



The Tributary



A Newsletter of the Western Division, American Fisheries Society

Volume 26, No. 3, October 2002

Second Call for Papers for the 2003 Western Division Annual Meeting in San Diego

"Productive Pacific Ecosystems: Lake, Stream, Estuarine, and Marine Environments from Alaska to Baja"

2003 Annual Meeting of the
Western Division and Cal-Neva Chapter of the
American Fisheries Society
Hyatt-Islandia Hotel, San Diego, California
April 14-17, 2003

The 2003 Annual Meeting of the Western Division of the American Fisheries Society will be held in beautiful, sunny San Diego, CA from Monday, April 14 through Thursday, April 17, 2003. The conference is being co-hosted and co-convened by the California-Nevada Chapter and the Western Division of AFS. The San Diego meeting location presents a unique opportunity to provide a forum for various marine and estuarine fisheries investigations and International (Mexico and Pacific Rim) fisheries management issues and concerns. However, symposia, contributed papers, and posters pertaining to inland freshwater fisheries issues are certainly welcome and highly encouraged. Our goal is to provide a forum for all topics of interest to the Western Division and the California-Nevada Chapter...not to mention the beaches, warm temperatures, and nearby activities (anybody up for some deep-sea fishing or dive trips??) for all members of the family.

The host hotel is the spacious Hyatt Islandia Hotel on Mission Bay, right next to Sea World. Scheduled events for this southern California meeting already include, but are certainly not limited to: Monday - Continuing Education classes, featuring the very popular "AFS Leadership Training" with Carl Burger and team; Tuesday - a top-notch Plenary Session on "Global Fisheries Sustainability" followed by various symposia and contributed papers; Wednesday - a full day of symposia and contributed papers followed by a fun-filled evening social at the Scripps Institute-Birch Aquarium; and Thursday - another full day of contributed papers, culminating with our Aloha Social that evening.

A series of Symposia and Technical Sessions that will provide participants an opportunity to share information on a broad range of topics related to the management of many of the Pacific's Ecosystems are being planned. The following is a sample of Symposia proposals already submitted...

- 1) Ocean Ecology of Pacific Salmon
- 2) Reservoir Fisheries Management
- 3) Biology and Management of Native and Exotic Freshwater Fish, Amphibians, and Aquatic Reptiles in Coastal Southern California and Northern Baja California
- 4) Interactions of Hatchery and Wild Fishes in Marine and Estuarine Environments

- 5) Defining Pelagic Fish Habitat; Electronic Tags and the Ecology of Pelagic Fishes

And here is a list of additional Symposia/ Contributed Papers we hope to receive proposals for...

- Marine Protected Areas: Management & Science
- Sharks
- Ecosystem-based Freshwater Fish Management
- Conflicting Demands for Water in the Southwest
- Connecting Benthic Habitat Mapping with Fisheries Production
- *Oncorhynchus* at Environmental Extremes
- Trends in Pacific Groundfish Stocks
- Research and Management of the Eastern Pacific Tuna Fishery
- Fisheries Science and Public Outreach
- Inland Freshwater Fisheries Management
- Watershed Restoration: Lakes, Streams, and Western Impoundments
- Genetics and the Conservation of Listed Fishes
- Pacific Shellfish Management
- Mexican Fishes and Fisheries Management
- Estuarine Restoration
- Sport Fish Restoration - Marine and Freshwater
- Natural History Collections and Rare Native Fish

(continued on page 4)

The Tributary is distributed to 3,615 WDAFS members and exists as a forum to present fisheries-related information. The editor is Mary Whalen. If you have information you would like to have included in **The Tributary**, please contact us at;

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Submissions for the next issue of **The Tributary** are due by December 30, 2002.

WDAFS on the web: <http://www.fisheries.org/wd/>

President's Message

I believe that the Western Division (WDAFS) is one of the most potent and productive subunits of AFS. Recent history has shown that the members and the Chapters in the Western Division are among



the most active and effective in the Society. As a Society, we have done an outstanding job of promoting professionalism and scientific excellence. Our ability to publish and disseminate scientific research and technical information is unsurpassed. These activities have provided fisheries scientists,

fisheries managers, and others with the best tools and information available for managing fisheries and the habitats upon which they depend. Nevertheless, the integrity of aquatic resources throughout west has declined dramatically over the past few decades. Therefore, it is apparent that scientific information and professional excellence alone are not sufficient to assure the future of our shared fisheries resources. In addition, we need to become more effective in the shaping of public opinion and public policy. With this in mind, the Executive Committee of the WDAFS has developed a program of work for the coming year that focusses on three major goals, as identified in the AFS Strategic Plan, including:

- Promote Aquatic Stewardship;
- Provide Excellent Member Services.
- Provide Leadership in Information Transfer and Outreach; and,

Aquatic Stewardship

To be more effective in the public policy arena, we need to enhance dialogue and provide leadership on the key issues that are currently influencing the sustainability of fisheries and aquatic resources. Some of the key initiatives that we will implement to promote effective aquatic stewardship over the coming year and beyond include:

- Charging a number of Standing and Special Committees to address key aquatic stewardship issues in western North America, including the Bull Trout Committee, Environmental Concerns Committee, Fisheries Sustainability Committee, Riparian and Watersheds Committee, Policy Review Committee, and Western Native Fishes Committee;
- Conducting a critical review of the National Research Council's scientific evaluation of the biological opinions on listed fishes in the Klamath River Basin;
- Conducting a critical evaluation of the bull trout critical habitat rule that has been proposed by U.S. Fish and Wildlife Service for the Klamath River and Columbia River distinct population segments;
- Evaluating the status of native fishes in western

North America, including collating published data and information, convening a Symposium on this topic at our 2004 Annual Meeting in Salt Lake City, and, implementing a survey of fisheries professionals in western states and provinces;

- Continuing to facilitate a transition toward ecosystem-based management in the Columbia River by following-up on key recommendations that emerged from the 2002 Annual Meeting of WDAFS (Toward Ecosystem-Based Management in the Columbia River Basin and Beyond);
- Completing and publishing the results of the Symposium on Fisheries Sustainability that was convened in conjunction with the 2001 Annual Meeting of WDAFS;
- Supporting the preparation and publication of a peer-reviewed book on ecosystem-based management in the Okanagan River Basin; and,
- Supporting appropriate projects that advance aquatic stewardship in western North America through the WDAFS Grants Funding Program.

Member Services

The strength of the WDAFS is in its members. Therefore, it is incumbent upon us to meet the needs of our members if we are to maintain and enhance the relevance of our organization. Accordingly, we will implement a number of key initiatives to support our members in 2002/2003, including:

- Convening the Annual Meeting of WDAFS in San Diego, CA during April 14 to 17, 2003 (Productive Aquatic Ecosystems: Lake, Stream, Estuarine, and Marine Environments from Alaska to Baja);
- Encouraging members to organize symposia and technical sessions for the 2003 WDAFS Annual Meeting to address topics of concern within the geographic area encompassing the Western Division;
- Providing members with abundant opportunities to share information and refine their communication skills by presenting papers and posters at the 2003 Annual Meeting;
- Offering an array of continuing education opportunities to members during the 2003 Annual Meeting, including convening a Leadership Principles Workshop in conjunction with the Annual Meeting;
- Enhancing student access to WDAFS and Parent Society Meetings by providing funding through WDAFS's Eugene Maughan Scholarship Fund, Sustainable Fisheries Foundation's William Trachtenburg Scholarship Fund, volunteer opportunities at the 2003 Annual Meeting, and other means;
- Providing opportunities for Mexican and Canadian members to participate activities in WDAFS activities, including the 2003 Annual Meeting; and,
- Providing timely access to information relevant

to WDAFS members through delivery of the Tributary, further development of the WDAFS Web Site, and application of the WDAFS List Server.

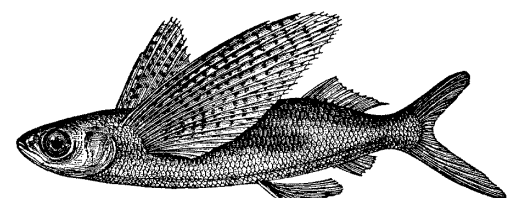
Information Transfer and Outreach

The members of WDAFS are recognized by decision-makers and natural resource professionals as essential sources of science-based information regarding the conservation, management, and sustainable development of fisheries and aquatic ecosystems. Some of the key initiatives that we will implement over the coming year and beyond to facilitate information transfer and outreach include:

- Maintaining and further developing partnerships with organizations that share our concern about the future of fisheries and aquatic resources in western North America;
- Further improving the visibility of WDAFS as a scientific organization and information source;
- Further developing the our Web Site to provide timely access to science-based fisheries and aquatic resource management information;
- Actively supporting and further developing the Hutton program to provide opportunities disadvantaged high school students to participate in the fisheries and aquatic ecosystem programs;
- Participating actively in the development of public policy on key issues affecting fish, fisheries, and aquatic ecosystems in North America;
- Educating the public about key fisheries and ecosystem management issues (for example, by supporting the development of a documentary on inland cutthroat trout).

As you can see, the foregoing program of work provides a very ambitious agenda for the coming year and beyond. Achieving these objectives will require active participation by WDAFS members throughout the Division. I want to thank all of you who have already applied to serve on various WDAFS Committees. But if you haven't, I'd like to take this opportunity to encourage you to join you colleagues on one or more of our WDAFS Committees (send me an email at sff@island.net). Your collective hard work and commitment will ensure that the WDAFS will continue to be recognized as one of the most respected and effective organizations addressing fisheries and aquatic resource management issues in western North America. I'm looking forward to working with you over the coming year!

Don MacDonald
250-729-9623
sff@island.net



WDAFS Committees

Here are the committee chairs for 2002-2003. If you would like to volunteer to help on any of these committees, please contact the chairs listed below.

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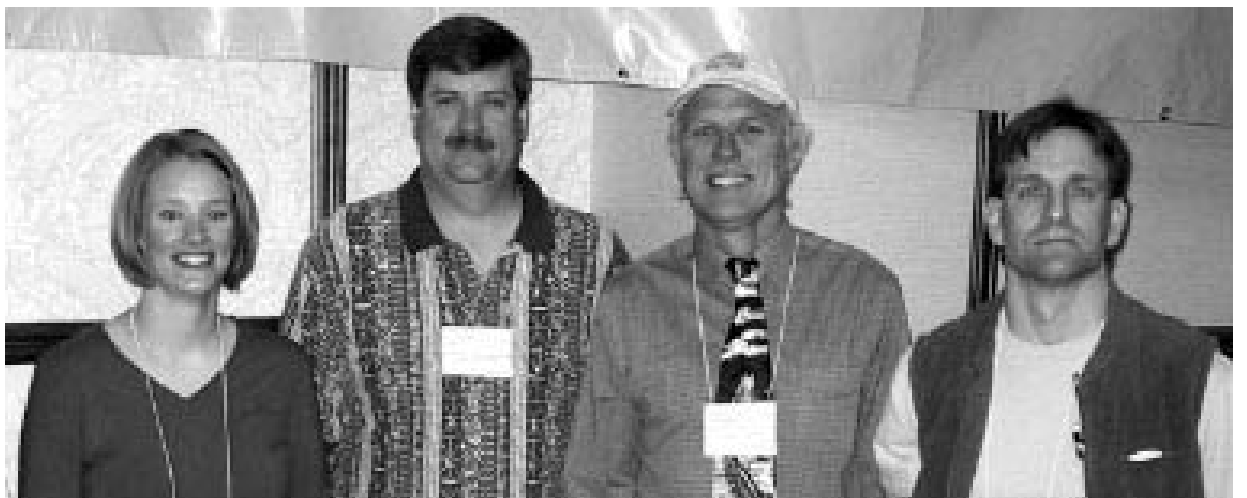
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From left to right - Monica Hiner, Secretary/Treasurer; Tom McMahon, President-Elect; Eric Knudsen, Past President; Don MacDonald, President.

2003 WDAFS Annual Meeting (cont.)

Symposia

Proposals for symposia from individuals or groups should be related to the conference theme or otherwise be of particular interest to Division and Chapter members. Symposia organizers are responsible for recruiting speakers, soliciting their abstracts, and submitting speaker abstracts as one packet. Symposia may be ½ day to 1½ days long. The Program Committee will review all symposium proposals and notify organizers of acceptance or refusal. Final deadline for symposia proposals is November 1, 2002 (Note - all Abstracts for accepted symposia will be due January 17, 2003). Symposium proposals must include the following:

1. A brief but descriptive title.
2. Name, addresses, telephone and FAX numbers, and e-mail addresses for all organizers. Primary contact person responsible for organization must be clearly identified.
3. A brief (300 words or less) description of topic and objective of the symposium.
4. Proposed format description; e.g., full-day session with 15 speakers followed by a 2-hr panel discussion, a 2-hr session with 5 speakers.
5. An identified moderator.
6. A list of anticipated audiovisual requirements and other facility requirements (special seating arrangements, panelist accommodations).

NOTE: All presenters (invited or volunteer) are required to pay the conference registration fee!!

Poster Presentation Format

1. See below for details on abstract format and submittal dates for posters
2. Note - Poster display space is somewhat limited, so please keep poster size to a maximum of 48" x 48". We also recommend mounting posters on foam board, or plotting your poster on paper that can be laminated.

Abstract Format for all Papers, Posters, and Symposia presentations

Contributed papers and symposia presentations should be prepared as MS Word or WordPerfect files in 12 point, Times New Roman font, be left justified only, and include all of the following:

1. A brief but descriptive title.
2. A list of all authors, their addresses, telephone and FAX numbers, and e-mail addresses. Presenters must be clearly identified.

3. An abstract of 200 words or less.
4. Clear indication of preference for either an oral or poster presentation. For an oral presentation, indicate the presentation type-either 2x2 slides or computer presentation using an LCD projector (Note: Authors are responsible for supplying their own laptop computers).
5. Clear indication if presenter is a student.

Final deadline for submitting abstracts for all Papers, Posters & Symposia is January 17, 2003.

ABSTRACT EXAMPLE (Please follow this format for abstract submission)

Title: Quest for a fish friendly world

Authors: M.J. Brouder, Esquire-Presenter, USFWS, AZ Fishery Resources Office, PO Box 710, Peridot, AZ, 85542, 928-475-2552(W), 928-475-2701(F), Mark_Brouder@fws.gov; T. McMahan, Arizona Game and Fish Department, 2221 West Greenway Road, Phoenix, AZ, 85023, 602-789-3216(W), 602-789-3776(F), tmcMahon@gf.state.az.us.

Abstract: This statement will be used to evaluate and prioritize selections for inclusion in the 2003 program. Problem statement, issue significance, objectives, findings, and conclusions should be relayed in 200 words or less.

Preference: Oral presentation preferred with slides/poster session acceptable.

Student: No

Cal-Neva Chapter Members - Please Note

The presentation solicitation process will differ slightly this year. In the past, the Cal-Neva Chapter has identified "technical session" chairpersons early in the meeting planning process. The technical session chairs would then typically approach individual speakers to give presentations that were pertinent to a particular session's theme. This year, the Program Committee of the Western Division is obtaining technical sessions as contributed papers using a different process. This year's process will be more flexible and allows for the greatest possible opportunity for all Western Division members to participate without chairperson solicitation.

You are still highly encouraged to submit proposals for symposium and serve as the chairperson, as stated above. However, you should also feel free to submit an abstract individually for any research or management topic you would like to present. Thus, the Western Division considers all abstracts "contributed papers" The Program Committee

for this year's meeting will then organize all of these contributed papers into "technical sessions" with facilitators. In short, if you would like to present a paper, you do not have to pursue or wait to be contacted by a technical session or symposium chairperson. Simply submit an abstract following the guidelines above.

Submitting Contributions

All program contributions must be submitted electronically in either of two ways:

- 1) E-mail Mark_Brouder@fws.gov with symposia proposal or abstract (Poster/Contributed Paper) attached as an MS Word or WordPerfect file.
- 2) Submit on a 3.5-in diskette formatted in either MS Word or WordPerfect to:
WDAFS-Program Committee
Mark Brouder
USFWS, AZFRO-San Carlos
PO BOX 710
Peridot, AZ, 85542.

NOTE: Final deadline for submitting all abstracts is January 17, 2003.

NOTE: All presenters (invited or volunteer) are required to pay the conference registration fee!!

We will acknowledge receipt of your submission promptly by e-mail. For additional information, please contact Mark Brouder at (928) 475-2554 or Mark_Brouder@fws.gov.

Federal Aid in Sport Fish Restoration Act Fund Allocation Formula May Be Changed

Negotiations are continuing regarding the formula used to apportion Federal Aid in Sport Fish Restoration Act (SFRA) funds to the States. The National Association of State Boating Law Administrators (NASBLA) has proposed that the Boating Safety Program receive a substantial increase in the dollars allocated from the Motorboat Fuel Tax Account.

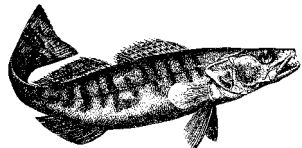
The NASBLA proposal would increase the percentage of total SFRA funds received by the Boating Safety Program from the current 14% to 24.3%. On the other hand, the percentage of the total funds for the Sport Fish Restoration Program (SFRP) would decrease from 50.2% to 44.4%. The Coastal Wetland Program would also decrease from 18% to 14.8%. Other smaller programs would be funded at about the same level. The International Association of Fish and Wildlife Agencies has proposed 49.5% for the SFRP, 15% for Boating Safety, and 18% for Coastal Wetlands. The American League of Boaters and Anglers (ALAB) is taking the lead in developing a

(continued on page 5)

compromise proposal. However, it is very important that whatever proposal is agreed upon does not erode the user pay–user benefit concept that has been one of the major strengths of this critical Federal Aid program. Based on the major sources of the revenues generated (motorboat fuel taxes, Federal excise taxes on fishing equipment and sonar devices, and import duties on boats and fishing equipment), existing funding levels for the SFRP can be justified.

All state sport fish management agencies and AFS should be concerned about the potential loss of SFRP funds, especially when revenues from state general funds are declining due to the slumping economy. Larger states could lose up to 1.75 million in Federal Aid dollars annually from their SFR programs in the future. Thus, it is critical for both AFS and the states to make their views known to the IAFWA and ALAB that the user pay–user benefit concept needs to be maintained to ensure that the funds generated are distributed in a fair manner.

Submitted by,
Chuck Knutson, President
California-Nevada Chapter, AFS



3rd Annual Retreat Coming Soon!

The third Annual WDAFS EXCOM and Leadership Retreat is being planned for the weekend of November 16-17, 2002 in Salt Lake City. The purpose of the retreat is to provide some extended, dedicated time for the EXCOM and Committee Chairs, and anyone else interested in WDAFS leadership, to focus on issues that promote WDAFS. The meeting will be held at the Little America Hotel, site of the planned 2004 WD annual meeting. Having good representation at the retreat by leaders of all the Chapters is integral to the success of the meeting. Therefore, we are hoping that each Chapter president will be able to attend. If you are unable to attend, please encourage your President-Elect or Vice-President to attend on your behalf. Please let Don MacDonald know ASAP at (250) 729-9623 who will be attending for your Chapter. To make your reservations at the hotel, please call Little America @ 801-363-6781 and mention the WDAFS Excom Retreat. Room rates are \$75 for a single or a double. We are planning a fun social on Saturday evening.

For those arriving early, there is an opportunity on Friday the 15th for a folk music concert by Karen Savoca and Pete Heitzman at the University of Utah, Social Work Auditorium (about 4 miles from the hotel). See KarenSavoca.com for more information. Tickets are \$12 in advance or \$14 at the door. Email Eric Wagner for advance tickets at nrdwr.ewagner@state.ut.us.

The Society of Environmental Toxicology and Chemistry is holding its annual meeting on Nov. 17 - 20, 2002 in Salt Lake City. So, there may be an added benefit of attending the retreat.

Seeking Western Division Award Nominations

Here is your opportunity to help honor someone you have always admired professionally. The AFS Western Division Awards Committee is seeking nominations for awards that will be presented at our 2003 annual meeting in San Diego, April 14-17. The Division has five awards that recognize various outstanding contributions to AFS, our profession, and fisheries research, conservation, and management. You can check out past and present award winners at: http://www.fisheries.org/wd/committee/awards_and_nominations/

The awards summarized below are for individual and group achievements within the Division, some of which are given to non-AFS members. Please consider a nomination within the following categories:

Award of Excellence. This is the most prestigious award offered by the Western Division and it is intended to recognize sustained professional excellence. It is given annually to an AFS member who has demonstrated outstanding achievement and exceptional competence in fishery resource applications through monumental works, new methodologies, or multiple successful contributions that benefit our resources and profession. Successful nominees have usually excelled in research or management programs at the regional, national, or international levels. Other examples include fresh, innovative approaches to improving our understanding of aquatic resources, and imaginative and successful programs in education at any level of teaching.

Award of Merit. This award is given to an AFS member(s) who has made a regionally significant and worthy contribution to our Division, our profession, or our fishery resources.

Award of Special Recognition. This award is given to an individual or to an entity making a significant contribution to the development and success of the Western Division.

Robert Borovich Conservation Achievement Award. This award is given annually to an individual who has significantly contributed to fishery conservation within the Division. The individual may be a non-member of AFS.

Conservation Achievement Award. This award is typically given to an entity (such as an agency, tribe, or organization) that has demonstrated a significant contribution to the conservation of fishery resources within the Division.

The Awards Committee needs your help in identifying qualified candidates, and we hope you will consider this an opportunity to become involved and ensure that your peers receive the recognition they deserve. Please take a moment and think about people you know whose significant contributions and accomplishments meet the Division's award criteria, and who should be recognized.

Please submit nomination statements, along with any pertinent supporting documents to Eric Knudsen, USGS, 1011 E. Tudor Rd., Anchorage, AK 99503, or by e-mail eric_knudsen@usgs.gov

by January 31, 2003.

In addition to the awards described above, the Division also awards the WDAFS Outstanding Chapter Award. The name says it all. The Division winner is entered in the Society's competition for Outstanding Chapter. Our Division has been very successful in this competition. The award winner for the Division 2002 was the Colorado-Wyoming Chapter. Watch for announcements later this year for this important competition. Be sure to check out the announcement on page 7 of this newsletter about the WDAFS Riparian Challenge Award.

Western Division Member Honored by AFS

Dirk Miller, Assistant Fisheries Management Coordinator for the Wyoming Game and Fish Department reeled in the 2002 American Fisheries Society Distinguished Service Award at their 132nd Annual Meeting in Baltimore, Md. Aug. 20.

The American Fisheries Society (AFS), founded in 1870, is the oldest and largest professional society representing fisheries scientists. Each year, they recognize the outstanding contributions of time and energy for a wide variety of special projects and activities by giving one or more members the Distinguished Service Award. With almost 10,000 members worldwide, AFS promotes scientific research and enlightened management of resources for optimum use and enjoyment by the public.



"I can personally attest to the fact that you have been indefatigable in your efforts on behalf of the Society, and AFS is a better institution because of you," Ken Beal, AFS president wrote in a letter of congratulations.

"My involvement with AFS and fishery professionals from across the country has been very rewarding," said Miller. "I didn't expect this award, and I'm honored and humbled to receive it from an organization that has been so important in my career."

Miller received a bachelor's degree in 1982 in zoology and a master's in 1988 in fishery and wildlife biology from Colorado State University. First employed as a fisheries technician for the Colorado Division of Wildlife, Miller began his G&F career as the fish population supervisor. In 1996 he was promoted to his current position and is stationed in Laramie.

He joined AFS in 1986. He is a life member of AFS and is a certified fisheries professional.

Contributed by Michelle Zitek, Laramie Regional Public Information Specialist, Wyoming Game and Fish Department

Status of Western Native Fishes Project

The Western Division of the American Fisheries Society will be undertaking an important project this year entitled, the Status of Western Native Fishes. This project is being undertaken to assess the status of freshwater, non-anadromous fishes of western North America. The project is intended to compliment other, related projects that were undertaken by the American Fisheries Society and its collaborators to assess the status of western anadromous salmonids (Nehlsen *et al.* 1991, Slaney *et al.* 1996, Warren *et al.* 2000, Taylor *et al.* 1996, Huntington *et al.* 1998, and Baker *et al.* 1999) and marine fisheries resources (Musick *et al.* 2001).

Detailed information on the status of western native fishes is required for a number of reasons. First, such information is needed to identify species and populations at risk throughout western North America. In addition, information on the status of inland fishes is needed to evaluate the efficacy and potential impacts of recovery plans that have been developed or are being developed to facilitate the recovery of anadromous fish populations listed under the Endangered Species Act. Furthermore, such information is needed to identify key data gaps and to help focus limited state and federal resources on the most appropriate areas (i.e., river basins, species, and stocks). The findings from this project could provide the basis for developing and identifying priorities for ecosystem-wide habitat protection initiatives on public and private lands that will facilitate the protection and recovery of species-at-risk. Ultimately, the information compiled under this project will advance the management of western native fishes by compiling published and unpublished information of the status of a wide variety of fish species, identifying the key issues and concerns for each species, and clearly articulating additional information needs.

Successful completion of this project will provide a definitive summary of the current status of inland fishes, including an evaluation of their distribution and abundance relative to known historic conditions. This project will be based on a review of existing status documents, identification of information gaps, a major symposium, and a survey of local experts to complete the status assessment as much as possible. It will include all species known to exist in the geographic region of WDAFS to the extent that information is available.

The project will be formulated, directed, monitored, and finalized by the Western Division AFS *Western Native Fishes Committee*. Ultimately, the project will culminate in a final

report to the Western Division and a summary report that will be published in the AFS periodical *Fisheries*. It is anticipated that this paper will set the stage for conservation and/or restoration of western native fishes because it will identify the species and locations where special efforts are warranted. The intention is that subsequent projects can be targeted at these critical locations and species. Anyone wishing to participate on the Western Native Fishes Committee or would like more information on this important project is asked to contact Don MacDonald @ 250-729-9623.

Oregon Chapter AFS 39th Annual Meeting

**Oregon Chapter
American Fisheries Society
39th Annual Meeting
February 26-28, 2003
Hilton Eugene & Conference Center
Eugene, Oregon
"Fisheries Science in Management
Decisions: How is it Used?"**

Deadline for Abstracts November 25, 2002

Contact: Dave Ward at
david.l.ward@state.or.us, 503-657-2000
x402;

For Registration Information contact:
Loretta Brenner, LBrenner@attbi.com;
osu.orst.edu/groups/orafs

Premeeting Workshop

February 25-26, 2003

"Improve your Fishery Photography,"
Facilitated by Richard Grost, award winning fish
photographer.

CALL FOR PAPERS AND POSTERS - OREGON CHAPTER AFS 2003 ANNUAL MEETING

The Oregon Chapter of AFS is hosting its 39th Annual Meeting February 26-28, 2003 in Eugene, Oregon. The theme of the 2003 meeting is "Fisheries Science in Management Decisions: How is it Used?" An exciting lineup of plenary speakers will set the tone for the 2003 meeting, they are: Anne Badgley, Pacific Region Director for the U. S. Fish and Wildlife Service; Rod Sando, Executive Director of the Columbia Basin Fish and Wildlife Authority; and Dr. Michael Blumm, Lewis and Clark Law School, Portland, OR; author of *Sacrificing the Salmon*, along with over 80 articles, monographs, and book chapters about salmon, water, public lands, and public trust law. Several engaging sessions are also in the works with topics including: *Fisheries science in the public arena*; *The other anadromous fish, part 1: sturgeon*; *The other anadromous fish, part 2: lamprey*; *Estuarine habitats and salmon*; *Elegance in the art of fisheries science*; *Bull trout management: from eradication to protection*; *Restoration of riparian zones*; *Accuracy, scale, and interpretation of geospatial technology in resource politics*; and *Groundfish/Marine issues*. Contributed papers sessions will be included, as well as our Combined Poster Session and Social. The meeting will be preceded by a great workshop on Fish Photography, facilitated by Richard Grost, who recently won two top awards for excellence in photography from the Northwest Outdoor Writers Association. Rich specializes in photography of trout, salmon, and other fish. His images appear in displays, presentations, advertisements, and a variety of magazines.

The deadline for submitting Paper and Poster Abstracts is November 25, 2002, for more information on submitting abstracts please contact: Dave Ward, President-elect and 2003 Meeting Chair, at david.l.ward@state.or.us; or 503-657-2000 Ext 402. For registration information and other meeting details contact Loretta Brenner, Oregon Chapter Administration, at LBrenner@attbi.com; 541-753-0442; or the Oregon Chapter website at osu.orst.edu/groups/orafs.

Help Wanted

The International Fisheries Section is seeking self-motivated and enthusiastic people interested in promoting international projects and initiatives from the American Fisheries Society

Numerous exciting opportunities exist. No experience necessary

Send your inquiries to bern.megrey@noaa.gov or [click here](#) to go to the section web site for more information

NEEDED

- People to run for elected office. Elections will be held in 6 months and candidates are needed for the President and Secretary-Treasurer positions.
- Newsletter Editor
- Chair of the Carl R. Sullivan International Member Program
- International Endowment Fund Committee
- Coordinate journal donations

Seeking Entries for the 2003 Riparian Challenge

The Riparian, Watersheds and Habitat Committee is seeking entries for the Western Division's 2003 Riparian Challenge Award. The Forest Service and Bureau of Land Management in the States encompassed by the Western Division are invited to participate in the Riparian Challenge. Winners will receive the Western Division's Award of Excellence in Riparian Management. The purpose of the award is to:

- Encourage the Bureau of Land Management and the Forest Service to strive for excellence in riparian habitat management,
- Encourage both agencies to progress in on-the-ground accomplishments which when added together throughout the West, will significantly improve riparian systems,
- Recognize managers and resource specialists for their efforts in maintaining, restoring, and improving riparian ecosystems.

We hope to receive a number of quality nominations from USFS and BLM offices this year representing their efforts in riparian management. If you are aware of a USFS or BLM project that you believe should be considered, please ask the appropriate USFS or BLM office to submit an entry form. Winners will be selected in the following categories (depending on the number of submissions received):

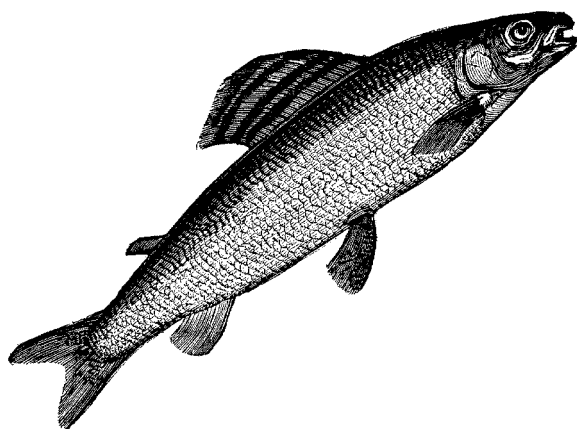
BLM

Best Resource Area or Field Office
Best State

Forest Service

Best Ranger District
Best National Forest

Entries must be received no later than January 6, 2003. The 2003 Awards of Excellence in Riparian Management will be presented at the Western Division's annual business meeting in Salt Lake City, Utah in February.



Ed Lider (left), representing the Coeur d'Alene River Ranger District of the USFS Idaho Panhandle National Forest, and Thomas Mendenhall (right), representing the Swiftwater and South River Field Offices of the BLM's Roseburg District Office, accepted the 2002 Awards of Excellence in Riparian Management at the 2002 annual meeting.

Entry Format and Criteria for Evaluation of the Riparian Challenge

The Riparian Challenge was established as an annual event to encourage continued on-the-ground accomplishments in riparian habitat management in states encompassed by the Western Division of the American Fisheries Society. Entries must document riparian habitat management efforts where resource values will be or have been improved within a watershed. Examples of these resource values include, but are not limited to:

- Streambank stability
- Water quality
- Vegetative diversity
- Stream flows
- Subsurface water supplies
- Aquatic/fish habitat
- Terrestrial wildlife habitat
- Forage production
- Recreation/aesthetic qualities
- Education

Entries must be type written and must not exceed 4 pages of text (not including photographs and maps). Land use plans, research projects, handbooks or technical guidelines are not eligible. These are products that are not actually on-the-ground accomplishments or achievements. Electronic submissions are strongly encouraged. If submitting hard copies, please submit four complete copies (including photographs). Include the following information on the first page of each entry:

- a) Agency Name (BLM or USFS?)
- b) Name of BLM Field Office or Resource Area and state or name of USFS Ranger District and National Forest
- c) Mailing Address

- d) Primary contact person
- e) Phone number
- f) E-mail address
- g) 1-3 other contacts familiar with the project and telephone numbers
- h) Project plan or name
- i) Date the plan was initiated and date project was or will be completed

Each typed entry should accurately describe the project, including background and objectives. Include photographs or scanned images (no slides) adequate to describe the project. Maps can also be included. The following questions should be answered within the text of each entry

- Which resource values were improved?
- Which species of wildlife will benefit from the project?
- Does the project address habitat for threatened or endangered species?
- How many stream miles and/or acres of riparian habitat were improved?
- Did the project involve an interdisciplinary process? Who was involved?
- Did the project involve multi-agency cooperation? Federal government, state government, private landowners, corporations, conservation groups, etc.

Winners will be selected for the Best BLM Field Office or Resource Area and Best Forest Service Ranger District. Winners will be selected on the basis of total points received from the judges for all projects/plans submitted by an office. Points will be awarded based on the resource protection afforded by each project/plan. Small projects are important and valuable; a number of small projects within a field office, resource area or district can equal the point total of an extensive multi-resource cooperative management effort. Awards for the Best BLM State Office and/or Best USFS National Forest may be made based on the entries received from the subordinate field offices. The Riparian, Watersheds and Habitat Committee of the Western Division of AFS will make selections. Awards will be presented during the business meeting at the annual meeting of the Western Division in Salt Lake City, Utah in February 2003.

All entries must be received no later than January 6, 2003. Completed entries should be submitted to the Western Division Riparian, Watersheds and Habitat Committee Chair at the address listed below.

David Zafft
Wyoming Game and Fish Department
528 S. Adams St.
Laramie, WY 82070
(307) 745-5180 ext. 235
david.zafft@wgf.state.wy.us

Please feel free to contact Dave if additional information is needed.

Salmon Recovery in the Twenty-First Century: Breaching the Basic Barriers by Robert Lackey

Robert T. Lackey

National Health and Environmental Effects Research
Laboratory
Office of Research and Development
U.S. Environmental Protection Agency
Corvallis, Oregon

When the chairman of the program committee first asked if I would give this talk, I sketched out a few things I might say. He listened politely, agreed that such a talk would be informative, but, in his gracious way, he was clearly something *less* than fully satisfied. It turned out that what he really wanted was an unvarnished assessment of the long-term future of wild salmon and, equally important, what society would really have to do *if* wild salmon runs are to be restored.

In short, his challenge for me was to identify the fundamental, the critical, the basic barriers that must be breached in order to recover wild salmon runs. Even being the naive researcher that I am, I could see through such a request — I was being set up to provoke controversy, to challenge complacency. But, as all successful program chairs must be, he was persistent, persuasive, and, in the end, convincing.

So, against my natural inclinations to give a typical luncheon talk — light, amusing, fluffy, general, safe — banished from my comments will be the usual:

- feel-good platitudes about the importance of restoring wild salmon runs
- the appeals to delusional reality that most of us know are simply rhetoric
- the cheer-leading for enticing, but unattainable, policy objectives
- the win-win happy talk that these days often passes for serious policy deliberations

Nor am I here to:

- add another gloom-and-doom talk to the hundreds most of us have already heard
- to contribute another to the long list of feel-good technofix bromides
- effuse over the apparent recent improvements in wild fish runs
- And, this is most important, to pitch the policy objectives of any particular organization, including my own.

For sure, I have given my share of all those kinds of talks. But not today, not at a conference where the focus is on serious analysis of the future of salmon in the Pacific Northwest. Not this time. Today, I will step back from the nitty gritty details and particulars of salmon science and policy and add a small dose, perhaps an unpleasant dose to some, perhaps an unwelcome dose to a few of you, but a necessary dose of reality as I see it.

In short, I will try to answer the simple, but inflammatory question:

“What are the fundamental, the really basic barriers to recovering Pacific Northwest wild salmon, and how might these barriers be breached?”

My answer will consist of only three barriers, but they will be three really big barriers — and for each I will offer some suggestions about how it might be breached.

The first barrier . . .

As we move into a new century, Pacific Northwest wild salmon, in spite of ups and downs, good years and bad

years, favorable and unfavorable ocean conditions, have been on a 150 year downward trajectory — and they are now at very low levels.

Wild Pacific salmon in the lower 48 states are well on their way to attaining a status enjoyed by some of their notable brethren — wolves, condors, grizzlies, cougars, bison — wild animals that are unlikely to disappear entirely, but struggle to hang on as remnants of once flourishing species in small portions of their original range. Ted Turner may be marketing the superior taste of buffalo burgers, the convenience of bison nuggets, the health benefits of barbecued buffalo ribs — but wild bison hang on as a remnant population in Yellowstone and a few other refuges. So it has also become for wild salmon in this part of the world.

Wild salmon are on the road to becoming biological remnants in the lower 48. Whether or not you like that prognosis, it should not surprise you. Too pessimistic? Consider the following facts about the state of wild salmon in California, Oregon, Idaho, Washington, and the Columbia portion of British Columbia. Many runs are reduced to less than 10% of their historical abundance. Some are much less than 10%. Some are gone. Other salmon runs are dominated by hatchery-bred fish. Even for the Columbia, once the mightiest salmon-producing river south of Canada, over four-fifths of the total run is now comprised of hatchery-bred fish.

Billions of dollars have been spent in a so-far failed attempt to reverse the long-term slide of wild salmon.

Nor is this region’s trajectory of salmon decline unique. Of the Earth’s four regions where Pacific and Atlantic salmon runs originally occurred — the other three being the Asian Far East, Atlantic Europe, and eastern North America), it looks increasingly like western North America will emulate the other three:

- extirpated or much reduced runs in the southern portions of the distribution;
- larger runs, closer to historical levels, in the northern portions.

When I look at the current wild salmon situation and apply some best-guess assumptions, by 2100 it appears to me that the Pacific Northwest most likely will resemble:

- the U.S. portion of eastern North America,
- Europe south of Scandinavia, and
- the Asian Far East south of Russia

Wild salmon runs that are a shadow of the past over much of the original range. For California, Oregon, Idaho, Montana, Nevada, Washington, and the southern portion of British Columbia — biological remnants!

This is a brief synopsis of ecological reality, the first barrier. I admit it is blunt. Perhaps it is sobering to some of you. But it is based on a common-sense assessment of the situation. It’s clearly not the only possible scenario, but it is the one that to me is most likely to play out.

The option of using hatcheries to maintain runs is another story and one I’ll not cover today. We are not going to have runs of wild salmon even remotely like those of 1850. For sure, some wild salmon restoration possibilities are definitely better than others; most promising are the coastal watersheds of Northern California, Oregon, Washington, and some areas of southern British Columbia. In short, the most efficient way to breach this barrier for wild salmon would be to focus recovery efforts in those geographic locations with the best chance of success. And those with the greatest chance of success for maintaining

wild salmon are the coastal watersheds.

The second barrier . . .

This one is perhaps the most obvious, and arguably the most important: salmon are only one of many priorities that society professes to rank high. Societal priorities are dynamic, difficult to forecast, subject to rapid change and, perhaps most frustrating to us salmon technocrats, impossible to rigorously determine in real time. Remember how the recent Pacific Northwest drought and California blackouts affected thinking. Or even more recently, how the terrorist attacks have so drastically recalibrated our collective priorities.

I want to be realistic here, forget the rhetoric and cheerleading: where does salmon restoration rank within the myriad of competing societal priorities? I don’t know the precise answer, but society’s collective behavior, not public opinion polls, will give us some indication. Let’s recap the past 150 years from a salmon-centric policy perspective.

1880 — in the Central Valley of California, and after a 30 year decline in salmon runs, supplemental stocking from hatcheries was widely viewed as the solution to declining salmon runs. In salmon policy debates, by the beginning of the 20th century, hatcheries had won out over preserving or restoring natural habitat, and hatchery-bred fish won out over wild salmon. Little more than a century later, protecting *wild* salmon is the preeminent statutory dictum. Now hatchery bashing is in vogue, and it is hatcheries that are under siege as the nemesis of restoring wild salmon runs. There continues to be discussion about closing some, or even all, salmon hatcheries. To be sure, part of the change in society’s priorities is due to better understanding of the biology of salmon, but most is due to changing values.

1905 — the mantra was “reclaim the Klamath River Basin.” Create productive farmland by irrigation. In the competition between societal priorities, irrigated agriculture won out over salmon. Over the next several decades, millions were spent to develop an elaborate system of dams and canals in the Basin. Now, at least for the Klamath Basin, society, based on regional and national polling data, values salmon and suckers above agriculture for use of scarce water.

1933 — the mantra was “put people to work.” Combat the devastating social effects of the Great Depression. Massive public works projects, such as many of the high dams of the Columbia Basin were built, even though the ruinous effect on wild salmon was well known. A single dam, the Grand Coulee, completely and permanently blocked a quarter of the Columbia Basin to migratory salmon, a thousand miles of the mainstem river lost to salmon in a single action. We knew precisely what would happen to those runs of wild salmon. The Depression and public works projects won out over salmon. Now, we are less sure of the priorities and we continue to spend millions trying to compensate for this lost habitat.

1942 — the posters proclaimed “America — the Arsenal of Democracy.” Electrical generation in the Pacific Northwest was greatly multiplied to supply the voracious appetites of aluminum smelters. The hydro-power was here; the war-time demand for aluminum was acute; the public support was near universal. Without any engineering protection, turbines, operating at maximum capacity 24/7 for four years, chewed up salmon at devastating rates. It was a war, after all, and it is not surprising that bombers won out over

(continued on page 9)

Robert Lackey Talk (continued)

salmon. Now most Pacific Northwest aluminum smelters are shut down because they can make more money selling their electrical contracts than manufacturing aluminum.

1948 — Widespread floods caused disastrous effects across this region. Vanport, the second largest city in Oregon, was swept away. The politicians of the day heeded the public's call for protection, and we built many flood control dams in Washington, Oregon, Idaho, and British Columbia. Society collectively demanded that human life and property be protected. Flood control won out over wild salmon. Now, a major flood, such as 1996, brings almost no calls for additional flood control.

1991 — The first salmon “distinct population segment” was listed under terms of the Endangered Species Act. With this action, the policy debate shifted away from restoring salmon runs in order to support fishing, to protecting salmon runs from extinction, two very different policy objectives. A century ago no one cared much whether a salmon started life in a hatchery, or in a redd. Now hatchery-produced salmon aren't the restoration solution, they are part of the restoration problem, at least according to many.

2001 — Just a decade later, a severe drought, combined with ongoing California blackouts, provoked the Bonneville Power Administration to declare a power emergency, abandon previously agreed upon interagency restoration commitments, and generate electricity using water reserved to help salmon migrate. In one of the most striking recent barometers of competing societal priorities, electricity won out over salmon, and with scant public opposition. Now, none of these public policy decisions over the past 150 years was inherently good or bad, they simply reflected the priorities or legal interpretations of the time. The policy premise that we can have our cake and eat it too is an old one and it continues to be popular today.

So that's the second barrier: there are many competing, conflicting, divisive priorities and most people are willing to sacrifice wild salmon to achieve a suite of other priorities. I am not here to cheer-lead for wild salmon, or for electricity, or for property rights, or for hatcheries, or for dredging shipping channels, or for any other societal priority, but it is naive to consider salmon recovery as anything but one element, one often minor element, in a constellation of competing, often mutually exclusive, societal wants, needs, and preferences.

The third barrier . . .

This one is perhaps even more important than the first two, and the easiest to gloss over. I am still somewhat ambivalent about raising it. As one of my colleagues told me when we talked about what I might say here: “You are absolutely right, most people already know it, and that's exactly why you should let it rest.” Undoubtedly very good advice. However . . . if society wishes to do anything meaningful about moving wild salmon off their current path heading toward becoming remnant runs by 2100, then something must be done about the long-term increasing numbers of humans in the Pacific Northwest. I am not here to argue that we collectively ought to necessarily change any policy, but the simple fact is that the human population level that we should realistically anticipate by the end of this century is a serious barrier, a show stopper to achieving any kind of significant long-term wild salmon recovery.

Some of you may wish it was otherwise, but to be responsive to Don's directive, I will continue to be candid. Currently,

Washington, Oregon, Idaho, and British Columbia (three states, one province) are home to 15 million humans. Assuming a range of likely human reproductive rates, internal migration to the Pacific Northwest, and continuing immigration policy and patterns, in 2100 this region's human population will not be its present 15 million, but rather will be somewhere between 50 and 100 million: a quadrupling of the region's human population by the end of this century — less than a 100 years from now.

To repeat, I am not here to advocate that society *ought* to do something about this trajectory, but if we end up with 50 or 100 million people in this region, and their demands for:

. . . *housing, schools, tennis courts, football stadiums, expressways, planes, trains, automobiles, Starbucks, MacDonald's, WalMarts, electricity, drinking water, pipelines, marinas, computers, HDTVs, movie theaters, ski resorts, golf courses, sewer treatment plants, hotels, and conference centers.*

If these demands continue, coupled with the expected increases in the region's human population, society's options for having wild salmon in this part of the world are just about non-existent. Good water quality is possible. Healthy populations of some fish species is also possible. But with high human populations and their associated lifestyle requirements, the future of wild salmon is not good.

For sure, there is not an exact one-to-one relationship that a given human population increase results in a predictable decrease in run size, but the general, unmistakable relationship is there:

- As the human population of the Asian Far East expanded, so salmon runs declined.
- As the human population of Europe expanded, so salmon runs declined.
- As the human population of eastern North America expanded, so salmon runs declined.

There's my final barrier, the PNW human population trajectory will have to be changed dramatically for wild salmon to have any chance of recovering. Could society reverse the trajectory? Yes, it is possible. It is happening in some European countries and Japan, but, as I interpret the demographic data, there is little indication that it will happen any time soon in the Pacific Northwest. For sure, world-wide birth rates are generally declining, but they are still above replacement levels in the Pacific Northwest. And, of course, the trend of people moving into the region shows no sign of slowing.

Should the rate of Pacific Northwest human population growth be slowed or even stabilized? That is really up to the collective body politic to decide. All of us can assess the inevitable consequences for wild salmon, but that doesn't mean that society *ought* to change public policy on human population growth.

Assuming that society wants to do something about population growth, and that is a big assumption, how could it be done? Well, one obvious point of influence is personal mobility, the fact that two-thirds of the growth rate is caused by people moving to the Northwest from elsewhere, either from outside Canada and the US or from other regions within the two countries. As I read the public's mood, it doesn't appear to me that either type of personal mobility, or the freedom to re-locate as desired, will be restricted any time soon.

Another obvious point of possible influence on human population growth is tax policy, the fact that taxpayers have for a long time, and currently still do, provide direct monetary subsidies to those members of society who reproduce. As with personal mobility, I don't see the public any time soon shifting away from supporting such tax deductions, or even tax credits, for each new child born. I could be wrong, but I don't see such issues on the legislative table for the foreseeable future. Perhaps I am not accurately reading society's current priorities, or misjudge the likelihood that they will change later in this century. If so, show me some individual or collective behaviors that would indicate major change.

Whether my assessment is right or wrong, population issues are not easy ones to raise, much less discuss without resort to advocacy, but the current and expected population level is at the core of any credible analysis of potential recovery strategies, or at least those strategies that are offered as serious attempts to actually recover wild salmon.

Let me close with a few final thoughts . . .

You now have heard my assessment of the three barriers that must be breached to successfully reverse the long-term decline of wild Pacific salmon. There are certainly many, many specific obstacles that hinder recovery, but for these others to have any lasting effect, the big-three barriers need to be breached.

I'll end with a prediction, and also offer a challenge, especially a challenge to those of you early in your careers:

“. . . any policy or plan targeted to restore wild salmon runs must at least implicitly respond to these three barriers or that plan will fail. It will be added to an already long list of prior, noble, earnest, and failed restoration attempts.”

Look down the road to the end of this century, to 2100:

- less than 10 decades away;
- only a few dozen generations of salmon beyond today's runs;
- just 2 or 3 Pacific Decadal Oscillations from now;
- to a time when this region's human population will not be its present 15 million, but rather will be somewhere between 50 and 100 million;

Even given all this, there are still salmon recovery options that are likely to be ecologically viable and probably socially acceptable, but the range of options continues to narrow. In my view, for professional fisheries experts, for most of us:

- it is a time for neither crippling pessimism, nor for delusional optimism
- rather it is a time for uncompromising ecological realism and forthright policy analysis.

Thank you.

Author's Biographical Sketch

Dr. Robert T. Lackey is a fisheries biologist at the U.S. Environmental Protection Agency's research laboratory in Corvallis, Oregon and is also courtesy professor of fisheries science and adjunct professor of political science at Oregon State University. For the past 35 years he has dealt with a range of natural resource issues from positions in government and academia. Among

Robert Lackey Talk (cont.)

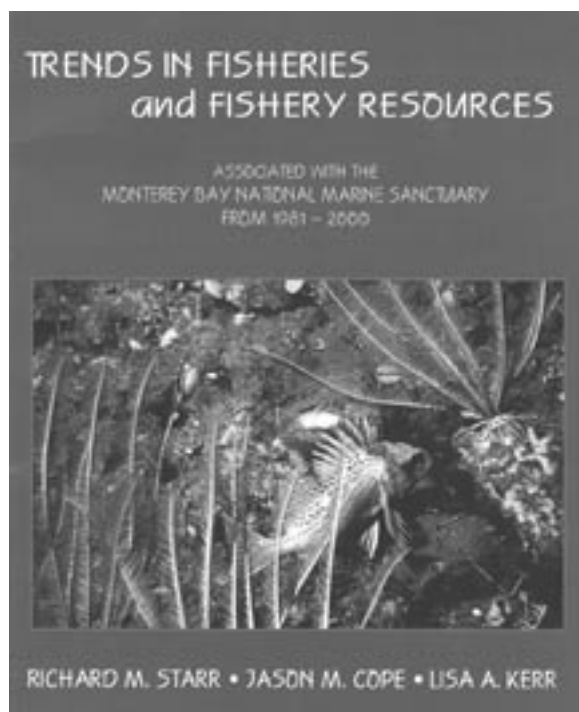
his professional interests are natural resource ecology and the interface between science and public policy. He has written 95 scientific journal articles. His current professional focus is providing policy-relevant science to help inform ongoing salmon policy debates. Dr. Lackey also has long been active in natural resources education, having taught at five North American universities. He continues to regularly teach a graduate course in ecological policy at Oregon State University. He was a 1999-2000 Fulbright Scholar at the University of Northern British Columbia.

This talk was a luncheon address at the conference: "Toward Ecosystem-Based Management: Breaking Down the Barriers in the Columbia River Basin and Beyond," Spokane, Washington, April 29, 2002. The views and comments presented are those of the author and do not necessarily represent those of any organization.

California Sea Grant College Program Publication Announcement

Trends in Fisheries and Fishery Resources by
**Richard M. Starr, Jason M. Cope, and Lisa
A. Kerr. Publication No. T-046. 156 pp.**

Fisheries in central California are part of this region's rich cultural and economic history. In the last decade, however, catches of many fishery resources have greatly declined, due both to real decreases in fish populations and to increased regulations enacted to prevent depletion of fish stocks. In this book, we summarize, for a general audience, the technical concepts and information that fishery scientists use to estimate the population sizes of harvested species. In addition to summarizing scientific information, we also provide a brief description of the types of fisheries operating in the region encompassed by the Monterey Bay National Marine Sanctuary (MBNMS), and a summary of fishery management operations from 1981-2000.



New Book Releases from AFS

Catch and Release in Marine Recreational Fisheries

Jon A. Lucy and Anne L. Studholme, editors

Catch and release fishing has a long history in freshwater recreational fisheries, as a management tool to reduce the impact of fishing on fish populations. Aside from regulatory requirements, freshwater anglers have long practiced catch and release fishing in the interests of promoting conservation-oriented angling. However, in comparison to freshwater, catch and release fishing in marine fisheries is proving more difficult to define relative to its full impact on anglers and use as a fishery management tool.

This symposium proceeding brings together information from researchers, fishery managers, coastal resource management and conservation organizations, and angling community leaders, addressing the issues that have arisen in relation to recreational fishing.

Includes sections on:

- Release Mortality and Circle Hooks
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- Conventional and Ultrasonic Tagging Studies
- Angler Attitudes and Behavior
- Management Issues

AFS Symposium 30
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AFS member price: \$35

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Biological Indicators of Aquatic Ecosystem Stress

S. Marshall Adams, editor

This book is a practical guide to the use of biocriteria for assessment of the effects of environmental stressors on aquatic ecosystems and organisms, especially fish. Written by scientists who are the best in their fields, this book provides helpful information for designing and applying bioindicators in the field to reliably assess the health of aquatic organisms and ecosystems. This volume may be used as a manual for scientists, students, and others, in a variety of disciplines and applications.

Includes chapters on:

- Biochemical Responses as Indicators of Aquatic Ecosystem Health

- Genetic Responses as Population-Level Biomarkers of Stress in Aquatic Ecosystems
- Reproductive Indicators of Environmental Stress in Fish
- Integration of Population, Community, and Landscape Indicators for Assessing Effects of Stressors
- Statistical Considerations in the Development, Evaluation, and Use of Biomarkers in Environmental Studies

656 pp., August 2002
Stock Number: 550.37C / 550.37P
List Price: \$89 hardcover / \$62 paper
AFS member price: \$69 hardcover / \$48 paper

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Fisheries in a Changing Climate

Nature A. McGinn, editor

Representing the culmination of a very successful multi-agency effort organized by AFS, Sea Grant and others, this book brings together papers from scientists from US and Canadian governmental agencies and universities to discuss fisheries and climate change. This comprehensive, state-of-the-art volume is a valuable resource for anyone with an interest in the topic, and will serve as a guide to those continuing to study the future of fisheries in a changing climate.

Highlights include:

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- Reviews of recent climate impact fisheries research
- Stakeholders' Forum on Fisheries and Climate Change report
- A comprehensive bibliography of recent journal articles on the influences of climate change and variability on fisheries.

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Tribes Face New Threat to Salmon. Warming Rivers are Killing Fish, Biologists Say

Reprinted from *The Lateral Line*, the newsletter of the Humboldt Chapter AFS

By Glen Martin, Chronicle Environment Writer
Monday, August 26, 2002

Hoopa, Humboldt County -- Jimmy Jackson may not be "older than dirt," as the legend on his cap proclaims. But at 92, he's certainly one of the oldest members of the Hoopa tribe -- a respected elder who leads religious rites, conducts ceremonial dances and influences tribal policy by the simple weight of his opinion. These days, a lot of Jackson's thoughts are on the Trinity River, a few hundred yards down a dusty lane from his mobile home. The Trinity and its sister river, the Klamath, lie at the heart of one of California's longest-running water conflicts. Farmers and municipal managers say the water from the rivers is needed to irrigate the state's croplands and burgeoning cities. The "downstream stakeholders" -- mainly sport anglers, commercial fishermen and natives from the Hoopa, Yurok and Karuk tribes -- claim the diversions are wiping out the great salmon runs that once characterized the rivers and their tributaries. The Trinity, says Jackson, is the heart of the Hoopa nation. The people depend on it for water, food and spiritual solace. The Hoopas have subsisted on the Trinity's fish for millennia. In recent weeks, a new development has alarmed natives and biologists, who say it could cause irreparable harm: The rivers' water temperatures have become positively tropical. Warm water spells death for salmon.

SIGNS OF DISEASE

"The temperatures in the Klamath River are very, very warm -- about 80 degrees," said Tom Shaw, a fisheries biologist for the Arcata office of the U. S. Fish and Wildlife Service who works on the Klamath. "Lots of adult chinook salmon are showing signs of columnaris (a fatal fish disease associated with stress). The juvenile fish are heavily affected with parasites, which is also associated with warm water." The situation is similar on the Trinity River. "The temperatures have been high, and we're seeing fish mortalities" almost all the way up to Trinity Dam, said Jay Glase, a Fish and Wildlife Service biologist who monitors the river. The Trinity's salmon runs are already a fraction of their historic levels. Dammed and largely diverted for power and agriculture, its abundant salmon runs crashed in the 1970s. In recent years, it looked like a remedy was in the works: An agreement with the U.S. Department of Interior promised to bolster downstream flows to almost half their historic levels. But a lawsuit filed by the San Joaquin Valley's Westlands Irrigation District and the Sacramento Municipal Utility District could change that, siphoning off most of the Trinity's water. If the litigation succeeds, say tribal members and many fisheries biologists, the Trinity's salmon would go into free fall perhaps disappearing altogether. It's a vision that haunts Jackson, compelling him to recall happier days. "We used to fill our boats with salmon, enough for everybody in the village," he recalls. "The eels (lampreys) were so thick, you'd catch 500 of them in one night." Then in 1963, the big Trinity Dam was completed on the upper river, providing water and power for the surging populations of the south state.

A BROKEN WHEEL

Despite cheery government assurances, Jackson had a bad feeling about the project. "I went up to a guy working on the dam. . . . I asked him what all our fish would do without the water, and he said, 'Don't worry -- just call up, and we'll turn a wheel and we'll give you more.' " It didn't work out that way, said Jackson. "That wheel must've broke," he said bitterly. Things are at least as

tough for the Hoopas' neighbors, the Yuroks, a tribe that lives on the nearby Klamath River. The Klamath claims the Trinity as a tributary. Like the Trinity, the Klamath is dammed at its upper levels. And as with the Trinity, the Klamath's fish populations plummeted once the dams were built. That devastated the Yuroks, a fishing tribe like the Hoopas. "We've always been concerned about low flows, and this year, the flows are among the worst we've ever seen," said Troy Fletcher, the executive director for the Yurok Tribe. "The conditions are absolutely terrible. We have fish dying all along the river." As with the Hoopa, the Yuroks recently had their hopes raised. In 1999, the Klamath's coho salmon were listed under the U.S. Endangered Species Act. In response, the U.S. Bureau of Reclamation released more water down the Klamath system to aid the fish. Water to farmers in the Upper Klamath Basin was restricted.

FARMERS' PROTEST

But two things happened to derail the downstream flows. Last year, farmers in the Klamath Basin staged a series of protests, at one point seizing irrigation district headgates. Their demonstrations garnered publicity throughout the West and gained the sympathy of the Bush administration. And in February, the National Academy of Sciences issued a preliminary report stating there was insufficient evidence to conclude that curtailing irrigation would automatically contribute to the revival of Klamath fisheries. Accordingly, the U.S. Bureau of Reclamation, which controls the dams on the Klamath, revised its policy. This year -- officially designated as a "very dry" year -- the bureau has curtailed downstream flows to 650 cubic feet a second. That's a mere trickle for the mighty Klamath, the second biggest river in California after the Sacramento. Meanwhile, the Klamath Basin's 1,200 farmers have been given their full allotment of water.

SCIENTIFIC ALLOTMENT

Jeff McCracken, a spokesman for the Bureau of Reclamation, said his agency's allotments for the Klamath and Trinity are based on both science and federal compacts. He also said he has not heard of any mortalities affecting the Klamath's salmon runs. "We're guided by the recent Academy of Sciences report on the Klamath," said McCracken, "and our base flows on the Trinity (450 cfs) are directed by the Department of the Interior's record of decision issued in 2000. We intend to continue our current operations." McCracken said Klamath Basin farmers have been told by the bureau "that they have to conserve as much water as they can in order to prevent a reduction in deliveries. And they're doing that, by irrigating in the evening and other measures." Still, say the biologists, fish die-offs are occurring. What's needed to stem the loss is cold, clean water -- and plenty of it. But that's the rub, say Klamath Basin farmers, who argue that their diversions are not only economically necessary but environmentally defensible.

WARM WATER VS. NO WATER

Marty Macy, a Tule Lake farmer, board member of the Klamath Water Foundation and the president of the Tule Lake Growers Association, said any water that can be sent down the river originates from Upper Klamath Lake, which is shallow, warm and loaded with nitrogen and other fish-killing nutrients. "It's not good science to dump more hot water into the system," said Macy. "You just end up killing

more fish." Biologists agree that warm water can hurt salmon -- but they disagree that releases from Upper Klamath Lake would invariably do more harm than good. "It's disingenuous . . . to say that additional releases from Upper Klamath Lake wouldn't improve salmon fisheries," said William Kier, a fisheries consultant who specializes in the Klamath. "What the fish need is more water, and the water quality will be improved by downstream tributaries." To the Yuroks, the issue is simple: Empirical observations over the centuries have convinced them that more water means more fish. Recently, a group of Yuroks gathered at Sregon, the site of an ancient tribal settlement on the banks of the lower Klamath. They were there to hold a brush dance -- a healing ceremony for a sick child. Presiding over the ceremony was 89-year-old Jimmy James, one of the pre-eminent elders of the tribe. "We feel this river was given to us by the Creator," said James quietly as he consumed a meal of stew, spaghetti and watermelon prior to the dance. "We ask these people who are killing our fish: 'Why are you doing this kind of thing?' They need to think about that, because they are really dealing with the Creator, not us. They will have to answer to him."

Editor's Note:

An estimated 23,000 adult fall chinook, coho salmon, and steelhead have died from a fish kill in the Lower Klamath River that began around September 19, 2002. The fish kill was comprised primarily of adult fall chinook (95%), however, there were also substantial numbers of coho salmon (ESA Threatened Status), steelhead, some suckers and dace, and one green sturgeon observed. It is too early to know what area most of the fall chinook were returning to, however, it is likely that some sub-basins will be severely impacted due to differential run timing for various tributaries.

The fish died from two primary diseases: Columnaris (caused by *Flexibacter columnaris*) and "Ich" (caused by *Ichthyophthirius multifiliis*). Both of these pathogens are always present in the river, and transmission from fish to fish is greatly enhanced by high densities of fish. Numerous factors are thought to have contributed to the fish kill, including low river flows, warm water temperatures, fish stress due to water quality conditions, and delayed migration of fish which resulted in large numbers of fish congregating in the lower river (resulting in high densities of fish and increasing disease transmission). - submitted by Monica Hiner, Yurok Tribal Fisheries Program



Dead fish on the mainstem Klamath River

Early Life History of Fishes in the San Francisco Estuary and Watershed

Symposium and Proceedings Volume

Sponsored by the Interagency Ecological Program and the CALFED Science Program
To be held in conjunction with the American Fisheries Society, Larval Fish Conference
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The symposium proceedings will be published by the American Fisheries Society in late 2003 and will be edited by Frederick Feyrer (Dept. of Water Resources), Larry Brown (U.S. Geological Survey), James Orsi (Dept. of Fish and Game, retired), and Randall Brown (Dept. of Water Resources, retired).

For more information and updates contact Frederick Feyrer (ffeyrer@water.ca.gov) or visit the following web sites:

IEP Early Life History Symposium: http://iep.water.ca.gov/2003_elh/

AFS 2003 Larval Fish Conference: <http://www.lfc2003.com>



Contributed Papers

Larval fish assemblages of San Francisco Bay

M. McGowan (San Francisco State University, Romberg Tiburon Center)

Ecology of larval herring (*Clupea harengus*) in San Francisco Bay

S. Bollens and A. Sanders (San Francisco State University, Romberg Tiburon Center)

Survival and growth of Pacific herring larvae is a function of external salinity

F. Griffin, M. Brenner, H. Brown, E. Smith, C. Vines, and G. Cherr (U.C. Davis, Bodega Marine Lab)

Pacific herring, *Clupea pallasii*, spawning grounds in San Francisco Bay: 1973-2000

D. Watters, D., H. Brown, F. Griffin, E. Larson, and G. Cherr (CA Dept. Fish and Game and U.C. Davis, Bodega Marine Lab)

Larval anchovy ecology in San Francisco Bay

M. McGowan (San Francisco State University, Romberg Tiburon Center)

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A. Jahn, J. Amdur, and J. Zaitlin (Port of Oakland)

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