PERSONAL HISTORY
OF
BRUCE HERBOLD (USEPA)

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Activities

I am principally involved in issues of water management and water quality as they affect endangered species, salmonids and sport fish in California's Sacramento-San Joaquin Estuary. I have worked on these issues since my time as a graduate student in 1979. I have been employed by the US Environmental Protection Agency (EPA) since 1991. My early work at USEPA yielded new operation rules to protect fish that were adopted by both the USEPA and the State Water Resources Control Board of the California EPA.

Most of my work has involved interagency efforts to address significant resource management problems. Most of this has occurred within established interagency efforts like the nine-agency Interagency Ecological Program and the twenty-two agency CalFed program, but I have formed or been part of a number of ad hoc interagency groups on specific topics.

Currently I am part of a management team charged with unraveling the reasons for a recent sharp decline in the pelagic fishes of the Delta. This work has led to fifty-five separate efforts using a wide array of personnel from academic and agency positions and spending about $3 Million annually for the last three years. Results from these studies were recently used in the finalization of a court order and will form the basis for required new biological opinions under state and federal ESA.

I was formerly involved in the development of a system of linked conceptual models to allow evaluation of the likely impacts of various proposed management actions. These models clarify our scientific understanding of the Delta and thereby help prioritize research needs and keep management on a secure scientific foundation. They have recently been a focal tool for the Bay Delta Conservation Plan development.

I was very active in CalFed's Delta Cross Channel/Through Delta Facility Team, the Interagency Program's Delta Cross Channel Project Work Team, and a stakeholder-led team of technical leads attempting to integrate eleven project team's within CalFed's Water Supply and Water Quality programs. I have also served for many years as a Coordinator of the Interagency Ecological Program (IEP). I have been a member of numerous technical advisory panels on water quality and fishery issues in the San Francisco Bay and Estuary. Much of this work is the technical basis for current discussions about reconfiguring the delta and restoring aquatic ecosystems.

Previously I led EPA's development of the estuarine habitat standard that was central to the 1994 Accord and 1995 Water Quality Control Plan. As a forum for the interaction among all parties interested in the development of these standards, I was very active in the early, formative work of the California Environmental and Water Forum. At the request of the Bureau of Reclamation and Metropolitan Water District, I spent several years designing and helping to implement the Vernalis Adaptive Management Plan. That plan is now a cornerstone of the CVPIA's Restoration Plan and of the SWRCB's water rights decision 1641. I helped lead a team of engineers and biologists in examination of the effects of operation of the Delta Cross Channel on fish and water quality. The results of those studies appear to have profoundly changed many people's understanding of the management options available to protect fish and water quality in the delta.

I have repeatedly testified as an expert witness and appeared at workshops, including the San Francisco Estuary Program, the CVPIA b(2) team, the AFRP core team, as well as the CalFed Science Program and many others. I have participated on expert panels on topics ranging from the environmental effects of expansion of the San Francisco Airport to the development of a strategy for the restoration of a self-sustaining salmon population below Friant Dam.

I am regularly a public spokesman for the technical work I have been involved with and make frequent presentations at conferences and public meetings. Similarly, I am involved in helping communications between scientific staff of diverse agencies and groups of upper management policymakers.

Education

Ph.D. Ecology; 1987 University of California, Davis
Dissertation: Patterns of co-occurrence and resource use in a non-coevolved assemblage of fishes.
Advisor: Peter B. Moyle

M.S. Biology; March, 1979 California State University Los Angeles
Thesis: Effects of Salinity on Temperature Tolerances of Tilapia zillii
Advisor: David Soltz

B.A. Zoology; January, 1975 University of California, Berkeley

Professional awards

Gold Medal for Exceptional Service, USEPA, as member of team which developed final Water Quality Standards for the protection of aquatic resources of the Sacramento-San Joaquin Delta and for defining critical habitat of the threatened delta smelt.

Certificate of Appreciation, USFWS, as member of team which wrote recovery plan for nine delta native fishes.

Certificate of Appreciation, USDOI, for technical contributions toward agreement embodied in the 1994 Bay/Delta Accord.

Unit Citation, DWR, as member of the Data Assessment Team for the CALFED Operations Group.

Publications:

Sommer, T, Armor, C, Baxter, R, Breuer, R, Brown, L, Chotkowski, M, Culberson, S, Feyrer, F, Gingras, M, Herbold, B, Kimmerer, W, Mueller-Solger, A, Nobriga, M, Souza, K. 2007. The collapse of pelagic fishes in the upper San Francisco Estuary. Fisheries 32(6):270-277.

Feyrer, F, _____, S.A. Matern and P.B. Moyle 2003. Dietary shifts in a stressed fish assemblage: consequences of a bivalve invasion in the San Francisco Estuary. Transaction of the American Fisheries Society, in press.

Sommer, T., R.Baxter, and _____. 1997. Resilience of Splittail in the Sacramento-San Joaquin Estuary. Transactions American Fisheries Society 126:961-976.

Moyle, P.B., R. Pine, L. Brown, C. Hanson, _____, K. Lentz, L. Meng, J.Smith. D. Sweetnam and L. Winternitz. 1996 Recovery Plan for the Sacramento-San Joaqiun Delta Native Fishes. USDOI USFWS 193 pp.

Meng, L., P.B. Moyle and _____. 1994. Changes in Abundance and Distribution of Native and Introduced Fishes of Suisun Marsh. Transactions American Fisheries Society 123:498-507.

_____, A.D. Jassby, and P.B. Moyle. 1992. Status and Trends of Aquatic Resources of the San Francisco Bay and Delta. San francisco Estuary Project. 210 pp + 2 appendicies.

Moyle, P.B., _____, L. Miller, D. Stevens. 1992. Life history and status of delta smelt in the Sacramento-San Joaquin estuary, California. Transactions American Fisheries Society. 121:67-77

_____ and P.B. Moyle. 1989. The Ecology of the Sacramento-San Joaquin Delta: a Community Profile. US Fish and Wildlife Service Biological Report 85(7.22) xi+106 pp.

Moyle, P.B. and _____. 1987. Life history patterns and community structure in stream fishes of western North America: comparisons with eastern North America and Europe. in W.J. Matthews and D.C. Heins (eds.) Community and evolutionary ecology of North American stream fishes. University of Oklahoma Press, Norman.

_____. and P.B. Moyle. 1986. Introduced species and vacant niches. American Naturalist 128(5):751-760.

_____. An alternative to the fullness index. 1986. *in* C.A. Simenstad and G.M. Cailliet (eds) Contemporary studies on fish feeding: the proceedings of GUTSHOP '84. Dr. W. Junk, Dordrecht, Netherlands.

Moyle, P.B., R.A. Daniels, _____, and D.M. Baltz. 1985. Patterns in distribution and abundance of a non-coevolved assemblage of estuarine fishes in California. Fisheries Bulletin 84:105-117

_____. 1984. Structure of an Indiana stream fish association: choosing an appropriate model. American Naturalist 124(4): 561-572.

Moyle, P.B.,_____, and R.A. Daniels. 1982. Resource partitioning in a non-coevolved assemblage of estuarine fishes. *In* Gutshop 1981, G.M. Cailliet and C.A. Simenstad (eds). Washington Sea Grant.