Steven P. Cramer, Principal

Education and Training
1972 B.S. in Fisheries Science - Oregon State University
1974 M.S. in Fisheries Science - Oregon State University Minor: Statistics. Funding: Research assistantship with Oregon Cooperative Fishery Research Unit. Major Professor: Dr. John D. McIntyre. Thesis Title: The Heritability of Resistance to Gas Bubble Disease of Columbia River Fall Chinook Salmon, Oncorhynchus tshawytscha

Employment History

1974–1977	Research Project Leader, ODFW
1977–1987	Research Program Leader, ODFW
1987–Present	Fisheries Consultant, Cramer Fish Sciences (a.k.a. S.P. Cramer & Associates, Inc.

Special Qualifications

- Led numerous efforts to model salmon and steelhead populations, both to predict future outcomes, and to synthesize existing knowledge of population dynamics.
- Developed habitat-based models for estimating stream carrying capacity for steelhead, spring Chinook, fall Chinook and cutthroat trout.
- Designed and led several innovative projects that have related fish carrying capacity and survival to habitat features.
- Led numerous studies on salmon and steelhead in California's central valley.

Years in Profession: 35

Professional Experience
Steven P. Cramer has been a fisheries consultant to private firms, state and federal agencies, and Indian tribes for the past 17 years after serving 14 years with the Oregon Department of Fish and Wildlife (ODFW) where he directed major research programs on the Rogue and Columbia basins. The focus of his research and consulting has been the population dynamics of salmon and steelhead populations in the western United States.

Population Status Reviews. Mr. Cramer has been the lead author on over a dozen major reports supplied to NMFS for ESA status reviews of coho, Chinook, and steelhead populations. Three times, Steve Cramer has been contracted to guide ESA status reviews for fish populations in an entire state, including coho in Oregon, steelhead in Oregon, and steelhead in California. He has also led consultant teams to complete regional status reviews of fish populations, including spring Chinook in the Willamette Basin, steelhead in the lower Columbia Basin, steelhead in the mid Columbia Basin, Chinook in all of Puget Sound, and Oregon Coast coho.

ESA Consultations. Mr. Cramer has led or played a key role in a variety of complex ESA consultations, both Section 7 and 10. The most substantive consultations include passage of juvenile Chinook at major water diversions in the Sacramento River Basin, effects on salmonids from flow control and operation of the irrigation system in the Yakima River Basin, passage of juvenile and adult salmonids over Savage Rapids Dam, up and downstream effects on bull trout and steelhead of adding turbines to Yakima-Tieton Dam, and development of a new water storage reservoir in the Umpqua Basin.

Fish Passage. Mr. Cramer has led studies on several fish population issues related to hydroelectric dams and water diversions. He served as team leader and technical reviewer, under sole source contract from BPA, to complete a series of 11 reports by leading consultants in the Northwest on juvenile and adult passage issues in the Columbia River. Mr. Cramer has also completed detailed studies of the feasibility of reintroducing extinct salmon species into several rivers in the Columbia Basin. Mr. Cramer led studies for ODFW of downstream fish passage and predation on juvenile salmonids at Columbia River Dams. He directed 5 years of studies in the Sacramento River to evaluate alternative methods of guiding juvenile Chinook past large water diversions.

Hatchery Evaluations. Mr. Cramer is widely recognized as a leader in evaluating the effectiveness of hatcheries. He supervised a multi-year field study of rearing and release practices for Chinook, coho, and steelhead at Cole Rivers Hatchery on the Rogue River. He supervised the evaluation of fishery contribution by fall Chinook from Oregon hatcheries in the Columbia River Basin. He completed extensive analyses of the effects of rearing and release practices on harvest and escapement of fall Chinook in the Sacramento River. He has completed detailed genetic risk assessments for new hatchery programs in the Hood, Umatilla, Clearwater, Grand Ronde, and Imnaha rivers. Recently, he was a key investigator in preparing the Comprehensive Environmental Assessment for all hatcheries in the Columbia Basin. He has completed simulation models to evaluate long-term fishery contributions from Cowlitz Hatchery, Nez Perce Tribal Hatchery, and Sacramento Basin hatcheries.

Population Modeling. Mr. Cramer has led numerous efforts to model salmon and steelhead populations, both to predict future outcomes, and to synthesize existing knowledge of population dynamics. Most recently he lead the team in the development of a model to predict the effects of temperature changes on the dynamics of Chinook, Coho, and Steelhead populations in the Clackamas River Basin, prepared for Portland General Electric. Another recent project involved the development of a life-cycle model to pattern the effects of USBR project operations on the viability of coho salmon in the Klamath Basin. 2007. Prepared for U.S. Bureau of Recalmation, Klamath Area Office. Other analysis efforts include a model for ESA Recovery Planning that predicts the effects of human actions on extinction risk and future population levels for salmon and steelhead. Similar efforts include an Integrated Modeling Framework for key fish species in the California Central Valley. He organized and led the multi-disciplinary science team that developed the STREAM Assessment Tool that tracks how actions on land translate into changes in stream features, which in turn determine carrying capacity and survival. He has developed several models for hatchery programs to determine broodstock needs, allocation protocols, and supplementation progress.

Harvest Impacts. Mr. Cramer represented ODFW as chairman of the Klamath River Technical Advisory Team (KRTAT), a subcommittee of the Pacific Fishery Management Council. The team was charged with developing a technical basis for evaluating the consequences to Chinook salmon of alternative management actions for fisheries off the coasts of northern California and southern Oregon. Mr. Cramer has completed extensive cohort analyses of coded-wire tag (CWT) returns of coho, spring Chinook, and fall Chinook from throughout the Columbia and Sacramento River basins to evaluate the timing, location, and rate of harvest in ocean and in-river fisheries. He completed an in-depth analysis of biases in methods for assessing harvest impacts on Snake River fall Chinook in the Columbia River, under contract to BPA. He prepared two reports and gave testimony to the Alaska Board of Fisheries on sustainable yield of Kenai River sockeye salmon. He has completed stock-recruitment analyses for numerous salmon and steelhead populations, and has spoken at several scientific symposiums on new approaches for determining

sustainable harvest levels. He has also developed simulation models for several populations to demonstrate impacts of alternative harvest regimes.

Effects of Flow Alteration. He led studies by ODFW for more than a decade on the Rogue River to evaluate the effects of temperature and flow below dams on production of salmon and steelhead populations. In that effort, he developed extensive life-history simulation models for Chinook and steelhead to evaluate the potential benefits of alternative operating strategies for two multi-port dams. He designed and supervised field studies in several river basins to evaluate the effects of flow on migration and survival of outmigrating juvenile salmonids. He developed new methods for estimating smolt passage survival through the Snake River, and analyzed the voluminous database of PIT-tag detections to demonstrate migratory responses of Chinook smolts to flow and spill at dams. He designed and supervised continuing field studies in the Stanislaus River to estimate the influence of flow on survival and migration of juvenile Chinook. His firm has been under contract by the US Fish and Wildlife Service for the last 9 years to estimate how flow affects migration timing, abundance, and survival of wild juvenile Chinook produced in the Stanislaus River, California.

Relationships of Fish to their Habitat. Mr. Cramer has designed and led several innovative projects that have related fish carrying capacity and survival to habitat features. He has developed habitat-based models for estimating stream carrying capacity for steelhead, spring Chinook, fall Chinook and cutthroat trout. He guided studies to analyze existing data on smolt production and habitat features in the Deschutes River Basin to demonstrate that habitat based estimates of steelhead capacities were comparable to observed data. He led the experimental design and analysis of data from snorkel and habitat surveys in the Great Basin, the Umpqua Basin, the Clackamas Basin, and in the Sandy River Basin to determine the relationships of salmonid rearing densities to habitat features.

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