

THE TRIBUTARY

A Newsletter of the Western Division,
American Fisheries Society



American Fisheries Society
Western Division

Volume 15, No. 3/June 1990

WESTERN DIVISION MEETING

The Western Division annual meeting is scheduled to be in Sun Valley, Idaho. It will be a joint meeting with the Western Association of Fish and Wildlife Agencies.

Sun Valley is surrounded by recreation opportunities with many lakes and great scenery. "Papa" Hemingway's Silver Creek is just down the road and the Wood River through town provides fishing for nice rainbows. The Wild and Scenic Middle Fork of the Salmon River, and Frank Church River of No Return wilderness offer challenging experiences in the largest Wilderness in the "lower 48 states." The Sawtooth National Recreation Area offers views of alpine peaks and hiking or driving to crystal lakes. This location provided for a memorable Parent Society meeting in 1985!

Rick Stowell is organizing a raffle. The raffle is intended to fund housing for students. The Division wants to encourage a strong student turnout. Rick has two fly casting outfits by one of the nation's top makers, and a wood carving by the world's leading fish carver, among other prizes. Bring some spare change. This should be a great event.

Registration for AFS members will be \$125. after June 1. Registration covers Sunday lunch, an "All-Idaho" social and a bar-b-que (a \$50. package). For information contact Steve Barton, 208/334-3782, Idaho Department of fish and Game, P.O. Box 25, Boise, Idaho 83707. You should have received your first mailer by now.

Room rates at Sun Valley start at \$67. per night for a single. Other cost options are available by splitting a room or a condo. For reservations contact Sun Valley at 800/632-4104 in

Idaho and 800/635-8261 elsewhere. Act fast for a good selection of rooms. Condos go fast and are the cheapest per person cost option.

Meeting dates are July 7-11, 1990, with an EXCOM retreat tentative on July 6.

**See page 3 for a complete
schedule of events.
See page 2 for a list of
contributed papers
(as of May 1, 1990).**

1990 AFS Raffle

American Fisheries Society Annual Meeting
August 23-31, Pittsburgh, PA

Proceeds go to permanent home expansion fund!

- **White level tickets: \$5.00**
Prizes include rods, reels, knives, art prints, outdoor apparel and camping gear valued up to \$200.00.
- **Red level tickets: \$25.00**
(includes 5 white level tickets and 1 red level ticket)
Prizes include state art prints, hunting, fishing and camping equipment valued at more than \$200.00.
- **Blue Level tickets: \$50.00**
(includes 10 white level tickets, 2 red level tickets and 1 blue level ticket)
Prizes include hunting and fishing trips, guns and other equipment valued from \$400.00 to more than \$1,000.00.

Special Award to the individual and chapter selling the most tickets. If each chapter purchases at least one blue level ticket in the chapter's name, any prize won can then be raffled to one of the chapter members.

Carl Sullivan, Executive Director of AFS has taken a keen interest in the permanent home expansion fund. Purchasing additional office space is one of Sully's goals before he retires. Strong individual and chapter support will provide funds for this worthwhile project! *Darrell E. Feit, 1990 Raffle Chair*

CONTRIBUTED PAPERS
1990 WDAFS ANNUAL MEETING

The following is an incomplete list of contributed papers as of May 1, 1990.

Status and trends of streams in forested lands in Washington: the Timber-Fish-Wildlife Ambient Monitoring Project. Michael J. Parton

Implementation and application of a standardized stream inventory program in the Pacific Northwest. Karl Stein

Aquatic habitat classification and stream inventories: what you see is what you get! Nick Schmal

A quantitative assessment of cumulative watershed effects on downstream fisheries. Glenn K. Chen, Gordon Reeves, and Cindy Ricks

The use of oxygen in Michigan, past and present. Harry Westers

Ozone for disinfecting hatchery water supplies. David E. Owsley

Effects of oxygen supersaturation on the culture of cutthroat trout *Oncorhynchus clarki* R. and Rainbow Trout *Oncorhynchus mykiss* R. Speros K. Doulos and Greg A. Kindschi

Performance comparison of the Low Head Oxygenator and the 24-inch sealed column. William P. Dwyer

Oxygen supplementation in a surface water hatchery. R.D. Ewing, J. Sheahan, and T. Herbst

The use of oxygen in Utah. Joseph J. Valentine

Use of the Aquatector in a commercial hatchery. Dick and Pat Smith.

Design of an oxygen injection system and proposed research at the Abernathy Salmon Culture Technology Center. Joe Banks

The other side of the coin. Robert G. Piper

Assessment of the migrational habitats, abundances, and growth of the Arctic grayling *Thymallus arcticus* stocks of the Gulkana River, Alaska. Doug Vincent-Lang

Life history strategies of Arctic grayling in interior Alaska. William Ridder

Evaluation of the HSI model for riverine Arctic grayling in relation to Alaska project impacts. Dr. J. B. Reynolds

Microhabitat utilization by young-of-the-year Arctic grayling in the Big Hole River, Montana. Geoff McMichael

Agonistic behavior of age 0, age I and non-breeding adult Arctic grayling *Thymallus arcticus* (Pallus). Larry Kratt

Enhancement of Arctic grayling spawning in Hyalite Creek, Montana. Chris Hunter

Why do grayling get bigger as you go upstream? Nick Hughes

Methods of stock assessment of Arctic grayling in riverine-systems of interior Alaska. Robert Clark

Monoclonal antibodies differentiating among the strains of infectious hematopoietic necrosis virus. Sandra S. Ristow and Jeanene M. Armen

Synthetic astaxanthin deposition in pan-size coho salmon *Oncorhynchus kitsuch* flesh. Blake E. Smith

Fish transfer and colonization in the Central Arizona Project, canal systems. Gordon Mueller

Ichthyoplankton drift past Headgate Rock diversion Dam Colorado River, Arizona/California. Thomas A. Burke

Effects of selenium-laden agricultural return flows on growth and fecundity of bluegill in the San Joaquin Valley, California. Thomas J. Hassler and Rodney J. Nakamoto

Demonstration model to characterize spawning habitat of fall Chinook salmon in the mid-Columbia River. D.D. Dauble and G. Seton-Harris

Adult returns of fall Chinook salmon *Oncorhynchus tshawytscha* improved by transportation of juveniles from McNary Dam on the Columbia River, 1978-1983. Thomas E. Ruchle and Donn L. Park

Use of PIT tags to monitor smolt migrations of wild and hatchery spring/summer Chinook salmon *Oncorhynchus tshawytscha*. Stephen Achord, Gene M. Matthews and Orly W. Johnson

Environmental factors influencing travel time of yearling Chinook and steelhead smolts in the Snake and mid-Columbia rivers. Thomas J. Berggren

The parr-smolt transformation in yearling Chinook salmon: implications to downstream passage. Albert Giorgi

Distribution and abundance of young-of-the-year trout in the Green River, Utah. Michael J. Buntjer and Timothy C. Modde

Cyclic rebound of salmonid productivity in Mt. St. Helens' streams; implications for long-term monitoring. Peter A. Bisson and Brian R. Fransen

Anglers, attitudes, and attorneys: a case history of conflicts in resource allocation. Russ Thurow

Spinal injury and mortality of rainbow trout and brown trout collected by electroshocking. Curt Meyer and Dirk Miller

Evaluating agricultural impacts on brown trout spawning success in Rock Creek, Twin Falls County, Idaho. Terry Maret

Egg location in and substrate composition of brown trout redds in Douglas Creek, Wyoming. R.T. Grost, W.A. Hubert, and T.A. Wesche

Protocols for assessment of dissolved oxygen, fine sediment, and salmonid embryo survival in an artificial redd. Timothy A. Burton, Geoffrey W. Harvey, and Michael McHenry

Application of stream corridor classification in forested lands of Washington. Eddie Cupp Hosey and Assts.

Comparison of woody debris characteristics and function in streams bordered by old-growth, second-growth, and clear-cut forests. Robert E. Bilby

Effects of fish size and temperature on the condition and survival of "low-fat" rainbow trout *Oncorhynchus mykiss* following long-term swimming activity. Keith P. Lawrence and William T. Helm

Cutthroat trout *Oncorhynchus clarki* winter habitat selection in the Green River, Utah below Flaming Gorge Dam. Ronald A. Englund and Timothy Modde

The pattern of basin-wide distribution of juvenile anadromous salmonids in Elk River, Oregon. Gordon H. Reeves, Fred H. Everest, and James R. Sedell

Characteristics of microhabitat utilization of trout among habitat types in the Green River, Utah. Timothy Modde and Ronald Englund

A basin level habitat classification to design instream flow studies. Jeffrey L. Kershner and William M. Snider

Western Division Annual Meeting

Sun Valley 1990

The Western Division annual meeting in Sun Valley, Idaho, July 7-11, 1990 will be a joint meeting with the Western Association of Fish and Wildlife Agencies.

JULY 6

EXCOM Retreat, Redfish Lake

JULY 7

Freshman Orientation, Paul Brouha instructor.
EXCOM Business Meeting

JULY 8

Jerry Burton - *Aquaculture: The Future for Folks Who Like to Eat Fish*

Joe Janisch, Arizona Game & Fish, *The State View*

Tom Sheldrake, U.S. Fish & Wildlife Service, "The Federal View"

Ernie Brannon, Univ. of Idaho, *The Scholar's View*

Buddie Jensen, Dexter National Fish Hatchery, *View from the Raceway #1*

Joe Lentz, Dworshak National Fish Hatchery, *View from the Raceway #2*

Environmental Ethics and Professionalism, Glenn Phillips, moderator

Dan Bottom, Oregon Department of Fish and Wildlife, *Our Obligation as Managers and Scientists*

Gary Machlis, Professor of Social Ecology, *Integrating Differing Systems of Value*

Peter Nielson, Executive Director, Clark Fork Coalition, *Expectations of a Citizen*

Jim Posewitz, Montana Dept. Fish, Wildlife & Parks,

Fishery Management and an Environmental Ethic

10 AM-Noon

Lunch/Business Meeting

Conservation of Biodiversity: A Key Issue for the 90s and Beyond, Peter Bisson, moderator

Jack Williams, Bureau of Land Management,

Biodiversity of Fish Assemblages in Western North America

Andrew Sheldon, Professor of Zoology,

The Patchwork West: Regional Components of Aquatic Diversity

Gordon Reeves, Forest Service Research, *Changes in Biodiversity of Juvenile Anadromous Fishes in Streams in Managed Forests*

FUN

6 PM-?

JULY 9

WAFWA/AFS Joint Keynote Session, Dominick Portolese,

Social Aspects of Managing Fish and Wildlife

Other keynoters

AFS Concurrent Sessions of Contributed Papers

Tentative Award of Raffle Prizes

1-5 PM

JULY 10

AFS Concurrent Sessions of Contributed Papers

Lots more FUN

6 PM-?

JULY 11

Wrap-up

8 AM-?

1990 WDAFS WESTERN DIVISION OFFICER CANDIDATES

CANDIDATES FOR VICE-PRESIDENT

BRYCE NELSON

Bryce has been a Special Project fisheries biologist with the Utah Division of wildlife Resources for 20 years. He received a B.S. in fisheries from Utah State University in 1970 and immediately went to work as the assistant Project Leader on a post-impoundment study at Flaming Gorge Reservoir and the Green River tailwaters. In 1974, he transferred as Project Leader to the Bear Lake Cutthroat Trout Enhancement Project where he has dedicated his professional field career to date. Bryce has been involved in the successful improvement of the Bear Lake cutthroat trout population in Bear Lake and the subsequent use of this strain of fish in other waters.

He has been active in the AFS since 1970 and has served in the Bonneville Chapter as committee person, president-elect, and president in 1979. He received the Chapter Award of Merit in 1989 for his work with cutthroat trout. Bryce is politically active on the private front and recently completed a four-year term as Mayor of Garden City, Utah in addition to Chairman of the Bear River Association of Governments and as President of the Bear Lake visitor and Convention Bureau. He is a proponent of political activism in the fisheries field.

GLENN PHILLIPS

Glenn attended the University of Minnesota where he received a B.S. degree in Fish and Wildlife Management in 1969. He later attended Oregon State University where he earned his M.S. (1971) and Ph.D. (1975) degrees in Water Pollution Biology.

Glenn worked at Montana State University for six years where he supervised investigations to evaluate pollutants associated with energy development in eastern Montana. For the last eight years he has worked in the Montana Department of Fish, Wildlife & Parks, Habitat Protection Bureau where he oversees the Pollution Control Program. Much of his work deals with documenting effects of metals on fisheries of the upper Clark Fork River.

Glenn has been an AFS member since 1967 and is a Certified Fisheries Scientist. His AFS activities have included Red Book Review Committee, Policy and Position Statement Task Group for Toxic Substances-Water Quality Section, Co-coordinated poster session and trade show for national meeting in West Yellowstone, Membership Committee-Western Division; 1980-82, Western Division Newsletter Editor; 1980-84, Environmental Concerns Committee-Parent Society; 1984, Co-authored an AFS Policy and Position Statement on oil and gas pipelines; 1987 to present, Secretary-treasurer, President-elect, President, Immediate Past President, Montana Chapter; 1988-89, Audit Committee Chairman-Western Division; 1989-present, Chairman Western Division Committee to evaluate WAFWA relations; 1989, Publicity Chairman, Riparian resource Management Symposium.

If elected, Glenn will work to encourage chapters to make greater use of Division and Parent Society Officers to convey concerns to regional and national fishery issues.

SECRETARY-TREASURER

CARL BURGER

Carl Burger is a research biologist and project leader for the Alaska Fish and Wildlife Research Center (USFWS) in Anchorage. For the past 15 years he has investigated the adaptations, behavior, habitat requirements, and genetics of Alaska salmonids. Carl earned a B.S. in biology from Northeastern University (1971) and an M.S. in fisheries at Oregon State University (1973).

Carl has been a life member of the Society since 1973. He is a Certified Fisheries Scientist and a member of the international Fisheries and Fish Genetics sections of AFS. He has chaired several committees for the Alaska Chapter and served as its president in 1985. Carl was the Society's Raffle Chairman in 1986. He was Local Arrangements Co-chairman for the 1989 Annual Meeting held in Anchorage where his efforts resulted in a Presidential Service Award at the Providence Annual Meeting for his fund raising accomplishments and at the same meeting he won the Best Poster Presentation award. Carl has received achievement awards for his

work with the Fish and Wildlife Service, and he remains an active member of other organizations such as AIFRB.

LYNN B. STARNES

While Lynn Starnes recently transferred to the Denver Region of the Fish and Wildlife Service, she is neither new to the American Fisheries Society nor to the west. In the American Fisheries Society she has served as President of the Tennessee Chapter (1979), co-chair of the Environmental Concerns Committee for 2 years 1983-84, 1984-85), chairman of the demanding Raffle committee (1986-87), and organizer and then President of the International Fisheries Section (1988-89) just to name a few of the elected/appointed offices. In addition, she has served on the common and Scientific Names of Invertebrates Committee since its inception in 1982.

Ms. Starnes worked from 1984-89 in Washington, D.C. in policy and legislation related to the "Fish" in the Fish and Wildlife Service. In this capacity she has dealt with a number of fishery issues throughout the United States including development of several restoration initiatives on the west coast. Between 1974 and 1984 she worked with the Tennessee Valley Authority. In addition to traditional fishery work on reservoirs and large rivers, she researched potential environmental impacts from coal and uranium development on aquatic resources in both the eastern and western United States. As a Peace Corps Volunteer in Gambia, West Africa, she taught science, agrarian practices and worked on fisheries projects. Currently, Lynn is the Assistant Regional director for fisheries and federal aid for the U.S. Fish and Wildlife Service in Denver, Colorado.

NATIONAL NOMINATING REPRESENTATIVE

LARRY L. ENG

Larry received his B.S. in zoology from the University of Idaho, M.S. in zoology from the University of Florida, and Ph.D. in zoology from the University of California at Davis. His doctoral dissertation concerned Asiatic clams.

Larry worked on bivalve mariculture as a Fishery Biologist for the U.S. Bureau of Commercial Fisheries (now NMFS) at their Milford, CT lab and studied freshwater fouling communities as a Research Biologist for the California Academy of Sciences in San Francisco before finally finding a home with the California Department of Fish and Game. During his tenure with the California Department of Fish and Game, he has been the Project Leader for California's Endangered Fishes and Invertebrates Project, served as staff zoologist and lead scientist for the state's Natural Diversity Data Base, coordinated the California endangered Species Act interagency consultation program, and currently supervises the coordination of the department's land and water projects environmental review under the California Environmental Quality Act.

Larry has been a member of the American fisheries Society since 1969 and is a Certified Fisheries Scientist. He has served as President of the Sacramento chapter; Membership Chair (continuing), Secretary and President of the California-Nevada Chapter; member of the Western Division Nominating committee; and member of Membership, Raffle, and Names of

Invertebrates (continuing) Committees of the Parent Society. He has also chaired many technical sessions at WDAFS and AFS meetings.

KELLY HEPLER

Kelly received a B.S. in fish and wildlife management from Montana State University in 1978. He began his professional career with the Alaska Department of Fish and Game in May 1979 working on a pilot instream flow program for the division of sport Fish. since that time has held a number of positions including assistant area management biologist and Chinook salmon project for Northern Cook Inlet and has authored a number of management and technical reports. Kelly was the Anchorage area management biologist before his present position. He is currently principal investigator for the Division's Exxon Valdez Oil Spill Damage Assessment projects in Prince William Sound and along the lower Kenai Peninsula.

Kelly is a Life Member of the society and has been active on the chapter and national level. On the chapter level he has been chairman of a number of committees including continuing education, resolutions, local arrangements, and program committee. He has served as secretary-treasurer, president-elect, and president of the Alaska Chapter. On the national level has served on the raffle committee, chairman of the chapter president caucus, and most recently on the steering and program committee for the 1989 national meeting.

WESTERN DIVISION AWARDS

The Western Division has 5 awards which are given out annually if qualified candidates are nominated. The following awards are available for nominations for 1990.

Award Of Excellence can be given to members or non-members within the Western Division. It is for outstanding achievements in fisheries.

Award of Merit can be presented to AFS members, non-members or organizations who have provided some type of meritorious service to the Society.

Robert L. Borovich Award is to be presented to non-AFS individuals for enhancing or protecting our fisheries resources.

Conservation Achievement Award is for non-AFS groups or organizations for outstanding work in fisheries.

Chapter of the Year Award is presented to the chapter which has the best justification in the nomination. Nominations can come from AFS member so nominate your own chapter.

Nominations for these awards must be submitted to the Awards Committee Chairman 15 days before the annual meeting so they can be presented at that time. Recipients of chapter Awards often make excellent nominations for the Western Division Awards.

Send your nominations with justification to Pat Dwyer, 27 Border Lane, Bozeman, Montana 59715.

1990 WESTERN DIVISION ANNUAL ELECTION

SELECT ONE FOR EACH POSITION

Vice-president

- Bryce Nielson
- Glenn Phillips

Secretary-treasurer

- Carl Burger
- Lynn Starnes

National Nominating Representative

- Larry L. Eng
- Kelly Hepler

Ballots postmarked after June 25, 1990 will not be counted. Please mark your ballots and return to:
Pat Dwyer, WD Election, 27 Border Lane, Bozeman, MT 59715.

THIS AND THAT AROUND THE WEST

YOUNG MISSOURI FISHERS

A statewide survey of Missouri sixth grade students (n=2,916) was conducted in April 1989 to determine students' knowledge, attitudes, and behaviors about fishing and the aquatic environment.

Surprisingly, almost all (90%) had fishing experience. Only 6% of the sixth graders had never fished (5% did not respond). Of those who enjoyed fishing (82%), 14% practiced catch-and-release. One-third (34%) fished to be outdoors with nature. Boys preferred catching bass (40%) over catfish (31%), while girls preferred catching catfish (30%) over bass (24%). Twice as many girls (10%, n=454) than boys (8% n=191) preferred catching trout.

Attitudes of both anglers and non-anglers indicated about one-third had anthropomorphic tendencies some agreed or strongly agreed that hooks hurt a fish's mouth (41%) and fish have feelings like people (27%). However, because most sixth graders enjoyed fishing, it appears they will continue fishing as adults and perhaps will develop catch-and-release values.

Knowledge scores were moderate (mean=62%). Students were more knowledgeable about fish ecology (73%), aquatic ecology (67%) and aquatic management (62%) than water pollution and environmental changes in aquatic habitats (45%). Aquatic education programs for middle school students should take advantage of students' interest, knowledge and participation in fishing by relating aquatic concepts to their fishing experience.

To request a copy of survey items, data, and/or report, write to: Missouri Department of Conservation, Education Section-Research, P.O. Box 180, Jefferson City, Missouri 65101-0180. This report will be published in the Proceedings of the Forty-Third Annual Conference, Southeast Association of Fish and Wildlife Agencies. *SFI (March, 1990)*

CONCERNED PROFESSIONALS

Idaho Environmental Professionals, a diverse group of attorneys, agency professionals, and consultants involved in water, fish, wildlife, waste management and development, meets once a month in Boise, Idaho. The group has had four meetings so far, with at least fifty

people in attendance. The diversity in the group makes for lively discussion, and better understanding of current issues.

OCEAN GARBAGE LAWS

New laws signed by the U.S. and 27 other nations bar disposal of plastics in navigable waters. The law (Annex V of Marine Pollution Treaty) also restricts disposal of all other refuse within 12 miles of shore and requires marinas, ports, and commercial dock operators to provide containers for easy disposal by mariners. Information, brochures, decals, videotapes, poster, coloring books, and curriculum materials are available from NOAA, Debris Info, 312 Sutter Street, Suite 316, San Francisco, CA 94108.

VOICE OF THE ENVIRONMENT SPEAKS

Founded with a basic tenet that abuse of our nation's recreational waterways will never be corrected unless the outdoor public demands change, the Anglers for Clean Water (ACW) recently announced formation of a new public involvement campaign entitled Voice of the Environment (V.O.T.E). V.O.T.E. was created to halt public apathy regarding problems with our surface waters and to alter the general feeling that "I can't do anything about it." The new ACW program hopes to register 10 million Americans to help find solutions to the problems facing America's recreational waters.

ACW, the 20-year-old non-profit arm of B.A.S.S., Inc. plans to widely distribute a 48-page, full color publication, *The Living Waters*. The publication will contain information relating to waterways abuse and contain guidance to resolve America's waterway problem. Issue papers prepared by a select team of scientists will be written in "layman's language." the purpose of the publication and the V.O.T.E. campaign is to identify the problems of our fisheries and to explain how America's boaters, anglers, and other users of these waters can get involved in creative and politically focused

corrective solutions. The power of the electorate at the voting place is a fundamental principle of the new campaign.

For more information on the V.O.T.E. program contact Ann Smith at B.A.S.S., Inc., One Bell Road, Montgomery, Alabama 36117, 205/272-9530. *SFI #413 (April 1990)*

IRON FERTILIZER

Scientists trying to battle the "greenhouse effect" have seriously proposed dumping hundreds of thousands of tons of iron into the ocean to create giant blooms of marine algae that could soak up much of the excess carbon dioxide believed to be responsible for global warming.

If the massive scheme is carried out, researchers say it would be among the greatest manipulations of nature ever attempted. The proposal to dump iron into the oceans has been given quiet endorsement by a special panel of the National Research Council, an arm of the National Academies of Sciences and Engineering, which is chartered by Congress to advise the government on scientific and technical issues.

The panel concluded "it is conceptually feasible to slow the increase in atmospheric carbon dioxide" by fertilizing the oceans with iron, which many scientists now believe is the one ingredient that would augment marine algae in many environments.

In a report that has not been publicly released, the group recommended that, "after careful modeling and appropriate preliminary experiments," a large international "iron enrichment experiment" be implemented at a cost of between \$50 million and \$150 million. Researchers have suggested that the first experiment be conducted off the coast of Antarctica or Alaska.

"You give me half a tanker full of iron, I'll give you another ice age," said John Martin of Moss Landing Marine Laboratories in California, one of the leading proponents behind what scientists only half-jokingly refer to as the "Geritol Solution" to global warming.

Scientists are unsure, however, about the negative effects of such a massive program. Marine algae are the foundation of the ocean

food web, and feed the shrimp-like krill that, in turn, are eaten by the ocean's fish, seals, penguins and whales. Disruption of the food chain in any way could have unknown ecological effects. *The Washington Post*

URBAN FISHERIES PROGRAM

The Sport Fishing Institute (SFI) is pleased to announce the formation of an urban fisheries program. This project, funded by Sport Fish Restoration Funds, also known as Wallop-Breaux, will create an information clearinghouse at SFI for state and federal urban planners. Upon completion of the project, urban fisheries coordinators, or anyone wishing to start or improve an urban fisheries program, will be able to contact SFI for information regarding economics, degrees of participation, species, as well as information on some of the problems associated with urban fisheries.

The clearinghouse will be a valuable asset to fisheries planners. By providing indexed information on existing programs, planners can avoid the time and expense of collecting data from the varied urban fishery programs already operating. Currently, SFI is in the process of mailing questionnaires to all state fisheries agencies in order to obtain site-specific information on urban fisheries. If you would like a copy of our questionnaire or have any information or questions pertaining to urban fisheries, please contact Laura Howard at the Sport Fishing Institute, 1010 Massachusetts Ave., N.W., Washington, D.C. 20001, 202/898-0770.

JOB OPPORTUNITIES

HATCHERY

Prince William Sound Aquaculture corporation, a private, non-profit regional aquaculture association, is soliciting professional résumés for salaried positions at 3 (4 in FY 92) remote hatcheries in Prince William Sound. All 5 species of salmon are currently being reared at different facilities. Send a résumé and statement of interest to Personnel, P.W.S.A.C., Box 1110, Cordova, AK 99574.

PUBLICATIONS

COLLECTIBLE TACKLE

To feed the growing public interest in old fishing tackle as an investment and hobby, Editor/Publisher Brian J. McGrath has launched a new journal called *Fishing Collectibles Magazine*. The quarterly report covers art, advertising, books, fish decoys, lures, rods, reels and other paraphernalia related to angling. For details contact Brian McGrath at 2005 Treehouse, Plano, Texas 75023, 214/867-5980.

CLEAN LAKES CLEARINGHOUSE

The Clean Lakes Clearinghouse has been developed by the EPA to identify technical information on lake management, restoration and protection. The objectives of the clearinghouse are to establish a core of technical literature on lakes and to make the information available. For more information call Clean Lakes Clearinghouse User Support at 202/382-1711 or write U.S. Environmental Protection Agency, Clear Lakes Program (WH-553), Washington, D.C. 20460.

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TWO VOLUME WILDLIFE GUIDE

The Official World Wildlife Fund guide to Endangered Species of North America is published by Beacham Publishing, Inc. and the World Wildlife Fund. This guide was created to provide essential information to professional wildlife researchers. The guide describes the appearance, behavior, habitat, population, range, threats to survival and recovery efforts for each of the 547 federally listed endangered and threatened species. Appendices list species state-by-state, while locator maps provide geographical data. Each entry is accompanied by a black and white photo with an additional 119 photos in full color. Other features include an introduction by Russell E. Train, Chairman of the World Wildlife Fund and background information on endangered species legislation by Michael Bean of the Environmental Defense Fund.

This two-volume, 1,258 page set is available for \$195.00 from Beacham Publishing, Inc., 2100 S Street, N.W., Washington, D.C. 20008.

ENDANGERED SPECIES

The American Fisheries Society recently updated their list of rare North American fishes. The 1989 list adds 139 new taxa to the list developed in 1979 of 251 fishes and removes 26 for a total of 364 fishes in Canada, United States and Mexico that warrant protection because of their rarity. The 26 taxa removed from the 1979 list include 16 removed because of better information on their taxonomy or status and 10 because they have become extinct. Not a single fish warranted removal from the list because of successful recovery efforts.

In addition, 49 fishes have changed in status but remain on the list; 7 have improved in status, 24 have declined and 18 have been reclassified because new information revealed that they were either more common or rarer than was earlier believed and therefore were incorrectly classified in 1979. Comparison of the 1979 and 1989 lists indicates that recovery efforts have been locally effective for some species, but are clearly lagging behind deterioration of the overall fish fauna. The health of aquatic habitats in North America continues to decay. Particularly disturbing is that all wild stocks of the aurora trout (*Salvelinus fontinalis timagiensis*) have been eliminated by acid rain. A major commitment to conservation of entire ecosystems, rather than the inconsistent recovery efforts for individual species, is needed to reverse this trend.

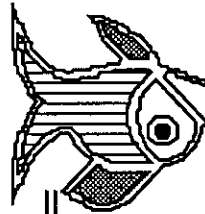
For further information contact Jack E. Williams, Chair, Endangered Species Committee, Division of Wildlife and Fisheries (WO-240), Bureau of Land Management, 18th and C Streets, N.W., Washington, D.C. 20240.

WEST COAST ESTUARIES

The Distribution and Abundance of Fishes and Invertebrates in West Coast Estuaries, Volume 1: Data Summaries presents information compiled on the spatial and temporal distribution, relative abundance and life history characteristics of 47 fish and invertebrate species found in 32 estuaries along the West Coast, from Puget Sound, WA to Tijuana Estuary, California. This report is available free of charge from Bob Emmett, NMFS, Box 155, Hammond, Oregon 97121.

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ELECTION ALERT

1990 Western Division
election ballot
inside.

Be sure to mark your
ballot and mail
immediately to:

Pat Dwyer
27 Border Lane
Bozeman, MT 59715

We need
YOUR
support!



1990 — The 200th anniversary of the Bill of Rights

The *Tributary* is distributed to 3,000 WDAFS members and exists as a forum to present fisheries-related information. As the editor, I cannot accomplish this goal unless YOU participate! The WDAFS will publish three editions of *The Tributary* in 1990. Deadlines for submission of articles for *The Tributary* are February 15 (for the Winter issue), May 20 (for the Spring issue) and October 15 (for the Fall issue). If you have information you would like included in *The Tributary*, send it to:

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Corvallis, Oregon 97339