts, Assessing Ecosystem Responses, and Evaluating Management Strategies. April 2010, Sendai, Japan.

Sustainable strategies in a warming climate: salmon in the Arctic. Climate Change Effects on Fish and Fisheries: Forecasting impacts, Assessing Ecosystem Responses, and Evaluating Management Strategies. April 2010, Sendai, Japan

Growth, Climate, and population dynamics of AYK salmon. Arctic, Yukon and Kuskokwim Sustainable Salmon Workshops. March 2010. Nome, Fairbanks, Anchorage, AK.

The use of salmon scales to test hypotheses about salmon growth, climate, and ocean carrying capacity. 4th International Otolith Symposium, August 24-28, 2009; Monterey, California. Keynote presentation.

Growth and Survival of Salmon in Response to Competition at Sea and Climate Change. State of Salmon 2009 Conference, *Bringing the Future into Focus.* Innovative Approaches to Applying Conservation Principles. February 2-5, 2009. Vancouver, BC

Abundance and relative contribution of hatchery and wild salmon in the North Pacific Ocean. NPAFC International Symposium on the Bering-Aleutian Salmon International Surveys (BASIS): Climate Change, Production Trends, and Carrying Capacity of Pacific Salmon in the Bering Sea and Adjacent Waters. November 23-25, 2008. Seattle, WA, USA

Management Data for Long-term Monitoring of Salmon Growth and Survival versus Climate Change. Long Term Research and Monitoring Project (LRMP), North Pacific Anadromous Fish Commission. April 7-11, 2008. Sokcho, South Korea.

Growth and Survival of Salmon in Response to Competition and Climate Change: Implications for Interactions of Wild and Hatchery Salmon. Symposium: Population Growth, Climate Change and Fish Habitat in the Columbia River Basin. American Fisheries Society Western Division Conference, May 4-9, 2008; Portland, OR.

Climate change, salmon interactions, and implications for salmon recovery. Pacific Salmonid Recovery Conference. November 6-9, 2007. Seattle, WA

Growth and Survival of Salmon in Response to Competition and Climate Change. AYK SSI Symposium on the Sustainability of the AYK Salmon Fisheries. February 6-9, 2007; Anchorage, AK.

Growth and Survival of Salmon in Response to Competition and Climate Change: Implications for Interactions of Wild and Hatchery Salmon. Current Issues Facing Salmon Hatcheries in the Russian Far East. Petropavlovsk-Kamchatsky, Russia. November 30, 2006. Invited by World Wildlife Fund and the Wild Salmon Center.

Growth, Abundance, and Survival of Salmon in Response to Climate Change. World Wildlife Fund, Climate Camp Alaska. Homer, AK. October 30, 2006.

The Kvichak Decline: Is there anything we can do about it? Dillingham & Naknek, AK. October 19 & 20, 2006.

Growth and Survival of Salmon in Response to Competition and Climate Change. AYK SSI Symposium on the Sustainability of the AYK Salmon Fisheries. Anchorage, AK February, 2007.

Survival of Puget Sound chinook salmon in response to climate-induced competition with pink salmon. Lake Washington Salmon Workshop. Seattle, WA. February 2004.

Evidence for Competitive Dominance of Pink Salmon Over Other Salmonids in the North Pacific Ocean. 2003 Annual Meeting of American Fisheries Society Meeting, San Diego, CA. April 2003.

Linkages between climate, growth, competition, and production of sockeye salmon populations in Bristol Bay, Alaska, 1955-2000. USGS Global Change Project Review and Planning Meeting. Phoenix, AZ. March 2003.

Survival, growth, and age at maturation of Puget Sound chinook salmon released during odd- versus even-numbered years: evidence for interspecific competition with pink salmon during early marine life. Northwest and Alaska Science Center, NMFS, Seattle, WA. November 2002.

Differential Marine Growth of Sockeye Salmon During Odd and Even Years: Evidence for Density-Dependent Effects of Asian Pink Salmon Abundance on Bristol Bay Sockeye Salmon, 1955-1997. Bristol Bay Salmon Science Symposium, Dillingham, Alaska. May 2001.

Abundance and stock origin of coho salmon on spawning grounds of lower Columbia River tributaries and photographic documentation of habitat disruption. Presentation to Columbia River Coho Salmon Working Group (NMFS, WDFW, ODFW). Portland, OR. February 1999.

Effects of farmed salmon on wild salmon stocks in the Pacific Northwest. Pacific International Council for the Exploration of the Sea (PICES). Fairbanks, AK. October, 1998.

Historical Growth of Sockeye Salmon Affected by Large Spawning Escapement in 1989. 1998 *Exxon Valdez* Restoration Workshop. Anchorage, AK, January 1998.

Past, present and future of salmon runs in the Chignik Lakes, Alaska. First Annual Conference of the Alaska Peninsula. Chignik Lake, AK. February 1997.

Factors influencing the survival of sockeye salmon in Alaska. Presentation to the Coastal Zone and Estuarine Studies Division, National Marine Fisheries Service. Seattle, WA. March 1995.

Age-specific use of habitat by juvenile coho salmon in the Chignik Lakes Watershed, Alaska. 1994 Northeast Pacific Chinook and Coho Salmon Workshop. Salmon Ecosystem Restoration: Myth and Reality. Eugene, OR. November 1994.

Preseason and inseason forecasts of sockeye salmon returning to Bristol Bay, Alaska. The 7th Annual Bristol Bay Fisheries Conference. Dillingham, AK. April 1992.

Preseason and inseason forecasts of sockeye salmon returning to Bristol Bay, Alaska. The 6th Annual Bristol Bay Fisheries Conference. Dillingham, AK. April 1991.

Influence of predation on salmon populations. School of Fisheries, University of Washington. Seattle, WA. May 1991.

Predation on sockeye salmon by fish and wildlife in Alaska. Department Fisheries and Oceans Canada. Cultus Lake, British Columbia. February 1991.

Preseason forecast of Bristol Bay salmon runs, 1990. The 5th Annual Bristol Bay Fisheries Conference. Dillingham, AK. April 1990.

Predator-prey interactions and fisheries management. Joint Institute for Marine and Atmospheric Research and National Marine Fisheries Service Seminar. Honolulu, HI. July 1989.

CONFERENCE AND SEMINAR PRESENTATIONS

Climate, growth and population dynamics of western Alaska Chinook salmon. NPAFC International Symposium on the Bering-Aleutian Salmon International Surveys (BASIS): Climate Change, Production Trends, and Carrying Capacity of Pacific Salmon in the Bering Sea and Adjacent Waters. November 23-25, 2008. Seattle, WA, USA

The salmon MALBEC project: a North Pacific-scale study to support salmon conservation planning. American Fisheries Society North Pacific International Chapter Annual Meeting. Tacoma, WA. June 6-8, 2007. Introduction presented by N. Mantua.

Hatchery Versus Wild Salmon Production in the North Pacific Ocean. American Fisheries Society North Pacific International Chapter Annual Meeting. Tacoma, WA. June 6-8, 2007.

Hatchery Versus Wild Salmon Production in the North Pacific Ocean. 9th Salmon Ocean Ecology Meeting. Newport, OR. March 14-16, 2007.

Ocean Climate Change and Collapse of the World's Largest Sockeye Salmon Population. 9th Salmon Ocean Ecology Meeting. Newport, OR. March 14-16, 2007.

Salmon MALBEC: Model for Assessing Links Between Ecosystems. (N. Taylor- presented). 9th Salmon Ocean Ecology Meeting. Newport, OR. March 14-16, 2007.

Retrospective Analysis of Yukon and Kuskokwim Chinook Salmon Growth. AYK SSI Symposium on the Sustainability of the AYK Salmon Fisheries. Anchorage, AK. February 6-9, 2007.

Growth and survival of salmon in response to climate change, competition, and a dynamic ocean carrying capacity. Global Challenges Facing Oceanography and Limnology. American Society of Limnology and Oceanography, June 2006.

Salmon age structure and variable resilience of Bristol Bay sockeye salmon to climate change. Pacific Salmon Environment and Life History Models: Advancing Science for Sustainable Salmon in the Future. 135th Annual Meeting American Fisheries Society, September 2005.

Growth and survival of salmon in response to climate change and a dynamic ocean carrying capacity. The Evolution and Ecology of Biocomplexity as Key to Fisheries Sustainability. 135th Annual Meeting American Fisheries Society, September 2005.

Linkages between climate, growth at sea, and abundance of sockeye salmon in Bristol Bay, Alaska, 1955-2000. GLOBEC Symposium: Climate Variability and Sub-Arctic Marine Ecosystems. Victoria, B.C. May 2005.

Survival and Growth of Puget Sound Chinook Salmon in Response to Climate-induced Competition with Pink Salmon: Implications for Habitat Protection and Restoration. Sustainability and Restoration: a practical partnership for the 21st. Society for Ecological Restoration. Seattle, WA. April, 2005.

Top-down and bottom-up linkages among climate, growth, competition, and production of sockeye salmon populations in Bristol Bay, Alaska, 1955-2000 (S2-2068). North Pacific Marine Science Organization (PICES) 13th annual meeting. Honolulu, HI. (Presented by J. Nielsen). October, 2004.

Survival of Puget Sound chinook salmon in response to climate-induced competition with pink salmon. Northwest Salmonid Recovery Conference. Seattle, WA. October, 2004.

Linkages between climate, growth, competition, and production of sockeye salmon populations in Bristol Bay, Alaska, 1955-2000. Study of Environmental Arctic Change (SEARCH) open science meeting, Office of Polar Processes, National Science Foundation. Seattle, WA. (Presented by J. Nielsen). (http://siempre.arcus.org/4DACTION/wi_pos_displayAbstract/7/601). October 2003.

Survival, growth, and age at maturation of Puget Sound chinook salmon released during odd- versus even-numbered years: evidence for interspecific competition with pink salmon during early marine life. 5th Annual Salmon Ocean Ecology Meeting. Newport, OR. February, 2003.

Seasonal marine scale growth of Bristol Bay sockeye salmon during odd- and even-numbered years: evidence for competition with Asian pink salmon and seasonal food web dynamics in the North Pacific Ocean and Bering Sea. 5th Annual Salmon Ocean Ecology Meeting. Newport, OR. February, 2003.

Long-term trends in annual Bristol Bay sockeye salmon scale growth at sea in relation to sockeye abundance and environmental trends, 1955-2000. 4th Annual Salmon Ocean Ecology Meeting, 15-16 January, 2002, Santa Cruz, CA.

Differential Marine Growth of Sockeye Salmon During Odd and Even Years: Evidence for Density-Dependent Effects of Pink Salmon Abundance on Nushagak Bay and Chignik Sockeye Salmon, 1955-1997. Pink and Chum Salmon Workshop. University of Washington, Seattle. March 2001.

Natural Habitat Degradation in a Major Salmon Watershed: A Lesson in Salmon Population Resilience and Decline. Washington Lakes Protection Association Conference. SeaTac, WA 2000.

Historical analysis of sockeye salmon growth among populations affected by large escapements associated with the Exxon Valdez oil spill. Legacy of an oil spill: ten years after the Exxon Valdez oil spill. Anchorage, AK. March 1999.

A historical perspective on salmonid production from Pacific rim hatcheries. First Symposium of the North Pacific Anadromous Fish Commission. Hokkaido, Japan. w/ C. Mahnken, NMFS. October 1996.

Factors influencing the survival of salmon in Alaska and the Pacific Northwest. Visitation Retreat & Cultural Center, City of Federal Way, WA. October 1995.

The application of remotely-sensed data to salmon harvest management and operational planning of the salmon industry in Alaska. Third Thematic Conference: Remote Sensing for Marine and Coastal Environments. Seattle, WA. September 1995.

Initial water quality assessment of the Upper Hood Canal Watershed. Presentation to the Upper Hood Canal Watershed Management Committee. Seabeck, WA. November 1994.

Investigations of salmon populations, hydrology, and limnology of the Chignik Lakes, Alaska, during 1993. Chignik Regional Planning Team. Anchorage, Alaska. December 1993.

Population dynamics and winter ecology of sockeye salmon. 1993 Sockeye-Kokanee Workshop. Richmond, British Columbia. March 1993.

Long-term trends in the growth of sockeye salmon from the Chignik Lakes, Alaska. 1993 sockeye-kokanee workshop. Presented by J. Bumgarner. Richmond, British Columbia. March 1993.

Migrations of juvenile sockeye salmon and other fishes into and out of Black Lake, AK. Chignik Regional Aquaculture Association. Everett, WA. December 1992.

Factors affecting the early marine growth of Bristol Bay sockeye salmon. Workshop on the growth, distribution, and mortality of juvenile Pacific salmon in coastal waters. Sidney, British Columbia. October 1992.

Migrations of juvenile sockeye salmon and other fishes into and out of Black Lake, AK. Chignik Regional Planning Team. Anchorage, AK. October 1992.

Sockeye salmon run fluctuations and winter habitat quality of Black Lake, Ak. Chignik Regional Planning Team. Anchorage, AK. April 1992.

Habitat and sockeye salmon dynamics in a unique Alaskan lake. The 54th Annual Meeting of Pacific Fishery Biologists. Semi-am-hoo Resort, Blaine, WA. March 1992.

Responses of juvenile salmon to low oxygen levels in Black Lake during February 1992 and the forecast of adult sockeye returning to Chignik in 1992. Chignik Seiners Association, Shilshole Marina, Seattle, WA. March 1992.

The Alaska Salmon Program of the Fisheries Research Institute, University of Washington. Poster presentation at FISH EXPO 1991. Seattle, WA. October 1991.

Enhancing harvests of Chignik salmon through predator control and habitat rehabilitation: a cost-benefit analysis. Chignik Seiners Association. Seattle, WA. January 1991.

Rehabilitation and enhancement of sockeye salmon returning to Black Lake, Alaska. Chignik Regional Aquaculture Association. Seattle, WA. November 1990.

Factors influencing the large fluctuations of adult sockeye returning to Black Lake, Alaska: results of the 1990 winter investigation. Chignik Seiners Association. Chignik, AK. June 1990.

Bycatch of Pacific salmon by the domestic trawl fishery. The 5th Annual Bristol Bay Fisheries Conference. Dillingham, AK. April 1990.

Salmon projects of the Fisheries Research Institute in Alaska. Annual Meeting of the National Food Processors Association. Seattle, WA. March 1990.

Predator impacts on salmon populations. Annual Meeting of the National Food Processors Association. Seattle, WA. March 1989.

Threespine stickleback (Gasterosteus aculeatus) *aggregations as a refuge from predation for sockeye salmon fry* (Oncorhynchus nerka). National meeting of the Animal Behavior Society. Missoula, MO. August 1988.

Forecasts of Chignik salmon and the effects of predation by coho on sockeye survival in the Chignik Lakes, Alaska. Presentation to the Chignik Seiners Association and salmon processors. Chignik, AK. June 1988.

Salmon forecasts and research activities of the Fisheries Research Institute in the Chignik Lakes, Alaska. Presentation to the Chignik Seiners Association and salmon processors. Chignik, AK. June 1987.

Evaluation of the fisheries monitoring program to determine effects of the proposed Navy Home Port, Everett, WA. Presentation to Engineers and Navy personnel. Federal Way, WA. Oct. 1987.

Salmon forecasts and research activities of the Fisheries Research Institute in the Chignik Lakes, Alaska. Presentation to the Chignik Seiners Association and salmon processors. Chignik, AK. June 1986.

Consumption of migrating juvenile salmonids by gulls foraging below a Columbia River dam. Meeting of the Northwest Chapter, American Fisheries Society. Bellingham, WA. March 1986.

Alaska salmon research by the University of Washington. Seattle Poggie Club. Seattle, WA. April 1986.

Predator-prey interactions of piscivorous coho salmon and juvenile sockeye salmon in the Chignik Lakes, Alaska. Fisheries Research Institute Seminar, University of Washington. October 1986.

Salmon Research in Alaska: Past, Present, and Future. Organized seminar series at Fisheries Research Institute, University of Washington. October- December, 1986.

Salmon forecasts and research activities of the Fisheries Research Institute in the Chignik Lakes, Alaska. Presentation to the Chignik Seiners Association and salmon processors. Chignik, AK. June 1985.

EXPERT WITNESS TESTIMONY

Dam effects on salmon	Reconstructed salmon harvests by Tulalip Tribe had Sultan Diversion Dam not been built in 1916. Estimated fish passage through high gradient cascades. (case mediated & settled, 2005).
Exxon Valdez Oil Spill	Effects of oil spill on salmon tenders in Alaska (deposition, case settled) 2003.
Skokomish Tribe v. Tacoma Power	Tribal harvests had the dams not been built, 1926-1998. Ability of salmon to pass Big Falls prior to inundation by reservoir. (report, deposition, case removed in summary judgment) 2001.
Salmon Forecast Accuracy	Preseason and inseason run size forecast accuracy; insurance claim for 1998 Bristol Bay run failure (report, case settled) 2000.
Calkins v. Burger King	Probability of biotoxin accumulation in pollock from the Bering Sea (report, case settled) 2000-2001.
Proposed Cross Cascade Pipeline	Effects of refined oil pipeline on salmon and habitat (report, deposition, pipeline explosion ended proposed pipeline) 1999.
Dam Effects on Salmon	Chinook and steelhead runs reconstructed to estimate historical (85 yr) runs and harvests had dams not been built. (report, mediation settlement) 1998.
Exxon Valdez Oil Spill	Effects of oil spill on salmon harvests in Alaska (reports, deposition, trial testimony) 1994.
Glacier Bay Oil Spill	Effects of oil spill on salmon harvests in Cook Inlet, Alaska (report, deposition) 1989.
Touchet River Chemical Spill:	Effects of ammonia spill on salmonids in Touchet River, WA (deposition) 1983.