



# PISCES

Volume 33, Number 1, Spring 2004

## President's Message

### An Open Letter to California's Natural Resource Agencies

*Jim Steele, Chapter President*

The American Fisheries Society CalNeva Chapter and Humboldt Chapter will hold a joint annual conference in Redding Ca. on April 22-24, 2004. In this time of tight budgets and uncertain future for many state programs, the tendency for agencies managing our natural resources could be to restrict the numbers of their staff attending. I've heard this from concerned agency staff, not because they have budgets that would be strained if they attended but because of potential political criticism. This is a familiar situation that has many past examples and will again in the future. California natural resource agencies have always faced tight budget situations. I hope this time they will consider the many positive benefits from this event and the advantages to California.

The AFS Conference is a product of aquatic sciences professionals dedicated to the understanding and wise use of our natural resources. Many are Department of Fish and Game staff as well as other state, county, city and federal agencies. Also included are professionals from universities, consultants, water agencies and students. It is therefore without coincidence that the conference is designed to deliver scientific papers, information and activities that are important to the continuing education of its members. AFS members know that keeping current with scientific understanding is crucial to making the right decisions for a resource under extreme pressure from overuse and misuse. When this access to information was restricted in past budget crisis, the government's ability to make sound decisions during that period was not well served.

This year, the AFS has included topics important to the decisions of the day. We will have papers and lectures on the issues of the Klamath River system, managed flow rivers, endangered species, field and laboratory

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*President's Message, continued*

techniques, pollution, restoration and aquaculture. The participants will have an important opportunity to meet with leaders in these fields and their peers from other agencies and regions to discuss issues and relate approaches to problem solving. This is an important event that we have planned around the always present need for the type of information that busy aquatic professionals do not have time to acquire. The knowledge gained will deliver positive benefits to the people of California during this tough economy.

Now more than ever is the time to educate and exchange information, because each decision will have far reaching economic influence on Californians and their ability to enjoy our natural resources. It is with this in mind that I urge your organization to select this conference for aquatic wildlife professionals and the Wildlife Society Conference for terrestrial wildlife professionals as important investments for the future of California's natural resources. We are available to answer questions by addressing them to me at: 10126 Alpine Drive #2 Cupertino, California 95014. Thank you for your thoughtful consideration.

### **Letter to the USBR from the Cal-Neva Chapter AFS Regarding the Sacramento River Water Reliability Study**

*The following letter, dated January 20, 2004 and signed by Jim Steele, Chapter President, was sent to Ms. Sammie Cervantes in the Public Affairs Office of the U.S. Bureau of Reclamation, Sacramento, CA.*

"The California-Nevada Chapter of the American Fisheries Society represents over 500 professional fisheries scientists in California and Nevada involved in aquatic systems research and management. The mission of the American Fisheries Society (AFS) is to improve the conservation and sustainability of fishery resources and aquatic ecosystems by advancing fisheries science and by promoting the development of fisheries professionals. We are dedicated to ensuring that the best available scientific information is provided to the decision makers, and that this information is given full consideration.

We are aware that the Bureau is leading the Sacramento River Water Reliability Study (SRWRS) which will examine a number of alternatives for providing additional water to Sacramento and Placer counties. This study will look at the feasibility of delivering additional water from locations on the American, Sacramento or Feather rivers. Providing additional water supply is a valid public purpose. We believe the decision on which alternative diversion point(s) will be used must be based on the best available science to minimize impacts and ensure that the Bureau fully meets its responsibilities under NEPA, CEQA and the ESA.

From the preliminary project information reviewed so far, our Chapter has noted several issues that we believe the Bureau must fully address during its study process. We believe that a review of these topics will help in your decision process. We believe the most important issues are:

- The impacts to aquatic and fishery resources of additional diversions from the American, Sacramento or Feather rivers, including the American River downstream of Nimbus Dam.
- The short and long term impacts of introducing water from these out of basin areas on the genetic composition (through straying) of existing stocks of anadromous and native fishes in the watersheds of western Placer County and eastern Sacramento County.
- The potential to cause false attraction by mixing waters from different areas and their potential impacts on steelhead and all four races of Chinook salmon on state and federally listed species. This subject is a relatively new concern for salmonids and should be fully researched to see if it applies here.

We recommend that these issues be addressed fully during your study process. In order to assist the Bureau, the California-Nevada Chapter of the American Fisheries Society is offering to advertise within our membership for a committee of technically qualified professionals that would independently evaluate and add to the fishery resource information gathered during this process. An evaluation report from the committee could contribute substantially to the Bureau's process and help ensure that the public is provided with the most scientifically credible and transparent assessment and objective evaluation possible.

The Chapter stands ready to assist in this extremely important process. Please feel free to contact me at (916) 834-6165 (cell) or by mail at 10126 Alpine Drive#2, Cupertino, California 95014."

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## Letter from the WDAFS Lamprey Review Committee to the Cal-Neva Chapter AFS

*The following letter, was sent to Chuck Knutson, Chapter Past President, from Shawn Chase, Western Division AFS Lamprey Review Committee Chair. The WDAFS Lamprey Committee Members include Jennifer Bayer, Larry Brown, James Haas, Molly Hallock, Scott Haskell, Don Johnson, Hiram Li, Peter Moyle, Louise Porto, Jennifer Stone, Camm Swift, and Terry Wright.*

“On January 23, 2003, eleven conservation groups petitioned the United States Fish and Wildlife Service (USFWS) to list four species of lamprey as threatened or endangered under the Federal Endangered Species act. The four species of concern are the Pacific lamprey (*Lampetra tridentata*), river lamprey, (*L. ayresi*), western brook lamprey (*L. richardsoni*), and Kern brook lamprey (*L. hubbsi*). Pacific, river, and western brook lamprey inhabit waters in California, Oregon, Washington, and Idaho. The Kern brook lamprey is found only in California.

The Western Division of the American Fisheries Society (WDAFS) formed the Lamprey Review Committee (LRC) to review the petition. The primary objectives of the LRC are to:

- Review the petition for completeness and scientific accuracy.
- Make a recommendation to the WDAFS Executive Committee whether WDAFS should support the petition, and
- Make recommendations for any further action that WDAFS should conduct regarding the petition.

The LRC found the petition itself to be well written, however, the data presented does not strongly support the conclusions. The primary weakness of the petition is the overall paucity of information on lampreys. The depth of the information available on the four lampreys varies by species.

The data supports the listing of Pacific lamprey based on counts at dams on the Columbia, Umpqua, and Snake Rivers. For example, counts at the Ice Harbor and Winchester dams were measured in the tens of thousands during the early 1960's, but declined to the low hundreds or less by 2001. Although the counts of lamprey at the Columbia River Dams were considered unreliable by Moser and Close (2003), the sheer magnitude of the decline is conspicuous. Moser and Close (2003) did note that the counts were conducted in a uniform manner, and they provide the only historical measure of relative abundance for Pacific lamprey.

The case to list the three remaining species (river, western brook, and Kern brook lampreys) was not as strong. There are few accounts of these species in the literature cited, and no trend data for the three remaining species were presented.

The available data do suggest that Pacific lamprey numbers have declined, possibly substantially, over the last several decades, and that the other three other species may be in decline as well. Therefore, the Lamprey Review Committee does recommend that the Executive Committees for the Western Division and the Washington, Idaho, Oregon, and California-Nevada chapters of the American Fisheries Society write letters urging the USFWS to thoroughly review the status of the Pacific, river, western brook, and Kern brook lampreys.

The petition to list the four species of lamprey under the ESA provides a solid beginning, although a considerable amount of additional data collection and analysis will need to be conducted to fully evaluate their status. The LRC members possess a substantial amount of expertise regarding the four lamprey species, and stands ready to assist the USFWS in this endeavor as the Service sees fit.

The American Fisheries Society can provide technical expertise on the four species of lamprey, and can play an important role in the status review of lamprey. For example, the California-Nevada Chapter has begun this process by putting out a call to its membership for information on lamprey. Three members of CAL-NEVA have volunteered to create a repository for information on lamprey. The main objective of this project is to produce a paper detailing the historical and present status of lamprey in California. We recommend that each state conduct a similar review of the data. The result will be a peer-reviewed analysis of the available data on all species of lamprey that will be available for review by the USFWS.”

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**American Fisheries Society  
California-Nevada and Humboldt Chapters  
Symposium and 38<sup>th</sup> Annual Meeting**

***“Understanding, Protecting, and Enjoying California’s Fishes  
From the Sierra to the Sea”***

April 22, 23, and 24, 2004

***Red Lion Inn, 1830 Hilltop Drive, Redding, California 96002***

## ***Schedule Overview***

### **Thursday, April 22**

*Symposium I: Fish Screens and Beyond: Protection in the Fish Passage Corridor*

*Symposium II: Steelhead Recovery*

*Humboldt Chapter Business Meeting*

*Welcoming Social at the Turtle Bay Exploration Park*

### **Friday, April 23**

#### ***Plenary Session***

Harrison Dunning, Scott McBain, Anitra Pawley, and Lisa Thompson will discuss the law, science and public involvement needed to protect and restore California’s rivers, ecosystems and fisheries, from the Sierra to the Sea.

*Cal-Neva Chapter Business Meeting and the traditional “PB&J” Social*

*Poster Session*

*Jobs and Career Fair*

*Banquet*

Hosted by the Mendocino Brewing Company. Invited speaker: Ryan Brodrick, Director, California Department of Fish and Game

### **Friday, April 23 (afternoon) and Saturday, April 24 (morning)**

#### ***Concurrent Technical Sessions***

Enhance and share your understanding of California fishes at sessions on the Klamath, mercury and fish, effects of pulse flows applied experimental fish biology, monitoring techniques, river restoration, and more.

### **Saturday, April 24 (morning)**

*Sturgeon Run*

#### **Additional Activities to Enjoy California’s Fishes**

**April 20, 21:** Guided Sacramento River fly fishing trip. Contact with Mike Berry, (530) 225-2131, [mberry@dfg.ca.gov](mailto:mberry@dfg.ca.gov)

**April 21:** Tour of ACID Fish Facilities. Contact Tim Hamaker, [Tim.Hamaker@ch2m.com](mailto:Tim.Hamaker@ch2m.com)

**April 23, 24:** Camping and fishing on the upper Sacramento River near Dunsmuir on the opening day of trout fishing season. Contact Mike Berry, (530) 225-2131, [mberry@dfg.ca.gov](mailto:mberry@dfg.ca.gov)

#### **Lodging**

**Reserve your room at the Red Lion Hotel by calling (530) 221-8700 or <http://www.redlion.com/>.**

AFS conference rates are \$78 (1 bed, 1-2 people) or \$88 (2 beds, 2-4 people). Check-in time: 3:00 PM

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***For more information, please visit our website <http://www.afs-calneva.org/>***

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# DRAFT SYMPOSIUM AND MEETING PROGRAM

## **Thursday, April 22**

**8:00-5:00**

### ***Symposium I: Fish Screens and Beyond: Protection in the Fish Passage Corridor***

Protecting California's fishes from hazards posed by dams and diversions requires integration of fish biology and engineering. This daylong symposium will discuss advances in fish passage improvement, fish screen design and operation, and fish salvage and transport techniques, evaluating our progress and the challenges that remain ahead.

### ***Symposium II: Steelhead Recovery***

Recovery planning for threatened Central Valley steelhead is underway. This symposium, convened by the Central Valley Technical Recovery Team in association with the California-Nevada AFS Chapter, will synthesize the state of our knowledge of CV steelhead, including distribution, genetics, ecology, abundance and population viability.

**12:00-1:00**

### ***Humboldt Chapter Business Meeting***

**5:30-10:30**

### ***Welcoming Social at the Turtle Bay Exploration Park***

The Annual Meeting begins at the beautiful Turtle Bay Museum, on the banks of the Sacramento River. Explore the history, art and ecology of California's largest river basin, enjoy fine food and drinks, and catch up with friends and colleagues.

## **Friday, April 23**

**8:30-12:00**

### ***Plenary Session***

Harrison Dunning, Scott McBain, Anitra Pawley, and Lisa Thompson will discuss the law, science and public involvement needed to protect and restore California's rivers, ecosystems and fisheries, from the Sierra to the Sea.

**12:00-1:00**

### ***Peanut butter and Jelly Social***

**12:00-1:00**

### ***Cal-Neva Chapter Business Meeting***

**1:00-5:00**

### ***Concurrent Technical Sessions***

#### **Session 1. Mercury-contaminated Fish: Why Do We Have a Problem and How Severe Is It?,**

Michael Saiki ([michael\\_saiki@usgs.gov](mailto:michael_saiki@usgs.gov))

**Mercury Cycling and Bioaccumulation in Fish in Northern Sierra Nevada Watersheds Contaminated by Historical Gold Mining**  
Charles N. Alpers, U.S. Geological Survey

#### **Effects of Mercury on Clear Lake Fishes: A Mining Legacy**

Thomas H. Suchanek, U.S. Fish and Wildlife Service

#### **Methylmercury Toxicity as it Relates to Fish Consumption**

Susan A. Klasing, California Environmental Protection Agency

#### **Development of Fish Consumption Advisories Based on Mercury in California**

Robert K. Brodberg, California Environmental Protection Agency

#### **Mercury Concentrations in Sediment, Water, and Aquatic Biota from the Trinity River Watershed, 2000-2003**

Jason T. May, U. S. Geological Survey

#### **Outreach and Education on Fish Contamination in the Sacramento-San Joaquin Delta Watershed (AKA Delta Watershed Fish Project)**

Sun H Lee, California Department of Health Services

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**Total Mercury Concentrations in Fillets of Bluegill, Redear Sunfish, and Largemouth Bass from Lake Natoma, Sacramento County, California**

Barbara A. Martin, U.S. Geological Survey

**Mercury in Biota from the Lower Clear Creek Restoration Area, Shasta County, California**

Roger L. Hothem, U. S. Geological Survey,

**Natural and anthropogenic mercury sources of contamination to watersheds and biota**

James J. Rytuba, U.S. Geological Survey

**Effects of Mercury on Waterbirds Nesting Along the Carson River, Nevada: Some Unexpected Findings**

Charles J. Henny, USGS Forest and Rangeland Ecosystem Science Center

**Session 2. To Pulse or Not to Pulse: The Pros and Cons of Pulsed Flows on Habitat and Aquatic Biota,**

Paciencia S. Young ([psyong@ucdavis.edu](mailto:psyong@ucdavis.edu))

**The Effects of Managed Flood Release on a Salmonid Spawning Gravel Enhancement Project**

Joseph E. Merz , East Bay Municipal Utility District

**Pulse Flows for Alluvial Processes in Bedrock River Ecosystems**

William Trush, McBain and Trush

**Evaluating Pulsed Flow-Based Disturbances of Stream Benthos in Regulated Rivers**

Ian Chan, Garcia and Associates (GANDA)

**Freshwater Mussels and the Potential Impacts of Pulsed Flows**

Jeffrey D. Cook, Spring Rivers Ecological Sciences

**Some Effects of Spring and Summer Pulse Flows on River-Breeding Foothill Yellow-Legged Frogs (*Rana boylei*) along the North Fork Feather River**

Ronald E. Jackman, Garcia and Associates

**Pulsed Flows Effects on Foothill Yellow-Legged Frog Egg Masses, Filamentous Green Algae, and Fish Stranding in the Pit River**

Maria J. Ellis, Spring Rivers Ecological Sciences

**Stranding of Aquatic Organisms during Periodic Whitewater Boating Flows on the North Fork Feather River, California**

Tim Salamunovich, Thomas R. Payne & Associates

**Movement of Sacramento Sucker (*Catostomus occidentalis*) and Hitch (*Lavinia exilicauda*) during a Spring, Pulse Flow below Camanche Dam in the Mokelumne River, California**

Carson Jeffres, John Muir Institute of the Environment

**Effects of Pulsed Flows on Virtual Fish: What Can We Learn from Individual-based Models?**

Steve Railsback, Humboldt State University and Lang, Railsback & Associates

**Monitoring the Ecological Effects of Recreation Pulse Flows as a Component of Dam Relicensing Proceedings in Northern California**

Curtis Knight, California Trout

**Session 3. Fishery Restoration in the Central Valley and Bay-Delta: Challenges, Integration and Lessons Learned, Jill Marshall ([jillm@calwater.ca.gov](mailto:jillm@calwater.ca.gov))**

**Floodplain Restoration Planning Using Dredger Tailings: A Study At The Merced River Ranch**

Noah Hume, Stillwater Sciences

**River Restoration on the Trinity River in 2003 and Beyond**

Brandt Gutermuth, Trinity River Restoration Program

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**Reduce Flows to Benefit Fish: An Unusual Management Scenario**

Amy Harris, Sonoma County Water Agency

**Mercury in Gravel deposits in Central Valley tributaries: Implications for restoration**

Donna Podger, California Bay Delta Program, Ecosystem Restoration Program

**CBDA's Environmental Water Program - planning for fisheries improvement through strategic flow applications conceived as experiments in ecosystem restoration: Part 1. Process**

Campbell Ingram, US Fish and Wildlife Service

**CBDA's Environmental Water Program - planning for fisheries improvement through strategic flow applications conceived as experiments in ecosystem restoration: Part 2. Science**

Peter Downs, Stillwater Sciences

**IBI Application in Fish Resource Assessment of a Small, Low-Elevation Stream System in the Sacramento Valley**

Rob Titus, California Department of Fish and Game

**Fish Populations as Indicators of Ecosystem Health in the South Fork Feather River Watershed: Do Trout Go With The Flow?**

Scott D. Wilcox, Stillwater Sciences

**Differences in the Nearshore Fishes of the Sacramento–San Joaquin Delta, California, Over a Twenty-year Interval**

Larry R. Brown, U.S. Geological Survey

**Sr:Ca Ratios in Juvenile *Oncorhynchus mykiss* Otoliths Provide an Understanding About Levels of Anadromous Broodstock in a Population**

Eric R. Huber, John Muir Institute of the Environment, University of California, Davis

**Session 4. Decision Time in the Klamath Basin: Flows, Dams, and New Science**

**Klamath, Session #1 Science, Flows and Information Management**

Pat Higgins ([phiggins@humboldt1.com](mailto:phiggins@humboldt1.com))

**Longitudinal Water Quality Characteristics of the Klamath River from Iron Gate Dam to the Trinity River**

Michael L. Deas, Watercourse Engineering, Inc.

**Field Validation of Habitat Modeling of Chinook Spawning and Fry Life Stages in the Lower Klamath River**

Thomas B. Hardy, Institute for Natural Systems Engineering, Utah Water Research Laboratory, Utah State University

**Analysis of Contributing Factors Leading to the September 2002 Klamath River Fish Kill**

Michael Rode, California Department of Fish and Game

**Klamath Resource Information System (KRIS) Version 3.0 for the Klamath-Trinity Basin Captures New Fisheries and Water Quality Information**

Jim Villeponteaux, Salmon River Restoration Council

**Understanding habitat and fisheries relationships in a restored riverine wetland**

John D. Crandall, The Nature Conservancy of Oregon

**The Klamath River After the NRC Report: Towards a Sustainable Future**

Peter B. Moyle, University of California, 1 Shields Avenue, Davis

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**5:00-6:00**

***Poster Social***

**CalFish, A Web-based Clearinghouse for California Fisheries and Aquatic Habitat Data**

Eric Haney, California Department of Fish and Game

**California Zebra Mussel Watch Program**

Tanya Veldhuizen, California Department of Water Resources,

**A Revision of the Guide to Early Life Histories of Fish of the Sacramento-San Joaquin Estuary**

Johnson Wang, Bureau of Reclamation

**Calaveras River Life History Evaluation Project**

Gabriel Kopp, S. P. Cramer & Associates, Inc.

**Science-Based Restoration Monitoring of Coastal Habitats: A Framework for Monitoring Plans Under the Estuaries and Clean Water Act of 2000 (Public Law 160-457)**

Gordon W. Thayer, U.S. Fish and Wildlife Service

**Spawning areas of Green sturgeon (*Acipenser medirostris*) in the upper Sacramento River, California**

Brown, K. U.S. Fish and Wildlife Service

**Using landscape, climate and species occurrence data to predict potential habitat for conservation planning: a pilot study of *Oncorhynchus mykiss* in the south-central California coast**

David. A. Boughton, NOAA Fisheries

**Predicting the Habitat Distribution for Coho Salmon and Steelhead Trout in California**

Aditya Agrawal, NOAA Fisheries

**Central Valley Steelhead (*Oncorhynchus mykiss*) Redd Surveys on Clear Creek and Battle Creek, California**

Sarah L. Giovannetti, U.S. Fish and Wildlife Service

**Preventing the spread of New Zealand Mudsnails (*Potamopyrgus antipodarum*) in California**

David Bergendorf, U.S. Fish and Wildlife Service

**Programmatic Endangered Species Act Consultation for Conservation Activities: Improving the Permit Process and Fish Habitat in Marin County, California.**

Carolyn Callahan Remick, Sustainable Conservation

**Map of Potential Sediment Sites for Restoration and Habitat Limiting Factors for the Gualala River Watershed**

Cynthia M. LeDoux Bloom, California Department of Fish and Game

**Estimating Stream Residence Time and Escapement of Pacific Salmon from Serial Stream Counts of Spawners**

Glenn Szerlong, NOAA Fisheries

**Garcia River Restoration Planning and Evaluation**

Craig Bell, Garcia River Watershed Coordinator

**Klamath Resource Information System (KRIS) Version 3.0 Product of Basin-wide Cooperation**

Kelly Sheen, Trinity County Resource Conservation District

**The Salmon River Restoration Council Promotes Cooperation Among Stakeholders in the Salmon River Sub-basin**

Jim Villeponteaux, Salmon River Restoration Council

**KRIS Russian River Supports Collaborative and Adaptive Assessment of Factors Limiting Fish Populations and Water Quality.**

Gary Reedy, Institute for Fisheries Resources KRIS Project



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**Use of Thermal Refugial Areas on the Klamath River by Salmonids**

Michael Belchik, Yurok Tribal Fisheries Program

**Middle Klamath Tributary Studies Yield New Information about Juvenile Coho Salmon**

Toz Soto, Fisheries Director, Karuk Tribe Natural Resources Department

**Patterns of Adult Fish Use on a Large California River Floodplain**

William C. Harrell, California Department of Water Resources

**6:00-7:00**

***Jobs/Career Fair***

Meet with representatives of state and federal resource agencies, consulting and engineering firms, and universities to discuss your future in fisheries.

**7:30-10:00**

***Banquet***

Eat, drink, raise a toast to your colleagues at the Annual Awards Banquet, hosted by the Mendocino Brewing Company. Collect your raffle winnings, and hear more great stories about our treasured fisheries resources. Invited speaker: Ryan Broddrick, Director, California Department of Fish and Game

**Saturday, April 24**

**6:30-7:30**

***Sturgeon Run***

**8:00-12:00**

***Concurrent Technical Sessions***

**Session 5. Decision Time in the Klamath Basin: Flows, Dams, and New Science**

**Klamath, Session #2 Relicensing of Klamath Hydroelectric Project**, Pat Higgins ([phiggins@humboldt1.com](mailto:phiggins@humboldt1.com))

**Historical Distribution of Native Anadromous Fish Above Iron Gate Dam in the Klamath River**

John Hamilton, U. S. Fish and Wildlife Service

**California State Fish and Wildlife Resource Agencies and the Relicensing of the Klamath Hydroelectric Project**

Annie Manji, California Department of Fish and Game

**Relicensing the Klamath Project: An Opportunity for Restoration?**

Amy M. Stuart, Oregon Department of Fish and Wildlife

**Balancing Hydropower Generation with Environmental and Social Resources**

Todd Olson, PacifiCorp

**Klamath Basin Tribal Perspectives on PacifiCorp Project Relicensing**

Ronnie Pierce, Klamath Basin Inter-Tribal Fish and Water Commission

**Panel Discussion**

**Session 6. Monitoring Central Valley Anadromous Fishes: New Techniques and New Results,**

Larry Brown ([lrbrown@usgs.gov](mailto:lrbrown@usgs.gov))

**The Riverwatcher Fishcounter – An Image of Every Fish**

Benedikt Halfdanarson, Vaki Aquaculture Systems Ltd.

**Feasibility of Using Portable Resistance Board Weirs and Vaki RiverWatchers to Count and Characterize Anadromous Salmonid Populations**

Doug Demko, Fish Biologist, S.P. Cramer & Associates, Inc.

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**Using Emerging Technology and Multiple Data Collection Methods to Determine Demographics, Timing and Abundance of Chinook Salmon (*Oncorhynchus tshawytscha*) in the Yuba River, CA**

Cesar Cadena Blanco, U.S. Fish and Wildlife Service

**Comparison of chinook salmon, (*Oncorhynchus tshawytscha*), carcass survey estimates to counts at weirs on the Stanislaus and Mokelumne Rivers, California.**

Michelle Workman, East Bay Municipal Utility District

**Examining the Accuracy of Spawner-Escapement Estimates Based on the Mark and Recapture of Carcasses**

R. Glenn Szerlong, NOAA Fisheries

**Direct and Indirect Methods of Estimating Juvenile Winter Chinook Abundance in the Upper Sacramento River (JPE's versus JPI's)**

Phillip D. Gaines, U.S. Fish and Wildlife Service

**Feasibility of Dual Marking Age-0 Chinook Salmon for Mark-Recapture Studies**

Phillip D. Gaines, U.S. Fish and Wildlife Service

**Acoustic Tracking Technology and Potential Applications for Salmonid Research within the San Francisco Bay and Sacramento-San Joaquin Delta**

Doug Demko, Fish Biologist, S.P. Cramer & Associates, Inc.

**Adult Spring Chinook Salmon Monitoring in Clear Creek, California, 1999-2003**

Jess M. Newton, U.S. Fish and Wildlife Service

**Large-scale Marine and Freshwater Movements of a White Sturgeon**

Scott Turo and Barry McCovey Jr., Yurok Tribal Fisheries Program

**Session 7. Out of the Lab and into the Field: Linking Laboratory and Field Research to Improve Fish Management and Protection, Joseph J. Cech, Jr. ([jjcech@ucdavis.edu](mailto:jjcech@ucdavis.edu))**

**Effect of Elevated Water Temperatures on Smolt Development and Non-Specific Immune Functions in Trinity River Chinook Salmon Smolts**

J. Scott Foott, U.S. Fish and Wildlife Service, California – Nevada Fish Health Center

**Swimming Performance of Hatchery and Wild Juvenile Chinook Salmon from the Lower American River, California**

Katherine Seefloth, California State University, Sacramento

**Analysis of Osmoregulated Genes in Euryhaline Fish Using High-Throughput Technologies**

Dietmar Kultz, University of California, Davis

**Measuring Predation Threat Using Behavioral and Physiological Metrics: Implications for Habitat Loss in Estuarine Ecosystems**

Christa Woodley, University of California, Davis

**The Effects of Size on Juvenile Green Sturgeon (*Acipenser medirostris*) Swimming Performance**

Peter Allen, University of California, Davis

**Examining the Effects of Conventional and Enriched Hatchery Environments on the Development of the Salmonid Brain**

Rebecca L. Kihlslinger, University of California, Davis

**Night Bites: Determining the Contribution of Different Sensory Systems to Nocturnal Foraging**

Timothy D. Mussen, University of California, Davis

**Relative effects of organic and inorganic constituents of the suspended sediment load on salmonid foraging and prey availability**

Samantha J. Hadden, Humboldt State University

**Bay Bridge Pile Driving Monitoring Program Using Caged Fish**

Robert R. Abbott, Strategic Environmental Consulting Inc.

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**Biotic resistance to invasion of a fish assemblage: a laboratory stream experiment may explain unanticipated field data**

Bret C. Harvey, U.S. Fish and Wildlife Service

**Session 8. Contributed Papers, Chuck Knutson ([cknutson@dfg.ca.gov](mailto:cknutson@dfg.ca.gov))**

**Recovery Hatchery Guidelines for Coho Salmon**

Michael Lacy, California Department of Fish and Game

**The Russian River Coho Captive Broodstock Program: Overview of Objectives and Monitoring Priorities**

J. Louise Conrad, California Department of Fish and Game

**Evaluation of the Supplementation Program at Livingston Stone NFH using the Winter Chinook Salmon Escapement Survey**

Robert E. Null, U.S. Fish and Wildlife Service

**Coho salmon finding their way back: the Pine Gulch Creek example**

Brannon J. Ketcham, Point Reyes National Seashore

**Distribution of Summer Stream Temperatures in Salmon Holding Habitat of a Central Valley Stream**

Danielle J. Cresswell, California State University, Chico

**Coho Salmon Presence Confirmed/Presence Not Confirmed Survey**

Bill Jong, California Department of Fish and Game

**Coho salmon in Marin County – how do we measure up to the rest of the central California Coast ESU**

Brannon J. Ketcham, Point Reyes National Seashore

**Use of Freshwater Slough, Humboldt Bay, CA by Juvenile Salmonids**

Michael Wallace, California Department of Fish and Game

**Trophic Relationships of Fishes Inhabiting the Napa-Sonoma Salt Ponds**

Francine Mejia, U.S.G Geological Survey

**Spatial and Temporal Distribution of Age-0 Splittail in the Lower San Francisco Estuary Watershed**

Frederick Feyrer, California Department of Water Resources

**12:00 Adjourn**

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## More Annual Meeting Information

### Lodging at the Red Lion Inn

*Tricia Parker, Local Arrangements Chair*

Register for our upcoming conference soon!

AND

Book your hotel room/s EARLY!

\* Red Lion Hotel, 1830 Hilltop Drive, Redding, CA 96002

\* Phone (530) 221-8700 or 1-800-Red-Lion

\* Conference Rate: \$78 single/double, \$88 for three/four people

\* Room block for American Fisheries Society ends April 13.

\* Reservations can be made now. If necessary, you can cancel by 4pm and not be charged (check with the hotel for specifics).

#### Lodging Tips

Call the Red Lion at (530) 221-8700; ask for “in house group reservations”

— If you get transferred to Central Reservations be sure the person you talk to knows that you are entitled to the \$78 conference rate. We have a block of rooms reserved under “American Fisheries Society”. The room block ends on April 13. It’s always a good idea to keep a copy of your confirmation # with you (e.g. in your planner) to be sure you get charged the proper rate as you check in. If you intend to claim “tax exempt,” be sure to ask about this and follow the necessary steps (e.g. bring the tax exempt form to the hotel registration desk at check-in). The Red Lion website (<http://www.redlion.com/>) has nice photos, but is not very user friendly — we recommend using the phone to contact the hotel. See you in Redding on April 22!

<< Red Lion Hotel, 1830 Hilltop Drive, Redding, CA 96002 Phone (530) 221-8700 or 1-800-Red-Lion >>

### Welcoming Social at Turtle Bay Museum

*Tricia Parker, Local Arrangements Chair*

A special event is planned for attendees at this year’s AFS conference in Redding — a Welcoming Social at the Turtle Bay Museum (<http://www.turtlebay.org/info/index.html>). On Thursday, April 22 at 5 pm, shuttle busses will begin departing from the Red Lion Hotel Lobby to take people to Turtle Bay Museum. During the evening, you’ll first get to browse the fun natural history products in the Gift Shop, then stroll across the bridge taking you to the museum. Delicious food and refreshments will be available for you at tables along the bridge and throughout the museum lobby. The museum is a collection of learning attractions with a focus on the Sacramento River watershed, its natural inhabitants, regional culture and human history. We’ll be able to view the soon-to-be-completed Sundial Bridge spanning the Sacramento River. Be sure to arrive in Redding with plenty of time to make it to this special event!

### Bring Your Finny Attire!

*Rhonda Reed, Promoter of Chondrichthoid Couture*

Hey, I know y’all have at least one “fish” shirt in your wardrobe. Some of you have more: fish slippers, fish PJ’s, fish ties, lure earrings (need I go on?) What better place to show off what you’ve got than to the appreciative audience of an AFS meeting? So, bring your favorite fish get-up and wear it for Friday’s Social and Job Fair. PRIZES (and winning categories) will be announced at the banquet. If nothing else, wear your great Chris DeWees PacMac T-shirt from last year’s meeting for the Most Popular T-Shirt Design category.

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## Camping and Fishing at the Shasta Springs Trout Camp

Mike Berry, Activity/Sportfishing Chair

*A camping and fishing trip on the upper Sacramento River near Dunsmuir is planned for the opening day of trout fishing season after the annual meeting (April 22-23). Contact Mike Berry at (530) 225-2131 or [mberry@dfg.ca.gov](mailto:mberry@dfg.ca.gov) for more information about the trip.*

CalTrout's Shasta Springs Trout Camp is located on 40 beautiful acres on the famed Upper Sacramento River. The camp is nestled among black oaks on a picturesque flat along a remote, lightly fished stretch of the Upper Sacramento River between Dunsmuir and Cantara Loop.

### Upper Sacramento River History

Large numbers of Wintu Indians inhabited the Upper Sacramento Canyon for millennia before the arrival of white settlers in the mid 1850's. The Wintus' primary food source were the large runs of Chinook salmon and steelhead. The arrival of the railroad in the 1880's opened up the Upper Sac canyon. Several large resorts were established around the town of Dunsmuir capitalizing on the bubbly soda springs and their putative medicinal properties.

By the time of the Shasta Dam was finished in 1945 completely block salmon and steelhead migrations the anadromous fish runs of the Upper Sac were already in decline and the Wintu were long displaced. The Upper Sac as a trout fishery, however, flourished becoming renowned as one of the top trout fishing destinations in California.

### The Spill

On the night of July 14, 1991 a Southern California railroad tanker car derailed on the sharp Cantara Loop curve just 2 miles upstream from the trout camp. The tanker car contained 19,000 gallons of the potent soil fumigant-pesticide called metam sodium, all of which emptied into the river. The chemical quickly dispersed into the swift moving river and formed several highly toxic compounds. These compounds killed all aquatic life in the river and much of the riparian vegetation along the river. Residents along the river were evacuated from Cantara to Shasta Lake.

For three years from 1991 to 1993 the river was closed to fishing. CalTrout played an instrumental role in the recovery efforts of the Upper Sac. When the river opened in 1994 fishing populations were recovering nicely and fishing was reported to be excellent. Fish populations decreased following high flows in the winters of 1996 and 1997, but since then have been steadily on the rise.

### Shasta Springs Trout Camp

CalTrout bought this 40 acre parcel along the river following the spill in 1993 to protect open space along the river corridor. In 2001 the Shasta Springs Trout camp was established as place for CalTrout members to learn about CalTrout conservation activities statewide and to raise public awareness on our efforts to protect wild trout and steelhead and their threatened habitat.



The camp is comfortably equipped with an outdoor kitchen, an ice-cold spring providing potable water, and tents and tent platforms. The camp can accommodate up to six guests only at a time, ensuring light pressure on the miles of adjacent stream.

### Camp Facilities

1. A propane two burner stove
2. Pots, pans, utensils, cups, plates, etc.
3. Propane and white gas lanterns.
4. Campfire with grill.
5. Three 12 foot by 16 foot tent platforms with three tents equipped with two cots each—six sleeping places. The camp can fit more people, but you will need to bring your own sleeping pads and tents for extra guests.
6. Four sleeping bags.
7. A sink with running water—water is drinkable and potable.
8. A water cistern for keeping drinks cool.
9. Chairs and a picnic table.
10. A chemical toilet.

### What to Bring

1. All food and ice, unless previous arrangements have been made.
2. Sleeping bag.

### Questions??

Cell phones work at the camp. Call Curtis Knight at 530-926-3755 or Kristina Kenck at 415-392-8887 with any questions regarding the camp.

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## **DRAFT 2003 Annual Business Meeting Notes**

*California-Nevada Chapter, American Fisheries Society*

*Hyatt Islandia Hotel, San Diego, California, 17 April 2003*

*Editor's Note: The notes are provided here for review by the Chapter membership and are subject to approval by Chapter members at the upcoming Cal-Neva Chapter Business meeting during the Annual Meeting in Redding.*

**Call to order: Chuck Knutson called the meeting to order.**

**Verification of Quorum: Randy Brown verified that a quorum was present.**

**Western Division Report: Tom McMahon:**

- The San Diego meeting went well and handed out certificates of achievement for key workers.
- The 2004 Western Division meeting will be in Salt Lake City.
- There is an upcoming meeting on western native fishes. Roger Bloom, Peter Moyle and Camm Swift are working on the program. If desired, CalNeva can request additional participation on the planning committee.
- Casey Harthorne described the Hutton Program – a high school level mentoring program designed to encourage minorities and women to enter the fish biology field. They are looking for a representative from the chapter to help match mentors with students. Deadline this year for students to apply for the competitive process was March 1 but the Chapter was encouraged to use the upcoming year to put a program in place.
- Tom introduced Gus Rassam, Executive Director of the American Fisheries Society, who spoke a few words to the group about a new system to help track manuscripts. He also mentioned that they now have someone to answer the phones at headquarters and asked anyone with questions to let him know. Finally he congratulated the Division and Chapter for a great meeting.

**President's Report (Chuck Knutson):**

- Lake Davis - Chuck made a prepared statement to the Lake Davis Group in January. This past year they have found pike up to 15 pounds and may need another chemical treatment. Ivan Paulsen, the DFG contact person, will keep Chuck informed and the Chapter will continue to be involved.
- WDAFS/Cal-Neva 2003 meeting summary – Chuck gave some preliminary statistics on the San Diego meeting and concluded that the Division and Chapter would probably recover the meeting costs and there will probably enough left over to provide \$15,000 to the Western Division
- AFS Meeting Attendance – About 264 members attended the meeting and 91 non-members. Sixty-six people registered for the CAERS meeting.
- Application to WDAFS for Chapter of the Year Award.- Larry Brown, with some editorial help, completed and forwarded the application for Chapter of the Year Award.
- The 4<sup>th</sup> World Fisheries Congress will be held in Vancouver, B.C in 2004
- Humboldt Chapter has been involved in Klamath River Fish Kill issue. Thus far CalNeva has not been directly involved but could be in the future.

**President-elect's Report (Jim Steele):**

- Jim is getting ready to kick off planning for the 2004 annual meeting in Redding. Jim will be conference chair and is looking for dates, theme and venue. The Humboldt Chapter will co-sponsor the meeting.

**Past-Presidents Report (Larry Brown):**

- As a result of a lawsuit the USFWS will designate critical habitat for the Santa Ana sucker by February 2004. There is some concern about the effect of the ruling on the ability to consult on projects with sucker issues pending designation of critical habitat.
- Peter Moyle and Shawn Chase are organizing data and information regarding California's lampreys. They are looking for some funding to support this effort and plan to publish a paper describing their findings.

**Treasurer's Report (Amy Harris):**

- Amy reported that it will take some time to get all the income and costs for the meeting together but it didn't look like the Chapter made a profit.
- Amy also presented the proposed 2003-4 budget and asked that it be approved. Dan Logan made a motion that it be approved and the motion, seconded by Marty Brittan, passed with no dissent.
- The group thanked Amy for a great job taking care of meeting finances.

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### **Secretary's Report (Randy Brown):**

- The minutes from the 2002 annual business meeting were distributed to attendees. Larry moved the minutes be approved and Wayne Lifton seconded the motion. The motion passed with no dissent.

### **Membership (Fred Feyrer):**

- Fred announced that we have about 500 members, mostly in California. During the year the Chapter developed a list serve and created, printed and distributed a Chapter brochure. Fred is stepping down from membership chair and Bob Fujimura at DFG will be taking his place.

### **Finance and Website (Wayne Lifton):**

- Wayne will be working to redesign the website and add features, including the voting components.
- He also noted that the site was down for a few days because of the failure to pay a bill. He will work with the treasurer to see that this doesn't happen again.

### **Bylaws and Nominations (Tom Lambert):**

- Tom announced that election results were in: Tina Swanson is the president-elect and Shawn Chase is treasurer.
- He also asked for members to help recruit good candidates for the next election – for president-elect and secretary.

### **Conservation (Ted Frink):**

- Ted described some of the issues the committee worked on during the past year including Delta b2 water allocation, fish passage at the Red Bluff Diversion Dam, management of the Paiute Cutthroat trout and bull trout issues in Nevada. In 2003-04, they expect to be working on FIN, with the Urban Creeks Council, reviewing of legislative bills and the status reports on the threatened Sacramento splittail and delta smelt. Ted encouraged members to submit ideas for issues and to volunteer to help develop them.

### **FIN (Robert Blizard):**

- Bob was not present. Chuck indicated that FIN might want to develop some information about the delta smelt status review.

### **Continuing Education (Kathy Hieb):**

- Kathy described the classes that had been presented over the past year that generated a gross profit of around \$5,000. \$2,000 of that went to the Dry Creek Conservancy, thus the Chapter netted about \$3,000. As the State and federal budgets decline, it is likely that training funds, and class participation, will also decline.

### **Awards (Pat Coulston):**

- Pat announced that the award recipients will be posted on the website. Some of the recipients are:
  - Young scientist –
    - Richard Bush
    - Peter Allen
    - Chris DeWidley
  - For special contributions
    - Jim White
    - Sharon Shiba
    - Fred Feyrer
    - Kathy Hieb
    - Mike Mainz
    - Dave Manning
  - Distinguished Professional Achievement
    - Don Erman
    - Tina Swanson
  - All around good guy and chapter pres
    - Chuck Knutson
  - Conservation Achievement
    - John Merz

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### **Policy and Resolutions (Dan Logan):**

- Dan reported there were no resolutions this past year

### **Time and Place/Local Arrangements (Dave Manning):**

- Dan indicated that he will be stepping down but Tricia Parker (USFWS in Red Bluff) has agreed to serve as local arrangements chair for the Redding meeting.

### **Student subunit (Michele Buckhorn)**

- Michele has agreed to stay on in this slot. The unit now has about 40 members in Davis and will be reaching out to other schools.
- She thought the student social was very good.
- Amy pointed out that Michele designed the grunion run t-shirt. Everyone expressed their thanks.

### **Pisces Newsletter (Chris Wilkinson):**

- Chris now has one issue under his belt and is getting ready for the next one and is looking for contributions. Starting with the next issue, *Pisces* will be web based, although hard copies will be available and the pre-meeting issue will be hard copy. Chris will be starting a new feature called *Notes from the Field*.

**Merchandise Sales (Sharon Shiba):** Sharon was not present. Chuck mentioned that she is looking for new merchandise to sell.

**New Business:** Chuck introduced two items of new business.

- Excellence in scientific journalism. Chuck would like to consider making awards for especially good articles in newspapers. He asked Tom to determine if it would take a change in bylaws to accomplish this.
- An AFS chapter in Mexico. Eric Knudsen has been working with Mexican fish scientists to determine the feasibility of establishing one or more Mexican chapters – all of Mexico is in the Western Division. A meeting is planned for 2005 in La Paz to look into this further. Chuck and Lourdes Ruge are interested in helping in this effort.
- Dave Lentz discussed the need for some movement on the Paiute Trout recovery issue. Most of the environmental work is now completed but the lack of money and initiative is holding up recovery planning. Dave agreed to lead a subcommittee to look into the issue and report back to Ted Frink.

**Old Business:** There was no old business

**Move to adjourn:** The meeting adjourned at 1315 following motion by Wayne, a second by Larry and approval from the group.

## **News Releases and Announcements**

### **DFG Offers Suggestions to Prevent Spread of New Zealand Mud Snails**

**January 13, 2004**

Contacts: Ed Pert, Chief, DFG Inland Fisheries Division, (916) 445-3616; Patrick Foy, DFG Information Officer, (916) 358-2938; Steve Martarano, DFG Office of Public Affairs, (916) 654-5866

The California Department of Fish and Game (DFG) urges anglers throughout California to guard against the unintentional spread of the non-native New Zealand Mud Snails (NZMS). Discovery of NZMS has forced the emergency 120-day closure of Putah Creek in Yolo County to allow studies on the infestation and the best course of action.

In late December 2003, the snails were also discovered in the Mokelumme River, another Central Valley waterway that flows from the Sierra Nevada south of Sacramento. DFG announced the discovery after work crews with the East Bay Municipal Utilities District found the snails on equipment downstream from Camanche Reservoir, east of Lodi. Since 2000, the snails have also been found on the Owens River and Hot Creek in the Eastern Sierra.



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”It is important for anyone who fishes in California or works in our waterways to take precautions to not transport the NZMS,” said Ed Pert, Chief, DFG Inland Fisheries Division. “A major factor in the spread of the NZMS is a lack of awareness by anglers and others in contact with waters infested with NZMS. These snails can survive out of water on wading and fishing gear for extended periods.”

Pert said mud snails can survive up to 25 days if they are in a moist environment, such as inside waders, on muddy wader boots, in live wells or in cooling systems at cool temperatures. DFG suggests that anglers treat their gear with at least one of the following methods to prevent spread of NZMS:

- Spray gear with Clorox Formula 409, and then scrub with stiff-bristled brush to remove all visible snails. Follow the procedure with a careful inspection of waders and gear to ensure the removal of all adults. Finish with a tap water rinse. Snails frequently collect between laces and tongue of wading boots and in the boot’s felt soles.
- Freeze waders six to eight hours. It is best to leave them in the freezer overnight to ensure complete mortality.
- Drying in air temperature over 112 degrees (50 degrees Celsius) for 24 hours will eliminate all mud snails. Alternatively, place gear in water maintained at 130 degrees for five minutes. Mortality of snails varies by exposure to heat and humidity at different combinations.
- NZMS are not the only aquatic invasive species spread by anglers and boaters. Live bait and the packaging used for some forms of live bait are known to spread other invaders. In addition, invasive aquatic plants and animals are known to hitchhike on boats, their propellers, live wells, and fishing gear. Cleaning all boating equipment is crucial to reducing the impacts from non-native invasive species.

DFG biologists and field staff members who conduct studies in the infested areas have received similar instructions to guard against the spreading of NZMS, Pert said.

DFG warns that the snails in Putah Creek have been collected on the banks, well away from the water’s edge. Outdoor enthusiasts and boaters who travel within the riparian areas should also follow the guidelines.

NZMS is a very small snail with the potential of extraordinary population densities – up to approximately a million snails per square meter. Populations in New Zealand are limited naturally by native parasites and predators. In North America, however, there are no natural predators or parasites of the snail and the populations have flourished where introduced. Currently, no method of eradication has been successfully applied to large, open river systems.

Putah Creek began its 120-day closure on Dec. 26, 2003. The Fish and Game Commission ordered the emergency action, which received support from various fly-fishing clubs, to close the popular winter trout fishery from Monticello Dam downstream to, and including, Lake Solano in Yolo County. There are currently no plans to close the Mokelumne River, which is about 40 miles away from Putah Creek.

## **DWR Increases 2004 State Water Project Allocation**

News release, California Department of Water Resources

**January 16, 2004**

SACRAMENTO — The Department of Water Resources today announced an increase in the 2004 allocation for water delivery to the State Water Project Contractors. The increased allocation is 50 percent of the Contractors’ requested amounts, and could continue to increase during the winter months. At this time last year, the allocation was 45 percent. The initial allocation for 2004, announced in December, was 35 percent of requested amounts.

The 50 percent allocation amounts to 2,064,406 acre-feet, distributed among the 29 long-term SWP Contractors who serve more than 20 million Californians and nearly a million acres of irrigated farmland. In addition to this allocation, many SWP Contractors are carrying over water from their 2003 allocation. SWP Contractors benefited from a final 2003 allocation of 90 percent of requested amounts, of which they are continuing to take delivery of about 400,000 acre-feet.

In making this allocation, the Department considered a conservative projection of hydrology, SWP operational constraints, and 2004 contractor requests. SWP Contractors’ Table A water for 2004 totals 4.13 million acre-feet, of which all was requested. Table A water is the maximum contractual amount that SWP Contractors can request each year. The Department will revise the allocation as the year’s hydrologic and water supply conditions develop. A Notice to SWP Contractors appears on the DWR’s State Water Project Analysis Office Web site at: <http://www.swpao.water.ca.gov/notices.html>.

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## Public can Comment on Plan to Recover the Rarest Trout in America

January 26, 2004

Contact: Randi Thompson 775-861-6319

The U.S. Fish and Wildlife Service today released a draft recovery plan for Paiute cutthroat trout (*Oncorhynchus clarki seleniris*), the rarest trout in America. Paiute cutthroat trout are only native to a 9-mile stretch of Silver King Creek, a major tributary to the East Fork of the Carson River located in Alpine County, California in the eastern Sierra mountain range.

The public is invited to review the Plan and provide comments to the Service by 5:00 p.m. March 25, 2004. Comments and material related to the draft recovery plan should be submitted in writing to: Robert Williams, Field Supervisor, Nevada Fish & Wildlife Office, U.S. Fish and Wildlife Service, 1340 Financial Blvd. #234, Reno, Nevada, 89502.

“This fish is a fascinating example of adaptation and evolution,” says Bob Williams, Supervisor for the Nevada Fish & Wildlife Office. “This species was cut off from its family over 5,000 years ago, and it evolved into a distinct trout species by adapting to this remote 9-mile stretch of a creek.”

The Paiute cutthroat trout was listed as endangered under the Endangered Species Act (ESA) in 1970 and subsequently reclassified to threatened in 1975, facilitating management of the species and allowing regulated angling. This draft plan is an update of a recovery plan that the Service first prepared in 1985. The proposed revision incorporates recent research data and addresses the species’ current status, threats, distribution, and recovery needs.

The goal of the ESA is to recover listed species to the point where they are secure, self-sustaining members of their ecosystems and no longer need federal protection. A recovery plan is a blueprint providing guidance for actions by federal, state and other public agencies and private interests that will lead to the recovery and delisting of a species. Recovery plans are advisory only. They do not obligate the expenditure of funds or require that the recommended actions be implemented.

The Service worked with biologists from California Department of Fish & Game and the U.S. Forest Service to develop the proposed revised plan. Key objectives include improving populations of Paiute cutthroat trout in its native habitat, improving the quality of habitat, and eliminating competition from nonnative trout.

One of the challenges in updating the recovery plan was to take into account the impact that recovery actions would have on two rare amphibians that live in the same creek. The Sierra Nevada population of the mountain yellow-legged frog (*Rana muscosa*) and the Yosemite toad (*Bufo canorus*) are both candidates for federal protection.

“This recovery effort will focus on improving the ecosystem,” says Williams. “A healthy stream and riparian corridor will benefit all the species that live there.”

For example, removing self-sustaining nonnative trout is a main objective of the plan that will benefit many native species. Nonnative trout appear to pose a threat to mountain yellow-legged frog. Scientists have found that the frog occurs in areas inhabited by Paiute cutthroat trout, but not in areas inhabited by nonnative Rainbow trout.

While the Paiute cutthroat trout originate from Silver King Creek, they were transplanted to areas outside of their native habitat in the early 1900’s. There currently are four self-sustaining, genetically pure populations of Paiute cutthroat trout. They are found in the North Fork of Cottonwood Creek and Cabin Creek in the Inyo National Forest, and Stairway Creek and Sharktooth Creek in the Sierra National Forest. For anglers, these four areas are remote and not easily accessible, so the best fishing opportunity is at Silver King Creek. This is one reason why California Department of Fish & Game and the Service have made restoration at Silver King Creek a priority.

“We have an opportunity to restore a rare species and create a very unique trout fishery,” says Williams.

The total estimated cost of recovering Paiute cutthroat trout is \$558,000, but actions are advisory only and there is no requirement for the expenditure of funds. The Service expects to initiate delisting of the Paiute cutthroat trout in 2013, if tasks are implemented as recommended and recovery criteria are met.

The draft recovery plan was published in the Federal Register today. The plan is available on line at <http://nevada.fws.gov>, or by calling the U.S. Fish and Wildlife Service’s Nevada Fish & Wildlife Office at 775-861-6300. Copies can also be obtained at the Nevada Department of Wildlife, or at U.S. Fish and Wildlife Service at 1340 Financial Blvd. #234, Reno. Comments will be taken until March 25, 2004 date.

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## State Study Finds Delta Water Project Technically Feasible Water Storage and Supply Project Advances Within CALFED Bay-Delta Program

February 4, 2004

Contact: Fiona Hutton, Red Gate Communications, (818) 508-1986

**Sacramento, CA** – One of California’s critically needed water storage and supply projects advanced another step forward today as state agencies studying the In-Delta Storage Project, an innovative plan to store water in the Sacramento-San Joaquin Delta, announced the project is technically feasible and can provide significant statewide benefits.

With water demand rapidly rising and regulatory and environmental constraints further straining existing water resources, California’s elected officials, water industry and business community have placed a high priority on expanding and improving California’s water infrastructure, calling construction of new water storage facilities and development of new water supplies critical components to ensuring the state’s continued economic viability. Recent additional restrictions along the Colorado River, one of California’s major water sources, further jeopardize the state’s water supply for people, farms and business. Therefore, every effort must be made to create new water supplies and efficiently store surpluses when available.

The California Bay-Delta Authority (“CBDA”), a consortium of federal and state agencies charged with managing water supplies and ecosystems within the Sacramento-San Joaquin Delta, is currently studying a short list of proposed water storage and supply projects, including the In-Delta Storage Project, for potential construction and implementation. Today’s announcement is an important step forward for the state and the water industry at large as any real progress in constructing new surface water storage facilities has yet to materialize, despite the constant calls for action. All other proposed storage projects are at very preliminary phases of investigation. To date, the In-Delta Storage Project is the only proposed water storage and supply project to have been determined technically feasible.

CBDA and the California Department of Water Resources (“DWR”), with technical assistance from the U.S. Bureau of Reclamation, conducted a state feasibility study of the In-Delta Storage Project during the past year. The report concluded that the project is technically feasible, will provide significant statewide benefits and can be built safely. The study evaluated project operations, water quality, engineering, environmental and economic issues. The study’s engineering design and risk analyses were peer reviewed and endorsed by DWR’s independent panel of renowned water and engineering experts.

“We are very pleased with the findings of CALFED’s much anticipated study,” said Andy Moran, general manager for the Delta Wetlands Project. “The state’s study has demonstrated that we can safely construct a water project that will provide a new source of high quality water for California’s thirsty residents and businesses, provide critically needed new storage capacity, and protect and enhance the environment.”

“Recognizing state’s current fiscal constraints, the In-Delta Storage Project presents the California Bay-Delta Authority with their best opportunity to move beyond studies and actually implement a new surface water storage project,” added Moran.

“The In-Delta Storage Project could provide a variety of benefits and contribute to meeting each of CalFed’s four objectives for water supply reliability, water quality, ecosystem restoration and levee system integrity.” (Source: DWR’s Draft Executive Summary, In-Delta Storage Program State Feasibility Study, January 2004)

According to the state feasibility study, the In-Delta Storage Project could:

- Ø *Provide additional, new water supplies for urban and agricultural interests. Per operating agreements with urban water agencies, the project will comply and even exceed all existing drinking water quality standards for the Delta.*
- Ø *Provide 217,000 acre-feet of new storage capacity, able to capture and store excess water (typically during storms or other events that produce large flows through the Delta) and also releases from overflowing upstream reservoirs that would otherwise be lost.*
- Ø *Provide water to support CalFed’s Environmental Water Account, protecting fish at sensitive times and ensuring deliveries to water users are not impacted.*
- Ø *Improve operational flexibility of the state and federal projects.*
- Ø *Improve Delta water quality (i.e. salinity), by releasing fresh water into the Delta in a timely and flexible manner.*
- Ø *Provide temporary storage for water transfers, aiding state water users who have not had enough storage opportunities.*
- Ø *Improve quality and availability of habitat for fish and other wildlife living in the Bay-Delta eco-system.*
- Ø *Provide additional water to support CalFed’s Ecosystem Restoration Program and federal wildlife refuges.*
- Ø *Reduce risk of regional flood damage, diverting water onto the reservoir islands during high flow season and lowering water in adjoining channels.*
- Ø *Improve seismic stability of existing levees, reducing the risk of levee failure and associated saltwater intrusion from the*

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*San Francisco Bay.*

- Ø *Benefit state and federal projects by helping meet Delta water quality standards, adding water into the system that the projects would otherwise have to provide.*
- Ø *Provide regional recreational benefits.*
- Ø *Be built safely. The project will meet all state and federal criteria for safety and risk factors, ensuring protection of neighboring properties.*

After a 30-day public review and comment period, a final state feasibility study will be issued for public review. It is anticipated that some additional economic and environmental studies will be required in 2004 before any final decision on implementation can be made.

The Delta Wetlands Project is supported by a broad coalition, including the California Chamber of Commerce, California Business Properties Association, California Business Roundtable, California Building Industry Association, Silicon Valley Manufacturers Group, and California Council for Environmental and Economic Balance, who have called for its timely implementation.

Located in the Sacramento-San Joaquin Delta and straddling San Joaquin and Contra Costa counties, the project involves four Delta islands. After years of farming and subsidence, the islands' land elevations are now below sea level. By fortifying the surrounding levee systems, the project will be able to store significant amounts of water on two of the islands, forming a greatly needed new surface water storage facility. The reservoir islands will be able to capture water when it is available (typically during storms or other events that produce large flows through the Delta), for later use when water is scarce.

Nine thousand acres on the two remaining islands will be set aside permanently as wetland and wildlife habitat, forming a mosaic of seasonal and permanent wetlands, riparian woodland zones, ponds and lakes, and open grassland areas. The habitat islands will provide extremely valuable wetland and wildlife benefits to the Delta, supporting a wide variety of species, including listed and endangered plants and animals and migratory waterfowl. In addition, a significant level of farming activity will be integrated into the habitat plan, preserving much of the history and character of the area.

Delta Wetlands has successfully completed an exhaustive fifteen-year environmental review process, receiving all necessary approvals from nearly a dozen state and federal agencies. The CBDA is currently in the final stages of studying the In-Delta Storage Project for potential acquisition.

For more information on the In-Delta Storage Project or to learn what other supporters are saying about the project, please visit its web site at [www.deltawetlands.com](http://www.deltawetlands.com).

## **Fish and Game Commission Accepts Coho Salmon Recovery Strategy and Proceeds with Listing Coho Salmon**

**February 5, 2004**

Contacts: Stephanie Tom Coupe, DFG Staff Counsel, (916) 654-3830; Gail Newton, Program Manager, (916) 327-8841

The California Fish and Game Commission approved the Department of Fish and Game's (DFG) Coho Salmon Recovery Strategy at a special session on Wednesday, and then proceeded with the process for listing coho salmon. In late August 2002, the Commission made the finding that populations of coho salmon from San Francisco to Punta Gorda in Humboldt County warranted listing as an endangered species under the California Endangered Species Act. In addition, the Commission found that the populations of coho salmon from Punta Gorda north to the Oregon border warranted listing as a threatened species. At that time, the Commission directed DFG to prepare a recovery strategy for coho salmon, and delayed the regulatory action by which coho would be added to the endangered species list while DFG prepared the recovery strategy.

DFG developed the Coho Salmon Recovery Strategy with a variety of stakeholders and constituents. The Coho Salmon Recovery Strategy provides a blueprint for the recovery of coho salmon in California, helping to revive struggling coho populations and restore their habitat. Ultimately, the implementation of the Recovery Strategy will lead to the removal of coho salmon from the California Endangered Species List as well as lead to the restoration of tribal, commercial, and recreational coho salmon fisheries.

"The success of this recovery strategy depends on the long-term commitment of us all," said DFG Director Ryan Brodrick. DFG worked with two recovery teams - a statewide team, and a local team focusing on agricultural water and land uses in the Shasta and Scott river valleys in Siskiyou County. These teams are composed of representatives of a variety of interests including landowners, environmental organizations, commercial and recreational fishing, and tribal, federal, state, and local governments. The Recovery Strategy is complex and lengthy, containing 13 chapters in over 700 pages of text encompassing more than 750 recommendations with more than 1,000 recovery tasks.

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## **Fisheries Research Website Now Available for Tracy Fish Collection Facility**

**February 17, 2004**

Contact: Peter Soeth (303) 445-3615, Jeffrey McCracken (916) 978-5100

The Bureau of Reclamation has developed a new research Web site for the Tracy Fish Collection Facility. This Web site describes research being performed for the Central Valley Project Improvement Act and has broad applications for fishery protection at large water diversions in the South Delta region of California. The Web site provides the public and cooperating agencies access to unique research data specifically devoted to the development of fish protection techniques and the latest technology used in fish research. Besides providing general information, the Web site provides links to collaborating agencies, peer-reviewed technical reports, and photos of program activities at the Tracy facility, the Denver Research Laboratories, and the Red Bluff Research Pumping Plant. Summary reports from all facilities can be viewed and downloaded as Adobe Acrobat PDF files. Water quality data, collected every 30 minutes from a probe installed in the intake channel of the Tracy Facility, is also available for download.

The Web site address is: [http://www.usbr.gov/pmts/tech\\_services/tracy\\_research/](http://www.usbr.gov/pmts/tech_services/tracy_research/). For questions, please contact Mr. Doug Craft, Research Chemist, Reclamation's Denver Office, (303) 445-2182.

Reclamation is the largest wholesale water supplier and the second largest producer of hydroelectric power in the United States, with operations and facilities in the 17 Western States. Its facilities also provide substantial flood control, recreation, and fish and wildlife benefits.

## **DFG Adopts Strategic Plan for Trout Management**

**February 18, 2004**

Contacts: Ed Pert, Chief, Fisheries Programs Branch, (916) 445-3616; Dave Lentz, Fisheries Programs Branch, (916) 445-3773; Troy Swauger, Office of Public Affairs, (916) 654-2096

The Department of Fish and Game (DFG) announced it has completed and adopted its Strategic Plan for Trout Management, a blueprint for the next decade that establishes broad, statewide direction for California's plentiful trout fisheries.

"The Strategic Plan for Trout Management identifies key overarching issues and concerns regarding the future of trout resources and fisheries in California," said Ed Pert, DFG's Chief of Fisheries Programs Branch. "This plan represents the initial phase of trout management planning for the next 10 to 15 years and beyond."

The 42-page document, which was completed in November and recently approved, presents management strategies and organizational goals on a statewide level. DFG trout experts will next develop an implementation plan that will better identify the number and species of trout and salmon within defined watersheds, and then establish priorities that draw from historic plans and include the new strategic outline.

DFG estimates there are more than 1 million licensed anglers who enjoy trout fishing in the state. The Strategic Plan focused around two themes that reflect DFG's general mission:

- Habitat and native species protection and management;
- Public use and availability, including recreational angling.

The management plan is available on DFG's Website, [www.dfg.ca.gov/fishing/index.html](http://www.dfg.ca.gov/fishing/index.html). The document is available for viewing at the Department's Fisheries Program Branch, 1812 Ninth St., Sacramento.

The scope of the plan includes all species and subspecies of resident (non-anadromous) forms of salmonids including landlocked forms of steelhead, coastal cutthroat trout, and inland salmon. Presently, California has 11 native forms of trout and three non-native species.

The plan is the result of participation by focus groups, special interest groups, and hundreds of individuals. DFG conducted public meetings throughout the state to gain input during the earliest stages of planning in 1999. The state's major trout fishing organizations contributed to all phases of the plan's development, Pert said.

"We have developed a plan that calls for an ecosystem (watershed) approach and includes strategies that recognize interactions between trout and other aquatic species," Pert said. "This approach is consistent with an ecosystem management strategy established by the DFG's overall strategic plan."

Strategies include how to maintain and enhance diverse trout angling opportunities; how to improve the effectiveness and efficiency of stocking hatchery-produced trout; and protecting and restoring cold-water ecosystems.

To guide the next phase, the implementation plan, the DFG Fisheries Program Branch will again work with trout fishing groups and others to develop the best trout management plans for specific waterways.

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## **Cordell Bank Will Close to Most Recreational Bottom Fishing For Remainder of 2004**

**February 23, 2004**

Contacts: Tom Barnes, Marine Region, (858) 546-7167; Carrie Wilson, Marine Region, (831) 649-7191

The California Department of Fish and Game (DFG) and National Marine Fisheries Service (NOAA) announced today that as of March 1 recreational fishing on Cordell Bank (off Marin County) will close for rockfish, lingcod, and associated species. This action is necessary to help reduce incidental landings of canary rockfish and other overfished bottom-dwelling fish species.

Cordell Bank habitat supports a large population of many species of rockfish. In particular, the bank has been identified by the Pacific Fishery Management Council's Groundfish Management Team (GMT) as a "hot spot" for canary rockfish and other overfished groundfish where catch rates of these species can be high. Since it is not possible to specifically target some rockfish species to the exclusion of others, recreational fishing will be closed at all times for rockfish, lingcod, cabezon, greenlings, California scorpionfish, California sheephead, and ocean whitefish.

This is not a new closure. In 2003, Cordell Bank was also closed as fishing was allowed only in waters less than 20 fathoms (120 feet) in depth, which effectively prohibited fishing there because the Cordell Bank does not rise above 20 fathoms. For 2004, however, the allowable nearshore fishing depth was increased to 30 fathoms (180 feet) during six months of the year. Because areas of the Cordell Bank are shallower than 30 fathoms, a special closure for this area must now be implemented to prevent excessive catches of canary rockfish, lingcod and several other overfished groundfish that would likely occur if the area remains open. Without this action, scientists predict that anglers may reach fishing quotas for canary rockfish early, which would then trigger early season fishing closures along the Central California coast.

The primary fishing ports that are within travel distance to Cordell Bank are Bodega Bay and the San Francisco Bay Area. Numerous other nearshore fishing grounds along the mainland coast and around the Farallon Islands will remain open during 2004 and are accessible from both of these port areas, providing an alternative to fishing trips that otherwise might have been directed to Cordell Bank. Fishing opportunities for salmon, sanddabs, crabs, and other species will remain open in this area.

A similar action for commercial fisheries will be considered through the normal in-season management process at the next meeting of the Pacific Fishery Management Council.

## **DWR Announces Availability of a New Web-Based Interface for the Bay-Delta and Tributaries Cooperative Data Management System**

**February 26, 2004**

Contacts: Karl Jacobs ([kjacobs@water.ca.gov](mailto:kjacobs@water.ca.gov)), Division of Environmental Services, (916) 227-7529; Don Strickland ([donalds@water.ca.gov](mailto:donalds@water.ca.gov)), Information Officer, (916) 657-4469

Sacramento - The Department of Water Resources, as a member of the Bay-Delta Science Consortium, announces the availability of the newest web-based user interface to obtain data from the Bay-Delta and Tributaries Cooperative Data Management System.

The new interface is intended to ease the sharing of data that will facilitate the development of a comprehensive understanding of the status, trends, and environmental processes and mechanisms in Central California, and help guide adaptive management of natural resources in the estuary and watershed. This interface was developed in response to data user specifications that were obtained from workshops and other forums on the features the new interface should have. You can gain access to the new interface at: <http://baydelta.ca.gov/>.

The new interface was developed as a project under the San Francisco Bay-Delta Science Consortium which is an organization composed of 15 government, university, and private institutions that have joined forces to share scientific information and resources on the aquatic ecosystem of the San Francisco Bay-Delta Estuary and its associated watersheds. Additional information on the Bay-Delta Science Consortium can be found at: <http://www.baydeltaconsortium.org/>

The Bay Delta and Tributaries Cooperative Data Management System provides data organization and distribution services for water resources-related information through collaborative efforts at local, State, and national levels. Over 50 organizations contribute data voluntarily to this project. The database includes biological, water quality, and meteorological data. Several dozen local databases at Federal, State, county, municipal, university, and private sector locations have already been successfully developed, implemented, and linked through the BDAT project. Additional information on the BDAT Cooperative Data Management System can be found at: <http://www.baydeltaconsortium.org/projects/data>.

## **State Pilot Project in Mono County to Explore Feasibility of Non-Profit Foundation to Provide Critical Hatchery Support**

**February 27, 2004**

Contacts: Michael Haynie, DFG Supervising Biologist, (760) 872-1133; Steve Martarano, DFG Office of Public Affairs, (916) 654-5866

In an effort to pump needed financial support into California's hatchery program, the Department of Fish and Game (DFG) is taking the

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first steps towards starting a unique and diverse partnership in Mono County to assist the critically important Hot Creek Hatchery, said DFG Director Ryan Brodrick.

DFG and Eastern Sierra-Inland Deserts Region Manager Curt Taucher, Mono County business leaders, and Mike Chrisman, Secretary of the state's Resources Agency, have joined together to look at the feasibility of creating a non-profit foundation that would seek creative funding to assist the Hot Creek Hatchery. The hope is for the foundation to serve as a template for similar efforts throughout the state's hatchery system, Brodrick said.

"We realize the importance these hatcheries have in supporting recreational opportunities in local communities, and we're committed to the concept of fast-tracking this idea and having the agreement finalized by the beginning of the 2004-05 fiscal year," Brodrick said, noting that legal and other logistical issues need to be resolved before the foundation can begin to accept financial support from outside entities. "This effort is the result of concerned citizens and Mono County coming to Secretary Chrisman and myself with a long-term, workable, potentially viable financial plan that communities throughout the state will be able to consider."

DFG currently operates 14 trout hatcheries statewide, which produces and stocks a total of 5.4 million fingerling, 1.4 million sub-catchable, and 7.4 million catchable-sized trout every year. The eight salmon and steelhead hatcheries produce 34 million Chinook salmon, 600,000 coho salmon, and 2.7 million steelhead annually. The overall hatchery program has suffered a budget cut of about \$2.6 million since the 2002-03 fiscal year, plus the loss of 44 total positions, which includes 27 permanent employees lost through attrition. The cuts have resulted in the pending closure of Mad River Salmon and Steelhead Hatchery in Humboldt County, and possible closures of the Merced River Salmon, Mojave River Trout and Hot Creek hatcheries.

Mono County last year generated alternative funding to keep operations at Hot Creek functioning at needed levels. In 2003, the county and city of Mammoth Lakes came up with \$25,000, which allowed about a half-dozen seasonal workers to continue stocking fish throughout the fall.

The foundation as proposed would be run by a five-person board consisting of DFG, Mono County, business, and industry representatives. The board would determine operation direction for the Hot Creek Hatchery.

For more information on DFG's hatchery program, go to <http://www.dfg.ca.gov/lands/fish1.html>

## **Department of Fish and Game 2004 Sport Fishing Regulations Now Available Online**

**March 3, 2004**

Contacts: DFG Marine Region, (831) 649-7191 or (831) 649-2804; Office of Public Affairs, (916) 653-6420

The 2004 California Sport Fishing Regulation booklets are currently available online, the California Department of Fish and Game (DFG) has announced. Both the Ocean Sport Fishing and the Freshwater Sport Fishing booklets, delayed this year because of budget constraints, are also scheduled to be printed and available by late March.

Beginning in 2002, the yearly regulation booklets have been split into two versions - one for freshwater, and one for ocean fishing. The Ocean Sport Fishing booklet is accessible on the Internet at [www.dfg.ca.gov/mrd/sportfishing\\_regs2004.html](http://www.dfg.ca.gov/mrd/sportfishing_regs2004.html). The Freshwater Sport Fishing booklet is available at [www.dfg.ca.gov/fg\\_comm/2004/freshfishregbook04.pdf](http://www.dfg.ca.gov/fg_comm/2004/freshfishregbook04.pdf).

Both freshwater and saltwater anglers may be interested in information about the recently implemented Bay-Delta Sport Fishing Enhancement Stamp, which is new for 2004. An online map of the area covered by this new stamp may be found at [www.dfg.ca.gov/fg\\_comm/2004/bdsfes\\_map.pdf](http://www.dfg.ca.gov/fg_comm/2004/bdsfes_map.pdf).

A clickable online fishing map is also available that gives saltwater regulations information by area. By clicking on the specific fishing area of interest, anglers will receive current saltwater sport fishing opportunities for that area in an easy-to-understand format. The clickable map can be found at [www.dfg.ca.gov/mrd/fishing\\_map.html](http://www.dfg.ca.gov/mrd/fishing_map.html).

## **American Rivers-NOAA Community-Based Restoration Program Partnership Now Accepting Proposals for River Restoration Grants**

American Rivers is seeking proposals for community-based river restoration grants as part of its partnership with the National Oceanic and Atmospheric Administration (NOAA) Community-Based Restoration Program. These grants are designed to provide support for local communities that are utilizing dam removal or fish passage to restore and protect the ecological integrity of their rivers and improve freshwater habitats important to migratory (anadromous) fish. Grants will be limited to projects in the Northeast, Mid-Atlantic, and California.

Eligible groups will demonstrate how their project: (1) will successfully restore anadromous fish habitat, access to existing anadromous fish habitat, or natural riverine functions; (2) is the correct approach, based on ecological, social, economic, and engineering considerations; (3) will minimize any identifiable short- or long-term negative impacts to the river system as a result of the project; (4) has had community involvement in project decision making and may have community involvement in the implementation; and (5)

will have the potential for public outreach and education. Successful applicants will be given non-renewable grants to assist in the technical application of fish passage or dam removal.

Applications are currently being accepted for the second cycle of fiscal year 2004 with a deadline of April 1, 2004. Applications for projects need to be postmarked by the deadline for consideration for the funding cycle. Potential applicants should contact American Rivers to discuss potential projects prior to submitting an application.

For a complete application and eligibility guidelines, please go to the American Rivers web site [www.amrivers.org](http://www.amrivers.org) or contact us at the address below. For more information on the NOAA Community-Based Restoration Program and its partners, please visit [www.nmfs.noaa.gov/habitat/restoration/community/index.html](http://www.nmfs.noaa.gov/habitat/restoration/community/index.html).

Contact:  
Peter Raabe  
River Restoration Finance Associate  
American Rivers  
1025 Vermont Avenue, NW  
Suite 720  
Washington, DC 20005  
Email: [rivergrants@amrivers.org](mailto:rivergrants@amrivers.org)

## Notes from the Field

Since it began a year ago, this column has provided chapter members with articles on the life of David Starr Jordan (Vol. 32, Number 2), steelhead trout in San Mateo Creek (Vol. 32, Number 3), and invasive New Zealand mudsnails and zebra mussels (Vol. 32, Number 4). *Notes from the Field* is a column for you, the Cal-Neva membership, to share information with other members. So, please take a few minutes to share a story, a picture, a poem, an essay, or an opinion with your colleagues by sending it to the Newsletter Editor, Chris Wilkinson, at [cdw@water.ca.gov](mailto:cdw@water.ca.gov). Text should be no longer than 8 pages, double-spaced, and files should be 6 MB or smaller. The deadline for the next issue of *Pisces* is June 1, 2004.

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## 2003–2004 Cal-Neva Chapter Executive Committee

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**AMERICAN FISHERIES SOCIETY  
CALIFORNIA-NEVADA AND HUMBOLDT CHAPTERS  
SYMPOSIUM AND 38<sup>TH</sup> ANNUAL MEETING**

***“Understanding, Protecting, and Enjoying California's Fishes  
From the Sierra to the Sea”***

**April 22, 23, and 24, 2004  
Red Lion Inn, 1830 Hilltop Drive, Redding, California 96002**

Name (as you want your name badge to read): \_\_\_\_\_

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Address: \_\_\_\_\_

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**Please Check the Appropriate Boxes:**

- I am presenting a (circle one) paper / poster / both
- I am a student presenter and would like to be included in the student paper / poster competition
- I am a student interested in volunteering to defray my registration costs. Contact Kimberly Rich, [ksm6@humboldt.edu](mailto:ksm6@humboldt.edu)

**ALL SYMPOSIUM PRESENTERS MUST REGISTER FOR THE SYMPOSIUM  
ALL TECHNICAL SESSION PRESENTERS MUST REGISTER FOR THE MEETING**

	<b>Symposium: April 22</b>		<b>Annual Meeting: April 23 and 24</b>	
	Postmarked by March 26:	Late and On-site registration	Postmarked by March 26:	Late and On-site registration
AFS Member	70	95	160	200
Non-member	90	115	185	225
Student	30	55	50	90
Retired	50	75	110	150

Symposium subtotal: \$ \_\_\_\_\_ Please specify preference

Annual Meeting subtotal (includes Welcoming Social and Banquet): \$ \_\_\_\_\_ for banquet entrée

Extra Banquet ticket (\$35): \$ \_\_\_\_\_ (circle one)

Extra Welcoming Social ticket (\$35) \$ \_\_\_\_\_ Beef / Fish\* / Vegetarian

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**Payment can be made by check (payable to CAL-NEVA AFS) or credit card.**

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**Mail completed form and registration fees to Shawn Chase, PO Box 11628, Santa Rosa, CA 95406. (707) 547-1986, [shawnc@scwa.ca.gov](mailto:shawnc@scwa.ca.gov).**

**Refund Policy: 80% refund if notified by email ([shawnc@scwa.ca.gov](mailto:shawnc@scwa.ca.gov)) by March 26. After March 26, refunds will be given for hardship cases only at the discretion of the Executive Committee.**