

As the leader of SWRI's aquatic resources team, Mr. Bratovich is a highly accomplished, recognized fisheries expert in California. With over 23 years of practical experience, he continues to actively participate in a broad range of forums in various strategic planning and technical expert capacities. He has conducted numerous consultations and negotiations with federal and state agencies such as the U.S. Bureau of Reclamation, National Marine Fisheries Service, the U.S. Fish and Wildlife Service, California State Water Resources Control Board, California Department of Fish and Game, and the California Department of Water Resources. Mr. Bratovich's professional practice emphasizes technical and strategic support for water rights and regulatory compliance projects.

*Water Rights Support • Strategic Planning • Expert Witness • FERC Relicensing
Instream Flow Requirements • Flow/Temperature/Habitat Relationships
Habitat Suitability and Restoration • Water Quality Assessment
Facilities Operations and Management • Monitoring and Evaluation
Regulatory Compliance (NEPA, CEQA, ESA)*

PROFESSIONAL HISTORY

Principal Scientist/Partner, Surface Water Resources, Inc., 1996 – Present

Senior Scientist/Regional Manager, Beak Consultants, Inc. 1987 – 1996

Aquatic Biologist, D.W. Kelly and Associates, 1983 – 1986

EDUCATION

*Master of Science in Fishery
Resources, 1985
University of Idaho*

*Bachelor of Science in
Fisheries, 1977
University of Washington*

TECHNICAL AND STRATEGIC NEGOTIATIONS

Yuba County Water Agency, The Proposed Lower Yuba River Accord. Mr. Bratovich is the Principal Scientist for the proposed Lower Yuba River Accord (Yuba Accord), comprised of a coalition of over 15 agricultural, environmental, and fisheries interests, including state and federal agencies. The Yuba Accord is a collaborative settlement initiative, which will resolve nearly 15 years of controversy and litigation over instream flow requirements for the lower Yuba River. The science-based, consensus-oriented Yuba Accord proposes new instream flow requirements for the lower Yuba River that will significantly increase protection for the river's fisheries resources and will improve habitat conditions for lower Yuba River Chinook salmon and steelhead – among the last remaining wild populations in California's Central Valley. The Yuba Accord also will represent the first major long-term water acquisition by the State of California for the CALFED Bay-Delta Program Environmental Water Account (EWA), and will improve water supply reliability for the major resource agencies. The Yuba Accord will promote the objectives of CALFED and the responsible stewardship of California's water supplies.

Mr. Bratovich was the Principal Scientist in the development of the Yuba Accord, and continues to serve on the Implementation Team and the multi-agency River Management Technical Team. He is leading the environmental compliance process, which includes public meetings, workshops, and scoping sessions that are being scheduled as part of the preparation of a joint Environmental Impact Report/Environmental Impact Statement (EIR/EIS) in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). He also is leading the consultations required by the state and federal Endangered Species Acts (ESAs).

Sacramento City/County Office of Metropolitan Water Planning, Lower American River Flow Management Standard. Mr. Bratovich is currently guiding the development and negotiation of a new flow management standard for the lower American River, directed toward the State Water Resources Control Board amendment of the U.S. Bureau of Reclamation's water right permit. Development of the flow management standard considers indices of water availability for the American River Basin as well as potential conflicts inherent in a regulated water system with numerous designated beneficial uses, such as: (1) Central Valley Project/ State Water Project (CVP/SWP) operational factors including storage and refill potential of CVP/SWP reservoirs, flood control, and Delta water quality objectives and demands; (2) American River Basin water supply and Folsom Dam hydropower generation; (3) requirements of the CVP Improvement Act including management of Section 3406 (b) (2) assets; and (4) regulatory requirements of the 1995 Bay-Delta Plan, California Fish and Game Code 5937, and biological opinions to protect Central Valley anadromous salmonids and delta smelt. Modeled flow requirements and rules to implement the requirements on a real-time basis have been developed. In addition to guiding the development of the flow management standard, Mr. Bratovich provides technical expertise and consultation regarding the development and implementation of a biological assessment for the lower American River flow management standard. This process includes development of: (1) biological justification and rationale for the new flow standard; (2) narrative standards; (3) river flow management element; and (4) a Monitoring and Evaluation Plan for the lower American River. Significant coordination with, and presentations to, resource agencies and stakeholders is an integral component of this process.

Yuba County Water Agency, Lower Yuba River Settlement Agreement Adaptive Management Process. Mr. Bratovich acted as the designated representative for YCWA in the Lower Yuba River Settlement Agreement Adaptive Management Process on the Biological Technical Team (BTT). The BTT reviewed any directive that affected the Yuba River that was of biological significance, identified areas of uncertainty that needed to be addressed, and developed a scientifically based monitoring and evaluation plan. Mr. Bratovich served a lead role in the input, review, and preparation of the following adaptive management components: (1) adaptive management process document; (2) goal setting and measurable objectives; (3) identification and prioritization of aquatic resource stressors; (4) Monitoring and Evaluation plans; and (5) coordinated management actions and specific project operations. The culmination of these combined efforts has led the Yuba County Water Agency to adopt the Lower Yuba River Accord.

Sacramento City/County Office of Metropolitan Water Planning, Water Forum Agreement EIR and Fisheries and Aquatic Habitat Management Plan as part of the River Corridor Management Plan for the Lower American River. As Principal Scientist, Mr. Bratovich led stakeholders *via* interest-based negotiation and problem-solving that addressed the political, technical, and scientific issues of over 40 separate parties, which include non-profit organizations, private landowners, and federal and state resource agency representatives, culminating in the completion of the EIR in support of the Water Forum Agreement. Mr. Bratovich also led the development of the impact analysis framework for the EIR and prepared the fisheries and aquatic resources impact analysis.

Currently, Mr. Bratovich is coordinating the implementation of the Water Forum Agreement by serving as Principal Scientist in the preparation of a Fisheries and Aquatic Habitat Management Plan, an integral component of the River Corridor Management Plan. This plan includes an ecological and biological monitoring plan that will: (1) establish the baseline for assessing the health of the lower American River; and (2) identify monitoring objectives, techniques and indicators, and performance standards to assess the ongoing health of fish and aquatic habitat and efficacy of the proposed restoration efforts.

Santa Ynez River Adaptive Management Committee. Mr. Bratovich has been retained to evaluate the trends in steelhead use of the lower Santa Ynez River and, if necessary, recommend alternatives and revisions to the recommended actions outlined in the "Lower Santa Ynez Fish Management Plan." As such, the Adaptive

Management Committee will: (1) make management decisions in response to annual and seasonal variation in hydrologic conditions and water supply availability; (2) capitalize on opportunities to implement habitat improvement measures on public and private property as they arise; (3) evaluate the results of implemented actions; and (4) recommend appropriate modifications to the Fish Management Plan based on these evaluations.

ENVIRONMENTAL COMPLIANCE AND CONSULTATIONS

Placer County Water Agency, Middle Fork Project Federal Energy Regulatory Commission Relicensing Project. Mr. Bratovich served as the Principal Scientist in the development of a strategic plan for relicensing Placer County Water Agency's (PCWA) Middle Fork Project facilities, which included analyses for fisheries, water quality, and terrestrial resources. Mr. Bratovich served as Principal Scientist in the preparation and implementation of the Middle Fork Project Water Temperature Monitoring Plan, which includes stream, reservoir, and meteorological monitoring components. He continues to be engaged in several activities in support of the Federal Energy Regulatory Commission (FERC) relicensing project, including consulting and coordinating project specific guidelines with the state and federal resource agencies, developing study plans in collaboration with the political, technical and scientific stakeholders, implementing study plans, analyzing study plan results, and identifying potential mitigation and enhancement measures (based on study plan implementation and evaluation). Mr. Bratovich is a member of the PCWA Middle Fork Project Relicensing Strategic Team, which is responsible for the overall strategic planning and implementation of all Middle Fork Project FERC relicensing-related activities.

Department of Water Resources, Oroville Facilities FERC Relicensing Project. As SWRI's Principal in Charge and Fisheries Technical Lead for the Oroville Facilities FERC Relicensing efforts, Mr. Bratovich led the SWRI and DWR team in the development of over 70 aquatic resources study plans. These study plans included several methodologies for evaluating Chinook salmon, steelhead, and green sturgeon passage above potential impediments in the lower Feather River and above Oroville Dam. During these evaluations on the lower Feather River, Mr. Bratovich participated as DWR's lead fisheries consultant and developed a methodology to evaluate the effects of Oroville Facilities operations on Chinook salmon passage above potential impediments. In addition to passage evaluations in the lower Feather River, Mr. Bratovich developed two methodologies for evaluating passage upstream of Oroville Dam.

Mr. Bratovich led a team that modified an existing passage methodology to create a quantitative, repeatable, and defensible assessment methodology utilizing hierarchical decision trees, which incorporated anadromous salmonid performance metrics, and standard data collection procedures to determine the potential for passage above potential barriers in the tributaries upstream of Lake Oroville. To determine the biological and economic feasibility of a program to transport adult Chinook salmon and steelhead above Oroville Dam, Mr. Bratovich participated in the development of a Microsoft Excel based Fish Passage Model utilizing information gained from extensive and comprehensive research to evaluate the potential success of various combinations of alternative fish passage program elements and goals.

Sonoma County Water Agency, Potter Valley FERC Relicensing Project. Mr. Bratovich prepared comments on FERC's draft EIS, "Protection and Maintenance of Fishery Resources at the Potter Valley Project, California" and the final environmental impact statement, "Proposed Changes in Minimum Flow Requirements at the Potter Valley Project" on behalf of Sonoma County Water Agency as a requirement of the FERC relicensing process. These comments addressed the biologic analysis of the Eel River, including the evaluation methodology and fishery impact assessment proposed in the draft and final environmental impact statements.

Mr. Bratovich provided technical expert consultation regarding instream flow regimes and fisheries and aquatic habitat assessment in the Eel River at the FERC Relicensing Workshop in June 1999. As the fisheries expert for the project team, he developed instream flow recommendations to protect Chinook salmon and steelhead in the Eel River, reviewed existing fisheries data and reports, interpreted hydrologic computer model output, developed instream flow regimes, reviewed project documents and reports, prepared comments, and developed responses to comments raised by various state and federal resource agencies and special interest groups.

U.S. Bureau of Reclamation/CDM Federal Programs, Environmental Water Account Environmental Impact Statement/Environmental Impact Report/Action Specific Implementation Plan. Mr. Bratovich, as the technical lead, assisted in development of a refined project description, identified the effects and interrelationships between related water acquisition and management programs, and developed alternatives that were analyzed and compared in the EIS/EIR in the areas of surface water quality and quantity, fish and wildlife, and vegetation. This work included consulting with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and California Department of Fish and Game to: (1) identify endangered, threatened, and proposed or candidate species that may occur in the Area of Analysis; (2) develop an appropriate approach for assessing species listed and proposed for listing as part of the Section 7 consultations required by the federal Endangered Species Act; and (3) determine to what extent the action may affect any of the identified species, including effects on Essential Fish Habitat.

Mr. Bratovich oversaw preparation of the fisheries and aquatic biology sections of the EIS/EIR and Action Specific Implementation Plan (ASIP). The ASIP is a document established by the CALFED Bay-Delta Program to fulfill the requirements of, and initiate project-level compliance with, the federal and California ESAs and the Natural Community Conservation Planning Act. Tiering off the CALFED Multi-Species Conservation Strategy, Mr. Bratovich focused the ASIP on evaluating the EWA Proposed Action's effects on evaluated species and habitats.

Northern California Power Agency, Consulting Services for Trinity River Issues. Mr. Bratovich provided fisheries biology and aquatic habitat analysis and assessment regarding steelhead and spring-run Chinook salmon escapement spawning surveys, and review of resource agency annual reports for monitoring of these species in relation to the information contained in the Trinity River EIS, in addition to liaison activities with state and federal resource agency representatives.

Sacramento Area Flood Control Agency, Folsom Dam and Reservoir Interim and Long-Term Reoperation Agreement. Mr. Bratovich served as a technical expert as part of the contract negotiation team on behalf of the Sacramento Area Flood Control Agency for the 10-year Folsom Dam and Reservoir Reoperation Agreement with the U.S. Bureau of Reclamation. He supervised wildlife and fisheries biologists and environmental planners, evaluated the potential impacts to federally threatened and endangered species and other significant biological resources due to simulated changes in reservoir storage and instream flow regimes throughout the Central Valley Project of California.

Mr. Bratovich also led the preparation of feasibility studies to determine the effects of reoperation given demands on the CVP and instream requirements of the lower American River. He assisted with the development of the modeling approach that was applied to the long-term studies and provided input regarding parameters and assumptions appropriate for the impact assessments, and prepared the fisheries and aquatic habitat impact analysis for the Final Environmental Assessment prepared for the project. Additional support included facilitating federal and state regulatory agency representative coordination to determine consultation requirements under the federal and state Endangered Species Acts.

City of Roseville, Warren Act and Endangered Species Act Compliance. Mr. Bratovich provided hydrologic analyses and fisheries and aquatic habitat impact evaluations for water-related resources, as well as a service area analysis, based on accepted USFWS protocols for the City of Roseville. He assisted in the development of a comprehensive hydrologic impacts framework for the analysis in consideration of the City's existing water entitlements, system capacities, ultimate buildout projections, and various local agreements. The service area impacts analysis (specific to the protection of listed and proposed threatened and/or endangered species) presented the planning and development approval process of the City, including the extent of and manner of implementation regarding relevant policies, ordinances, and regulations. Specific conservation projects were identified, as well as a detailed presentation of appropriate mitigation measures and monitoring.

North Gualala Water Company, Gualala River Fisheries Consultation. Mr. Bratovich was retained by the North Gualala Water Company for consultation with CDFG representatives to develop instream flow recommendations for steelhead and coho salmon in the Gualala River of northern coastal California. He evaluated coho salmon and steelhead juvenile rearing habitat conditions on sections of the Gualala River system, and performed a comprehensive review of existing fisheries data, data on physical habitat conditions, as well as temperature and other water quality data. Activities also included evaluation of flow-habitat relationships of potential impacts to steelhead and coho salmon populations through systems operations.

Grant County Public Utility District, Mid-Columbia River Habitat Conservation Plan. Participated in the preparation of a Habitat Conservation Plan for anadromous salmonids for the mid-Columbia River, which included extensive consultation with state and federal resource agency representatives.

Marin Municipal Water District, Lagunitas Creek Instream Flow Study. Mr. Bratovich designed and conducted biological investigations to determine instream flow requirements of coho salmon and steelhead trout in Lagunitas Creek, emphasizing identification of spawning habitat, habitat availability, sediment composition and hydraulic-sediment interactions. In addition, he participated in the identification of erosion control opportunities, and consideration of large hydraulic roughness (boulders) elements as coho salmon and steelhead habitat enhancement measures.

El Dorado Irrigation District, NPDES Permit Renewal. Mr. Bratovich developed an experimental approach and supervised field work for an investigation of the water quality, aquatic ecology, and hydrology of a third order Sierra foothill creek in California. He assisted El Dorado Irrigation District in developing site-specific NPDES permit requirements for its Deer Creek Wastewater Treatment Plant. The permit was revised to meet the water quality objectives of the Water Quality Control Plan for the Sacramento/San Joaquin River Basin and the federal regulatory intent of the permit.

EXPERT WITNESS AND ADMINISTRATIVE PROCEEDINGS

Yuba County Water Agency, Litigation Support for D-1644. Mr. Bratovich served as the lead scientific expert witness regarding fisheries and aquatic habitat resources in the lower Yuba River on behalf of the Yuba County Water Agency (YCWA). In response to requests to increase the instream flow requirements in the lower Yuba River, the State Water Resources Control Board (SWRCB) held a series of administrative hearings in 2000. In support of YCWA, Mr. Bratovich led the development of an instream flow pattern based on seasonal hydrologic and biologic conditions. Mr. Bratovich also prepared a declaration related to YCWA's petition for reconsideration. The SWRCB held supplemental hearings in 2003 and based, in part, on written testimony prepared by Mr. Bratovich, the Yuba County Superior Court granted an appeal to YCWA. Mr. Bratovich served as the principal expert witness during these proceedings regarding fish resource issues and instream flow and temperature recommendations for the Yuba River.

Sonoma County Water Agency, Technical Expert. Participated in the FERC Relicensing Workshop, June 1999, on behalf of the Sonoma County Water Agency.

Northern California Power Agency, Trinity River Litigation Issues. Mr. Bratovich prepared expert witness testimony in advance of litigation regarding the resources of the Trinity River addressing flow, water temperature, water quality, fisheries and aquatic habitat assessment, and policy analysis. Mr. Bratovich prepared declarations regarding these issues on behalf of the Northern California Power Agency.

Sacramento County, Lower American River Aquatic Ecology Investigation. Mr. Bratovich was responsible for the experimental design, implementation, and report preparation of a multi-faceted aquatic ecology investigation of the lower American River. Investigative elements included habitat classification and mapping, application of the Instream Flow Incremental Methodology to determine instream flow needs, estimation of Chinook salmon abundance and distribution by habitat type, microhabitat suitability data acquisition, juvenile salmon emigration data acquisition, and water temperature monitoring.

The results of these investigations were used by Mr. Bratovich in his service as a technical expert on the Alameda County Superior Court, Lower American River Technical Advisory Committee associated with the retained jurisdiction in the case of the *Environmental Defense Fund et al. versus East Bay Municipal Utility District*.

Mammoth Community Water District. Mr. Bratovich provided expert written and oral witness testimony at the SWRCB hearing regarding inflow requirements for brown and rainbow trout in Mammoth Creek located in Mono County, California on behalf of the Mammoth Community Water District. Testimony included discussion of physical habitat (weighted usable area), fish population dynamics, hydrologic interpretation and facilities operation with respect to water rights issues. Mr. Bratovich also was deposed and prepared additional testimony for presentation before Mono County Superior Court.

In addition to the above-listed Expert Witness and Administrative Proceedings experience, Mr. Bratovich has held lead coordination roles for the following liaison technical teams and working groups, and EIR/EIS Certification Public Hearings:

- ◆ Technical Expert on the Lower American River and Delta Tributaries Technical Team, Anadromous Fish Restoration Program, Central Valley Project Improvement Act, 1995 - 1996.
- ◆ Technical Expert on the Multi-Agency Lower American River Operations Working Group, ongoing.
- ◆ Placer County Water Agency/U.S. Bureau of Reclamation American River Pump Station Project EIS/EIR Certification Public Hearing, October 2002.
- ◆ City/County Office of Metropolitan Water Planning, Sacramento Water Forum, Water Forum Proposal EIR Certification Public Hearing, December 1999
- ◆ City of Sacramento Fish Screen Replacement Project Initial Study/Mitigated Negative Declaration Adoption Public Hearing, November 1999.
- ◆ Placer County Water Agency/Northridge Water District Groundwater Stabilization Project EIR Certification Public Hearing, November 1999.

- ◆ Bureau of Reclamation, Sacramento County Water Agency, San Juan Water District, and City of Folsom P.L. 101-514 Central Valley Project Water Service Contracts EIS/EIR Certification Public Hearing, April 1999.
- ◆ Bureau of Reclamation, California Department of Fish and Game, Corps of Engineers, and Glenn-Colusa Irrigation District Hamilton City Pumping Plant Fish Screen Improvement Project EIS/EIR Certification Public Hearing, May 1998.
- ◆ Bureau of Reclamation and Sacramento Area Flood Control Agency Folsom Dam and Reservoir Interim Reoperation EIR/EA Certification Public Hearing, December 1994.

FISH SCREEN AND PASSAGE PROJECTS

Natomas Mutual Water Company, American Basin Fish Screens and Habitat Improvement Project. Mr. Bratovich compiled preliminary biological information related to fisheries for use in a Biological Resources Report. The information was used to evaluate the relative benefits between various alternative plans for consolidating and screening Natomas Mutual Water Company's various diversions in and around the Sacramento River. Mr. Bratovich prepared the fisheries resources section of the Biological Resources Report, which focused specifically on three project areas including the Sacramento River, Natomas Cross Canal, and the Internal Canal System. Mr. Bratovich also provided technical review of the Fish Screen Technical Report and coordinated its activities, findings, and issues identification through attendance at project status coordination meetings and ongoing interactive dialogue with the project team.

City of Sacramento, Sacramento River Fish Screen Replacement Project. As Principal Scientist, Mr. Bratovich completed the EA/IS for the improvement of the fish screen at the City of Sacramento on the Sacramento River. Although the fish screen was in accordance with screen criteria when built, the screen was not in compliance with current CDFG and NMFS screening criteria. SWRI coordinated with the resource agencies for the screen design and prepared all environmental documentation for the screen improvements. Analysis included evaluation of impacts to resources such as fisheries and aquatic habitat, recreation, water quality, and terrestrial vegetation and wildlife.

Glenn-Colusa Irrigation District, Hamilton City Pumping Plant Fish Screen Improvement Project. Mr. Bratovich was Principal-in-Charge for the successful completion of an EIR/EIS for implementation of new screening facilities at the Hamilton City Pumping Plant on the Sacramento River. Mr. Bratovich managed all aquatic habitat and fisheries impacts analyses, which focused on the state and federally endangered winter-run Chinook salmon. He acted as client liaison for Technical Advisory Committee meetings, field surveys, and interpretation of engineering alternatives.

Department of Water Resources, Oroville Facilities FERC Relicensing Project. Mr. Bratovich led the development of several methodologies for evaluating Chinook salmon, steelhead, and green sturgeon passage above potential impediments in the lower Feather River, and above Oroville Dam. He developed a methodology to evaluate the effects of Oroville Facilities operations on Chinook salmon passage above potential impediments in the lower Feather River, and two methodologies for evaluating passage upstream of Oroville Dam.

Mr. Bratovich led a team to determine the potential for passage above potential barriers in the tributaries upstream of Lake Oroville, and to evaluate the biological and economic feasibility of a program to transport adult Chinook salmon and steelhead above Oroville Dam.

City of Sacramento, American River Intake Expansion Project. Mr. Bratovich served as the Principal Scientist in the expansion of the E.A. Fairbairn water treatment plant intake structure project. He coordinated with the National Marine Fisheries Services, U.S. Fish and Wildlife Service, and California Department of Fish and Game in screen design and environmental compliance aspects of the project.