The Tributary

A Newsletter of the Western Division, American Fisheries Society

Volume 16, No. 1/November 1990

THE PRESIDENT'S CORNER

People! Professionals! The Western Division of AFS is one of the most outstanding experiences I could hope to enjoy. The folks of this Division are an outstanding bunch to serve. You all have my respect for what you do for the Society as just plain old everyday people who are concerned about fish, fish biologists, fishing and fishers. Bob Iverson is developing momentum for the Hawaii Chapter. Pete Bisson is trying to hold the reins of the North Pacific International Chapter and do committee work for the Division. Gary Sanders gave me the quickest turn-arounds on my first request for Alaska Chapter information. Wayne Elmore agreed to chair the Division's riparian committee.

Division members constantly amaze me with their integrity. It is hard to imagine a group of folks who so consistently do what they believe is right, rather than whatever a dollar, or comfortable politics, might dictate. Phil Pister still tries to teach us ethics, while helping to organize a Mexican Chapter. Cay Goude nags the Society EXCOM to be sure that Division members are put ahead of special projects. Gordie Reeves, Cleve Steward, and those troublemakers in Oregon and Idaho stand up to be counted for the Columbia salmon. . . . and then there are troublemakers in California who want lowly delta smelt to be around for awhile.

The professionalism exhibited by Division members over the years is a hard act to follow. Art Whitney and Bob White from Montana made upstanding Society presidents. Glenn Phillips, your new Division vice-president, has been so persistent at contributing to the Society I've lost track of everything he's done. Don Martin is hanging in there as the new leader of the Water Quality Section.

Well, I think you get the idea. There are so many who contribute to the Division that I can't even begin to name them all. They ... YOU, are born leaders that I am honored to serve. *Dave Burns*

FROM THE HOME OFFICE

Dear Western Division Members:

In 1983 AFS successfully completed a fund drive to buy permanent office space in the Renewable Natural Resource complex here in Bethesda, MD. Owning our own "home" is currently saving the Society $44,500 per year in rent and the space we bought for $279,000 is now valued at $592,000. Doubting Thomases thought we couldn't raise the funds but with broad member support the Society was able to make this remarkably good investment.

The money saved from office ownership has helped enable the Society to 1) expand its legislative and fisheries resource conservation efforts; 2) greatly enlarge its publication and communication programs; 3) computerize office operations; 4) improve technical information exchange; 5) begin contributing education efforts; 6) keep dues increases below inflation rates; and 7) perform other needed services identified by the membership. Our efforts have led to an improvement in the quality of fisheries science in North America and to many new employment opportunities for fisheries scientists. We must continue to build on this record in the years ahead.

Because of the strong growth of our publication programs we recently moved editorial operations from cramped quarters in Managing Editor Bob Kendall's basement to excellent space adjacent to our central office. AFS is leasing this new space because every available square foot in our suite is occupied. We now have the opportunity to purchase this needed "growth" space at the cost of $300,000. I am a year away from retirement as your executive director, but before wrapping up my career, the AFS officers have asked me to chair a committee to raise these permanent home expansion funds.

Every AFS member is being asked for a contribution to our expansion fund. I sincerely hope that you will join in this effort and that you will be generous until it hurts just a little. Contributions are tax deductible. The names of all donors will be listed in a ledger posted permanently in the new offices and all gifts, large and small, will be welcome. Those contributing $1,000 or more will be individually recognized on a bronze wall plaque. Please join me in making this investment in the future of AFS and the fisheries science profession.

Sincerely, *Carl R. Sullivan*, Executive Director

IDAHO CHAPTER NEWS

The Idaho Chapter is deeply involved in activities relating to the evaluation of chinook for potential listing under the Endangered Species Act. Cleve Steward, Chairman of the Chinook Committee, and past president, Bert Bowler are participating on the NWFS Technical Committee. The committee has participants from all interests and the meetings have involved a lot of political chest-thumping. The chapter is striving to maintain an objective position and encourage a sound review process.

A bill drafted by the chapter and passed by the Idaho legislature designated the cutthroat as the official state fish. State Senator Mary Lou Reed, who sponsored the bill, is contributing funds to assist the chapter in preparing an educational poster.

The Chapter's annual meeting is scheduled for March 7-9, 1991, in Boise. The Chapter is sponsoring a two-day training session March 5-6, 1991, in Boise on stream hydrology and hydraulics conducted by Dr. Osborne from Washington State University. The training is open to non-chapter members. Contact Jim Congelton for more information at 208/885-6336.

RETIRED?

Retired AFS professionals now have a newsletter especially targeted to their needs. The title is *Homopsicus rusticus*. The Society has 245 members that register as retired, and an unknown number of retirees that register as active members.

STUDENT MEMBERSHIP

Membership data from the past 20 years show that as AFS has grown, the proportion of student members has declined. Students made up over 20 percent of the membership in the early '70s, but now comprise only 10 percent of the membership. The data does not allow separation of the recruits (i.e. those student members who became and remain regular members) from the immigrants (i.e. those who became members without passing through the student life stage as AFS members). However, the decline in student composition of the membership reflects the decline in student enrollment in natural resource programs since the heyday of the '70s.

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 publishes three editions of *The Tributary* yearly.
Deadlines for submission of articles 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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WESTERN DIVISION MEETING REPORT

The Western Division annual meeting was held July 7 - 10, 1990, in Sun Valley, Idaho. It was a joint meeting with the Western Association of Fish and Wildlife Agencies (WAFWA). The Idaho Department of Fish and Game proved to be gracious hosts, pulling together an evening social and BBQ, among other events. Keynote speakers included Senator James McClure, Dominick Portelese (Portelese Leadership Institute), Stan Tixier and Bob Nelson (Forest Service) and Si Jamison (BLM). Special panels were held on biodiversity-diversity, environmental ethics and professionalism, and the future of aquaculture. A day and a half were dedicated to several concurrent sessions of contributed papers.

The Division held an executive committee retreat at Redfish Lake Lodge on July 6. Officers and representatives of seven Chapters and one Section were elected. Paul Brouha of the Society staff worked to develop a two year action agenda. The agenda was constructed around achieving objectives outlined in the Society Long Range Plan.

Business conducted by the Division resulted in scheduling the 1991 meeting in Bozeman, Montana on July 17 -20. This meeting will be held independently from WAFWA, as will the 1992 annual meeting as voted by the Division membership. The Division decided to grant $500 to the National Resource Defense Council to support their review of the Central Valley Plan in California. A grant of $500 was made to the Idaho Chapter to support their petition to the National Marine Fisheries Service for listing of Snake River chinook salmon pursuant to the Endangered Species Act. Other actions included consideration of splitting the Division, support of a Chinook and Coho Workshop, and support of an educational video proposed by the North Pacific International Chapter.

An Award of Excellence was presented to Ron Goede of Utah, for his contributions in the area of fish disease. Awards of Merit were presented to Bert Bowler and Bruce Rieman of Idaho, for their leadership roles during the 1990 legislation designating the cutthroat trout the Idaho State Fish. The Chapter of the Year Award was presented to the Montana Chapter for over eleven outstanding contributions to the Division and conservation of fisheries resources. This was the second year in a row for Montana, a first in the Division. Two riparian awards were given. Al Bammann of the BLM Safford District in Arizona, was awarded for the restoration of Aravaita Creek, and Roger Williams of the Forest Service Heppner Ranger District on the Umatilla National Forest in Oregon, was awarded for work on Wall Creek. Cay Goude was presented the President's plaque.

CAL/NEVA CHAPTER NEWS

The Cal/Neva Chapter is as busy as ever with the following activities:

The Annual Meeting of Cal/Neva of AFS is set for February 7 - 9 , 1991, at the Radisson Inn, South San Francisco, California.

A petition prepared by Dr. Peter Moyle, University of California-Davis, to list the Delta Smelt (*Hypomesus transpacificus*) as an endangered species and supported in written and oral testimony by Cal/Neva was denied by the California Fish and Game Commission at hearings on August 30, 1990. The Chapter Conservation Committee is consulting other parties about follow-up actions it may consider.

An upcoming conference of interest to members is slated for late October, 1991.

The University of California and co-sponsoring organizations invite researchers and professionals to submit abstracts for oral and poster presentations at a Symposium on Biodiversity of Northwestern California (Klamath Province). The symposium will be held in Santa Rosa, California October 28 - 30, 1991. Papers may address any topic dealing with genetic, community and landscape diversity issues. Before submitting an abstract, obtain a copy of the call for papers from Dr. Richard Harris, Biodiversity Symposium, University of California, 5630 S. Broadway, Eureka, California 95501, 707/445-7351. The deadlines for submittal of abstracts are January 1, 1991 for oral presentations and March 1, 1991 for posters. A proceedings will be published.

There are two new publications available:

Callaham, R.Z. 1990. *Case studies and catalog of watershed projects in western provinces and states.* University of California, Wildland Resources Center. Report 22. 188 pp. ($6.00)

This report reviews and lists watershed projects where there had been, or was being planned, a significant investment of resources to apply appropriate technologies and where evaluation of monitoring of effects was an integral part of the project. 239 projects are listed and briefly reviewed, including those from western provinces of Canada.

Callaham, R. Z. 1990. Guidelines for management of wildland watershed projects. University of California, Wildland Resources Center. Report 23. 36 pp. ($3.00)

This report is a companion to Report 22. It represents the findings of a workshop on management of watershed projects. Report 23 tries to bring together factors that contribute to success and failure of watershed projects, and it suggests how they should be managed to optimize obtaining stated objectives.

The publications may be purchased together for a total cost of $7.50 or singly at the prices stated above from The Wildland Resources Center, University of California, 145 Mulford Hall, Berkeley, California 94720. Make checks payable to U.C. Regents.
Don C. Erman, President, Cal/Neva Chapter

EXXON-VALDEZ SLIDE SHOW/VIDEO

At the 1990 WDAFS meeting in Sun Valley, a resolution was passed supporting the concept of the production of a narrated slide show video on the Exxon-Valdez oil spill, and how the individual could make a difference in reducing oil traffic. The North Pacific International Chapter offered to work with Natalie Fobes (a photojournalist whose work on that oil spill and on Pacific salmon has appeared in recent *National Geographics*) in developing a cost proposal for this project. Total costs for the production of a master tape and 100 copies for initial distribution have been estimated at under $5,000. This is extremely reasonable, considering that Natalie's normal professional charges for such a proposal should be more like $7,500. Natalie obviously is quite committed to the cause, and so is our Chapter. But we need some help. You can help in three main ways:

1. Find additional sources of funding. The North Pacific International Chapter proposes to directly contribute $2,500 toward the project, and challenges the Western Division, other chapters and organizations to match those funds.

2. Offer your expertise in developing the second part of the video, which will focus on positive ways in which individuals can reduce their oil consumption.

3. Suggest names and addresses of groups to which this video could be distributed in order to cover as wide a cross-section of the public as possible. Scouting groups, public education TV stations, and environmental groups are but a few of the possibilities.

Natalie's presentation makes a lasting impression on those who see it, and will strengthen their resolve to make a personal difference. Please help to make this worthwhile project happen. Write me at RR1 S10 C4, Kaleden, BC, V0H 1K0, Canada, or call 604/493-8261 (work), 497-5553 (home) or 492-1314 (FAX). Bruce Shepherd, North Pacific International Chapter Past President

ACTIVISTS, WHERE ARE YOU?

The Western Division is the Society's leader in environmental activism. We are involved in a number of contentious issues and rightly so. As Chairman of the Environmental Concerns Committee for the past year, I am absolutely flabbergasted to report that this committee was called upon only once to comment on an issue.

I know most chapters have a committee of some name that deals with issues in their geographic area. However, I urge you to use the Division's Environmental Concerns Committee to help make your ideas and position known. We serve as a second avenue to bring your point across. In addition we act as a liaison with the Society's national committee.

I ask each chapter president to nominate a representative to serve on the Division's committee. Thanks for your support, Randy Bailey, c/o USFWS, 1011 E. Tudor Road, Anchorage, Alaska 99503. Phone FTS 869-3466, Commercial 907/786-3466, FAX 907/786-3350. Home phone 907/345-0706.

MONTANA CHAPTER ACHIEVEMENTS

Highlights from the Montana Chapter's annual report include the following achievements.

1. The Chapter developed an Action Agenda structured around the Society's Long Range Plan.

2. The environmental Concerns Committee commented in writing on nine natural resources issues.

3. The Chapter raised about $26,000 for resource action and protection.

4. A three day summer workshop on west slope cutthroat trout management was held at Glacier National Park.

5. The February 12 - 16 annual meeting in Lewistown which included an environmental ethics seminar by Phil Pister and a presentation by U.S. Representative Pat Williams (D-MT). U.S. Senator Conrad Burns (R-MT) sat in on their EXCOM meeting for 40 minutes and lead a wide-ranging discussion on issues.

6. An Active Extension Education Committee which presented a three day aquatic workshop and coordinated the Chapter's National Fishing Week activities.

7. A grazing audit of all National Forest and BLM areas in Montana by the Land Management Committee.

8. Initiation of a riparian management course at the University of Montana by the Riparian Committee.

9. A $500 Chapter grant to support students at the Canyon Ferry Limnological Institute.

10. Chapter representation at the Society's annual meeting in Anchorage.

Anyone interested in information on these efforts please contact a member of the executive committee of the Montana Chapter. President John Fraley, 406/752-5501; President-elect Chris Hunter, 406/444-3726; Secretary-treasurer Jim Peterson, 406/452-6181; Past-president Glenn Phillips, 406/444-5334; and Newsletter Editor/Secretary-treasurer-elect Ginger Thomas, 406/721-4457.

HAWAII CHAPTER OFFICERS

The Hawaii Chapter has newly elected officers, Robert T. B. Iversen, President, Linda Paul, Secretary-treasurer, and George Boehlert, President-elect. A special session entitled "Introduction of Aquatic Organisms in the Pacific Basin" is planned for the May 27 - June 2, 1991, 17th Pacific Science Congress in Honolulu.

PUBLICATIONS

WRITING HELP

Writing for Fishery Journals, the newest AFS publication, is the outgrowth of a 1988 AFS annual symposium developed and sponsored by the American Institute of Fishery Research Biologists. Edited by Dr. John Hunter (with major assistance from Bob Kendall) the 102 page book should have great utility for field fisheries managers, students, teachers and researchers. Publication funding support was provided by the Fisheries Management Foundation of Seattle, Washington, and the International Association of Fish and Wildlife Agencies. The price to AFS members is $12.00 and to non-members, $15.00. The book can be ordered from AFS, 5410 Grosvenor Lane, Suite 110, Bethesda, MD 20914-2199 (ISBN 0-913235-65-2).

TROUT UNLIMITED POSTER

Catch-and-release trout is the subject of a new art poster by Trout Unlimited.

The poster is the first fine-art quality reproduction with the catch-and-release theme. It represents Trout Unlimited's philosophy of recycling wild trout to spawn more wild trout. Almost every state has designated trout streams and lakes for catch-and-release fishing only.

The poster measures 24x18 inches and is printed on heavy, high-grade glossy paper. It is available from Trout Unlimited, 501 Church Street NE, Vienna, VA 22180 for $20.00 plus $2.00 for shipping in a sturdy mailing tube.

CAREERS IN ENVIRONMENTAL SCIENCES

The Complete Guide to Environmental Careers by L.P. DeAngelis, S.C. Bosler, and L.E. Yeager is published by Island Press, Covelo, California, 1989. A book of 328 pages, it is available for $14.95 by contacting CEIP Fund, Inc., 68 Harrison Ave., 5th Floor, Boston, MA 02111-1907.

The guide gives an overview of specific careers in environmental sciences with descriptions of job outlook, salary level, entry requirements and other pertinent data. Chapter 12 on Fishery and Wildlife Management may be of interest to student members of AFS.

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WDAFS TOP BANANAS

ELECTED OFFICERS

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Don Chase, President-elect (1991 Program Chair)
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Glen Phillips, Vice-president (Chairs: Membership, Time & Place, and 1989-90 Audit)
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Lynn Starnes, Secretary-treasurer
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Wayne Elmore, Riparian Chair
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Joe DoSantos, Native American Fisheries Chair
CSKT
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Pablo, MT 59855
406/675-2700

Mike Fraidenburg, Marine Fisheries Chair
5432 Keating Rd. NW
Olympia, WA 98502
206/753-5684 (w)

PICTORIAL GUIDE TO PACIFIC COAST FISHES

Pacific Coast Inshore Fishes by D.W. Gotshall is a third edition guide that has been revised and updated with descriptions and color photos of 167 species between Alaska and Central Baja, California. A pictorial guide to families, followed by color plates and brief comments on identification, range and habitat of each species, this publication is a useful key for amateur ichthyologists, divers and fishers.

Available from Sea Challengers, Monterey, California for $18.95.

ANALYSIS OF RESERVOIR PROCESSES

Reservoir Limnology: Ecological Perspectives, edited by K.W. Thornton, B.L. Kimmel, and F.E. Payne and published by John Wiley and Sons, Inc., New York.

Available from AFS at 5% discount, this publication gives analysis of reservoir processes in nine chapters prepared by leading experts. Chapter topics include introductory perspectives, transport processes, sedimentary processes, dissolved oxygen, nutrient dynamics, primary production, zooplankton, perspectives on fish and conclusions and speculations. This is recommended reading for reservoir biologists, limnologists and water resource managers. $49.95.

FISH HEALTH PROMOTION

To promote the sale of Journal of Aquatic Animal Health, the AFS editorial office has produced a promotional flier designed by Beth McAleer. Mary Frye is coordinating mailing to veterinarians and other specialized groups who may be interested in subscribing to the journal. The cost is $25.00 to AFS members, $75.00 to non-members. Contact the Washington D.C. office of AFS if you are interested.

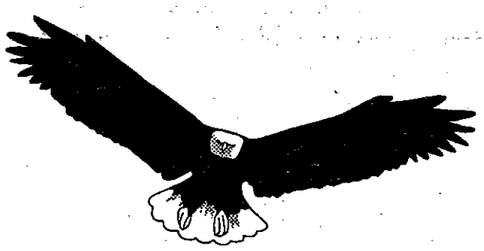
FISHERIES TECHNIQUES SLIDES

A set of slides that illustrate many of the techniques described in *Fisheries Techniques*, L. Nielsen and D. Johnson, editors is available for $125.00. The 200 2"x2" slides, compiled and produced by a committee of the Education Section chaired by William Kelso and Later by John Nickum, include a list of slide descriptions and are arranged to accompany the chapter sequence in *Fisheries Techniques*.

Send a check or money order for $125.00 to Education Section, AFS, c/o Dr. James Haynes, Aquatic Ecology and Biological Science, SUNY College at Brockport, Brockport, NY 14420.

CALIFORNIA FISH DECLINE VIDEO

The decline of California's salmon and steelhead populations is the subject of a video documentary produced for the California Advisory Committee on Salmon and Steelhead Trout. *On the Edge* can be purchased for $15.00 by contacting Bill Kier, the Committee's principal consultant, 415/331-4505. Copies can be borrowed at the U.C. Cooperative/Sea Grant Marine Advisory Office. Call Marine Advisor Jim Waldvogel, 707/464-9168 for more information.



CONFERENCE PRESENTATION COMPENDIUM

Proceedings of the Eighth Annual California Salmon, Steelhead and Trout Restoration Conference is a compendium of 23 conference presentations. Topics include watershed analysis, instream structures, propagation, classroom education, erosion control, evaluating biological success in response to habitat restoration, resident trout restoration topics, aggregate mining and fish habitat and a sustainable future. Copies can be obtained from UC Cooperative Extension/Sea Grant, Foot of Commercial St., Eureka, California 95501. Make your $5.00 check payable to CSSTRF.

HANDBOOK ON ARTIFICIAL REEFS

A cooperative effort between the Sport Fishing Institute's Artificial Reef Development Center and the Bass Anglers Sportsman Society has produced the handbook *A Guide to the Construction of Freshwater Artificial Reefs*. It provides uniform guidelines on constructing, transporting and siting of freshwater artificial reefs. Types of materials needed for reef construction, costs associated with the use of these materials and the methods used to construct reef habitat is included. Intended for use by fishery resource managers, local angling and conservation groups, and civic associations who are interested in properly designed and constructed freshwater artificial reefs, the handbook enables those interested to constructively enhance sport fishing opportunities.

S.F.I. and B.A.S.S. were presented an award by U.S. Secretary of the Interior Manuel Lujan, Jr. at the American League of Anglers and Boater's Wallop-Breaux Conference June 5 - 6, 1990, in recognition of the contribution of this handbook. Funded with Sport Fish Restoration funds, the handbook is available FREE from the Sport Fishing Institute, 1010 Massachusetts Ave., N.W., Suite 320, Washington, D.C. 20001, 202/898-0770.

THIS AND THAT AROUND THE WEST

IDAHO DEQ'S ADOPT-A-STREAM

The Idaho DEQ has begun an Adopt-A-Stream program. The one-year pilot project, funded by an incentive grant from the U.S. Environmental Protection Agency, provides funds to nonprofit organizations for projects to improve water quality, enhance riparian areas or monitor the quality of streams and lakes.

Examples of possible projects include volunteer water quality monitoring, stream cleanups and stream bank stabilization using willow plantings. A group could design and build stream identification signs, distribute educational materials or fence a sensitive stream-side area. The program is part of Idaho's overall nonpoint pollution program. Basin area meetings were held throughout the state last year to nominate stream segments of concern for special attention. The Adopt-A-Stream program enables local groups to identify and remedy problems on these special stream. Regional meetings are planned for this fall to introduce the program. The Division is accepting applications for these improvement projects now. Projects will be selected for funding in February 1991 for implementation in the spring and summer. For more information about this program, contact Joan Meitl, 208/334-5860. Joan Meitl, Idaho Clean Water, Spring/Summer 1990

DRIFTNET FISHING KILLS

Open-sea driftnet fishing is killing substantial numbers of tuna, sharks, marine mammals and sea birds in incidental catches in the North Pacific, confirmed a recently released report by the National Oceanic and Atmospheric Administration (NOAA). The report estimated that 59,060 albacore tuna, 58,100 blue sharks, 9,173 sea birds and 914 dolphins were captured incidental to Japanese fishing operations in 1989.

William Fox, NOAA Assistant Administrator for Fisheries, said early United Nations action might become necessary to halt the deaths. "The by-catch from high-seas driftnetting continues to be of great concern to the U.S.," he said. Fox also stated that if the trend shown in this year's report continues, the United Nations must insist on an immediate moratorium of this practice.

NOAA released a preliminary report summarizing catch and by-catch rates observed by nine U.S., five Canadian and 32 Japanese observers aboard high-seas driftnet vessels from June to December 1989 in a U.S.-backed pilot program. It was the first multinational observer program in the history of this fishery. The U.S.-initiated agreement with Japan and Canada to collect data with observers from the three nations required the results be published in a jointly-prepared summary report. A six month time limit was placed on the report's preparation and release.

The 1989 pilot observer program covered only four percent of the Japanese commercial squid driftnet fishery. Since coverage did not include vessels from the Republic of Korea or Taiwan, the results of the program cannot be considered conclusive for the entire fishery. Considerably more data will be acquired when the U.S.-negotiated observer program expands later this year to cover the Korean and Taiwanese driftnet fleets. The 1990 monitoring program will have three times as many observers scheduled to serve on commercial driftnet vessels as in 1989.

Data from this observer program will allow the U.S. to produce statistically reliable estimates of other species killed incidentally, in preparation for a

mid-1991 United Nations-sponsored review of the effects of driftnet fishing. Driftnets up to 30 miles long have been used increasingly by Japan, Taiwan and the Republic of Korea in their squid fishery over the past decade. The incidental catch of other species in their driftnets, especially U.S.-origin salmon, generated deep concern in the U.S. In 1987 act, Congress required the Secretary of Commerce and the State Department to negotiate monitoring and enforcement agreements with nations operating driftnet fishing in the North Pacific.

The observer-data collection programs are the result of three bilateral agreements the U.S. successfully negotiated during the summer of 1989. The U.S. accord with Japan was negotiated in June, 1989, with Taiwan in August, 1989, and with Korea in October, 1989. The agreements provided for a two-year phased monitoring program that would produce reliable scientific information about the effects of driftnetting in the Pacific. The enforcement portions of the agreements are targeted to prevent high-seas taking of salmon anadromous to the U.S.

For more information contact Jay Tebeau, 301/427-2370.

U.S. DRIFTNET BAN PASSED

The U.S. House of Representatives recently passed and sent to President Bush a bill that would ban the use of large-scale driftnets in U.S. waters up to 200 miles offshore and their use by American fishing fleets anywhere in the world.

On a voice vote, the House dropped its own version of the legislation and agreed to adopt a bill approved earlier this month by the Senate that also would require Bush to seek an international ban on driftnet fishing.

The bill expands the 1976 Magnuson Fishery and Conservation Act to include previously exempted tuna in government controls over commercial and sport fishing within 200 miles of the U.S. coastline.

The legislation also requires the government to develop standards that tuna canners would have to adopt in order to label their product "dolphin safe."

U.S. SPENDING ON CONSERVATION

The Center for International Development and Environment of the World Resources Institute has just completed a survey of the biological diversity research and conservation activities that U.S.-based organizations undertook in developing countries in 1987. Those surveyed included the U.S. government, non-governmental organizations, universities, museums, charitable foundations, botanical gardens and zoos.

In all, 873 projects active in 86 developing countries were analyzed. Of the $37.5 million spent in 1987, over half went to projects in Latin America and the Caribbean. Another 16 percent went to Asia; 12 percent to Africa; and 11 percent to global or multi-regional projects. Efforts in Costa Rica, Panama, and Mexico received 30 percent of all funding.

The survey showed that 44 percent of all funding was spent on projects focused primarily on research. Projects concerned with site and species management received 23 percent of all funding, most of it for protected areas. Fifteen percent of the funding went to education, which included technical and professional training. Support to developing country institutions totaled 11 percent, and policy planning and analysis accounted for 6 percent of all funding.

The U.S. government contributed over half of the total funding, but implemented projects involving only 24 percent. Non-governmental organizations implemented the most projects, followed by universities and U.S. governmental agencies.

The increasing loss of biological diversity, resulting from the loss of genetic diversity, the extinction of species, and the destruction of ecosystems, constitutes a global crisis. Compared to the size of the problem, however, the resources being spent to solve it are very small. The $37.5 million spent in 1987 is not enough to ensure that the world's biological resources will be sustained for future generations.

TAIMEN SALMON — THE WORLD'S LARGEST

Fishing for taimen salmon — the world's largest — has now reached new dimensions of availability for the angling public. Klineburger Worldwide Travel, a Seattle-based agency specializing in exotic adventure travel is now organizing fishing trips to Mongolia and Siberia. The first four scheduled trips have already returned, resulting in the submission of several International Game and Fish Association records for taimen and its cousin, the lenok. The largest fly-caught fish was over 50 pounds and 40 to 60 pound taimen were landed by actually sight casting to individual fish in the river. The largest taimen hooked on the four trips was estimated at 150 pounds, as observers saw it clear the water twice before it broke the angler's line.

Taimen salmon (*Hucho hucho taimen*) are the largest of the salmonid species, with the biggest recorded being a commercially caught fish which weighed 251 pounds, measured seven feet and was taken from the Siberian River in 1943. The largest sport-caught taimen was an 80 pounder taken by Buzz Ramsey, of Hood River, Oregon, in Siberia last year.

Unlike Pacific salmon, taimen are strictly a freshwater species; mostly inhabiting the streams and large river systems of Asia and the Soviet Union. They are extremely voracious and take a wide variety of flies and lures, the most productive of which resemble Arctic graying and mice, both of which make up a sizable portion of their diet. They also have been recorded to eat adult Pacific salmon, northern pike, ducks, muskrats, mink and even a dog. Also, unlike Pacific salmon, taimen do not die after spawning and are estimated to have a life span exceeding 100 years.

Anglers interested in going on any of the 1991 excursions should contact Klineburger Worldwide Travel at 3627 First Avenue South, Seattle, Washington 98134 or call Tom Knight at 206/343-9699 for complete details.

COLORADO RIVER STUDIES

A major environmental assessment program is now underway on the Colorado River. The program is to result in an Environmental Impact Statement covering the effects of Glen Canyon Dam and is administered by the Bureau of Reclamation, Upper Colorado Region. Studies conducted from 1982 to 1988 (Phase I) are continuing (Phase II) to provide the needed information. Basically the E.I.S. evaluates the effects of dam operation on the Grand Canyon by considering possible changes in operation, and potential structural and non-structural alternative actions.

Phase I led to 30 technical reports and a summary report to the Department of Interior in the spring of 1988. The summary concluded that high flows and floods had several impacts on how Glenn Canyon Dam operated. However, since the work was done during years of record high flooding, little was learned about how low and/or fluctuating flows effected the Colorado River in the Grand Canyon area. Additional studies were authorized. Phase II, now underway, includes examination of potential impacts on fish and wildlife; recreational opportunities, cultural resources, and other significant features in Grand Canyon.

STRAWBERRY RESERVOIR RESTORATION

The Utah Division of Wildlife Resources appears to have successfully restored Strawberry Reservoir. AFS Fisheries Administrators Section President Bruce Schmidt reported that nearly a million pounds of rotenone was used to treat the 14,000 acre reservoir and hundreds of miles of tributaries. Target of the rotenone efforts were the Utah chub and Utah sucker which now comprise more than 95 percent of the biomass and which have devastated the once fabulous

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OH, SO THAT'S HOW IT HAPPENS ...

In the Beginning was The Plan
And then came the Assumptions
And the Assumptions were without form
And the Plan was completely without substance
And the darkness was upon the face of the workers
And they spoke among themselves saying
"It is a crock of sh-t, and it stinketh."
And the workers went to their supervisors and sayeth,
"It is a pail of dung and none may abide the odor thereof."
The Supervisors went unto their Managers and sayeth unto them,
"It is a container of excrement and it is very strong,
Such that none may abide by it."
And the Managers went unto the Directors and sayeth,
"It is a vessel of fertilizer, and none may abide its strength."
And the Directors spoke amongst themselves, saying to one another,
"It contains that which aids plant growth, and it is very strong."
And the Directors went unto the Vice-presidents and sayeth unto them,
"It promotes growth and is very powerful."
And the Vice-presidents went unto the President and sayeth unto him,
"This new plan will actively promote the growth and efficiency of this Company, and in these Areas in particular."
And the President looked upon The Plan,
And saw that it was good,
And The Plan became Policy.
This is how sh-t happens.

Oregon Chapter Piscatorial Press. May, 1990.

trout fishery. Goal of the $3.5 million dollar effort was a 99 percent kill of undesirable species prior to reintroduction of cutthroat and rainbow trout. More than 200 biologists and technicians from nine states and Norway participated. Project leader was Leo Lentsch of Hever, Utah.

BIODIVERSITY, JUSTIFIED?

"The last word in ignorance is the man who says of an animal or plant: 'What good is it?' If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of æons, has built something we like, but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent thinking."

Aldo Leopold

ENDANGERED FISHES OF NORTH AMERICA

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. S.F.I. Bulletin, January/February 1990

NW FISH FUNDS

An appropriation of $17.5 million to fund fish screens and other fish bypass improvements on Columbia and Snake River dams was approved by the U.S. House of Representatives on June 19. The money is part of the 1991 Energy and Water Development Appropriations bill. Senate action was expected in July.

Members of the Northwest Power Planning Council praised the Northwest congressional delegation led by Speaker of the House Tom Foley (Washington) for their strong consistent leadership in getting the appropriation through the House. Representatives Les AuCoin (Oregon) and Jolene Unsoeld (Washington) testified in support of the funds earlier before the House Appropriations committee.

Until bypass screens are in place and operating effectively, fish-laden water must be spilled over the dams to protect young salmon and steelhead from the turbines. The spilled water can't be used to generate electricity, resulting in some $15 million of lost revenues to the power system. The bypass systems are essential for adequate fish protection. The sooner they are installed, the sooner fish survival can be improved and the cost to the electrical system be reduced.

The funds are earmarked for improvements at six dams operated by the U.S. Army Corps of Engineers: Lower Granite, Little Goose, McNary, Lower Monumental, The Dalles and Ice Harbor dams. Especially important is the $2.7 million added by the House Committee for new bypass systems at Ice Harbor and The Dalles dams. The executive budget had proposed to delay work at these two dams for at least two years while another federal mitigation study was developed. The House Committee rejected any further study and directed the Corps to continue progress on improvements at the two dams.

V.O.T.E.

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 campaign to involve the public entitled Voice of the Environment (V.O.T.E.). The organization was created to halt public apathy on 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. 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*. It will contain information on waterways abuse and contain guidance to resolve waterway problems in America. The purpose of the publication and V.O.T.E. campaign is to identify the problems of our fisheries and to explain how boaters, anglers, and other resource users can be involved in creative and politically focused corrective solutions. The power of the electorate is basic. Contact Ann Smith, B.A.S.S., Inc. One Bell Road, Montgomery, Alabama 36117.

ACID STREAMS GET NEW TREATMENT

The U.S. Fish and Wildlife Service has begun evaluating a new approach in its continuing efforts to determine the most efficient and effective method of neutralizing or buffering the Nation's waters where fishery and other aquatic resources have been damaged by high acidity.

Dr. Kent Schreiber, the service's acid precipitation research manager stationed at the National Fisheries Research Center, Leetown, West Virginia, said the new effort involves applying limestone to a watershed rather than just treating specific waters that receive the accumulations of acidic runoff.

Woods Lake in the Adirondack Mountains of New York, which has a long history of acidic conditions, was selected as the test site for the joint research project involving the Service, the electric Power Institute, Living Lakes, Inc., Empire State Electric Energy Research Corporation, U.S. Geological Survey, and several universities.

Dr. Schreiber said the watershed approach has been tried in Scandinavian countries but never before in the United States. In early October, 30 percent or about 250 acres of the Woods Lake watershed was treated with 1,100 tons of limestone pellets. Distributed from a helicopter guided by a LORAN navigational system to pinpoint selected sub-catchments, the pellets readily dissolve with rain and snow to increase the neutralizing capacity of the soil. This technique should provide long-term benefits both for a lake and its tributaries, according to Dr. Schreiber.

Acidic conditions in Woods Lake have been studied in the past and the lake was treated with limestone powder on several occasions to improve water quality for stocking fish. However, the gradual flushing of the lake with runoff from the watershed returned the lake to its original acidic condition. Dr. Schreiber said in view of these results, we are now keenly interested in the watershed approach and its longer term benefits. Water coming into the lake and its tributaries should interact with the limestone and forest soil to reduce the acidity. Additionally, this type of treatment also should decrease the leaching of aluminum from the soil.

The Fish and Wildlife Service is particularly interested in the way that this type of treatment may affect the tributary streams and near-shore areas of the lake that serve as spawning sites for brook trout, Dr. Schreiber said. Results of field studies monitoring the project will be available to fisheries and resource managers involved with restoration of acidic surface water.

For further information contact Dr. Kent Schreiber, 304/725-8461. S.F.I. Bulletin, January/February 1990

COLUMBIA RIVER SALMON STATUS

In April 1990, the Oregon Department of Fish and Wildlife reviewed the current status of Columbia River salmon. While intensive management efforts and dollars have been spent attempting to restore these once abundant salmon stocks, five of the six stocks are currently at either low or decreasing levels. A brief summary on the status of these stocks is presented below.

Lower River Spring Chinook

The success story of 1990 was a record return of 128,000 spring chinook to the Willamette river. Primarily hatchery returns from over five million smolts released in November and March of each year, these fish contribute heavily to the recreational and commercial fisheries of Canada and Alaska before returning to Oregon to spawn as three, four or five-year-old fish.

Spring chinook provide thousands of hours of sport fishing opportunities, as well as contributing to a commercial gillnet fishery on the Columbia River. Oregon fish managers would like to increase the harvest of Willamette River-bound fish. Unfortunately, in order to protect native Upper Columbia and Snake River stocks, fishing opportunities in the mainstem Columbia are frequently restricted.

Upriver Spring Chinook

Once the most important salmon species to the native American tribes of the Columbia River, these

long distance travelers historically arrived in runs which provided harvests of two million fish annually. Annual returns declined gradually, however, to about 250,000 fish in the early 1970s, dropping to a low of less than 50,000 in 1984. With the help of a massive recovery program, returns are expected to reach 121,000 by 1990. Unfortunately, the millions of dollars spent on long term efforts to restore wild stocks have not been found to have significantly improved the stocks.

Summer Chinook

Formerly one of the most numerous subspecies of Columbia River salmon, the summer chinook have been nearly extirpated by the construction of dams. One race, the giant "June hogs," were essentially terminated by the construction of the Grand Coulee Dam in 1941, while the other race, bound for the Salmon River in Idaho, are now only partially supported by intensive hatchery operations.

Fall Chinook

Two strains of fall chinook return to the Columbia River, the "upriver bright" chinook and the "tules." The upriver bright chinook, which historically spawned in the now flooded areas of the Snake and Upper Columbia Rivers, is particularly vulnerable to environmental conditions because they start their downriver migration in the first year of life while still fingerlings.

After a drastic population decline in the late 1940s, upriver bright numbers remained stable until the mid-1980s when the population began a dramatic increase. Currently, however, the stock is in the midst of another downturn, with only 200,000 projected to return in 1990.

Tules, a lower river strain of fall chinook, are an important ocean sport and commercial fish as well as an important fish for hatchery production. The decrease in the survival of juveniles in recent years, however, has biologists perplexed. A record low return of only 65,500 lower river tules is predicted for 1990.

Sockeye Salmon

While the Columbia River runs of sockeye salmon once numbered three million fish, dam construction has reduced salmon access to historic sockeye nursery lakes by 96 percent. Sockeye are unusual among anadromous fish in that juveniles must rear in a nursery lake for one or two years before migrating downstream to the ocean.

Presently, Columbia River sockeye are produced only in the Wenatchee and Okanogan River systems. Less than 50,000 fish passed the Bonneville Dam in 1989.

Coho Salmon

While the vast majority of lower river coho are hatchery reared, a small wild segment spawns in tributaries of the lower Columbia. Estimates derived from counts of juveniles on their spawning beds have dropped from 30 to 40 fish per mile in the 1960s to less than two. Spawning and rearing habitat are believed to be the primary reason for the decline.

For more information contact the Oregon Department of Fish and Wildlife, P.O. Box 59, Portland, Oregon 97207. 503/229-5400.

YAKIMA PRODUCTION PROJECT

A unique experiment that could help rebuild salmon and steelhead runs throughout the Northwest is beginning in Central Washington's Yakima Valley. The experiment involves using a new hatchery complex, called the Yakima Production Project, to replenish the fish runs that spawn in the natural environment. In the past, hatcheries have been used principally to augment harvest, not rebuild native runs on a sustained basis.

The project will be a laboratory for testing a technique, called "supplementation," to rebuild runs in the Yakima Valley. With supplementation, hatchery-produced fish are released into streams with naturally-produced fish. If successful, this technique may be the Northwest's best hope for rebuilding its salmon and steelhead runs. Supplementation has been used to re-establish Atlantic salmon on the East Coast, and sockeye salmon in Alaska lakes, but has not been used with much success in the Northwest.

The full-scale project could include three hatchery facilities, two satellite facilities and 33 acclimation ponds. Young fish from the hatchery will spend a period in an acclimation pond, fed by water from the stream where fishery managers want the run replenished. It is hoped the young fish will imprint the chemical characteristics of the stream so that they will eventually return to that stream to spawn naturally. Ordinarily, hatchery fish would return to the hatchery. The full-scale project could contribute about 85,000 adult salmon and steelhead to the Columbia Basin. Given the uncertainties about the success of supplementation, the Council called on the fishery managers to develop a scaled-down alternative to the full-scale project that would reduce possible ecological risks.

The unknowns related to supplementation generally involve the impact that the hatchery fish would have on fish already in the stream. A major concern is that the hatchery fish may have lost some of their genetic ability to survive in the wild. Consequently their progeny may not perform as well. The hatchery fish may also stray into streams where they are not desired. This experiment in the Yakima Valley will help fisheries experts find the best way to handle these concerns.

FISH DECLINE

Researchers report that during the past 100 years, 3 genera, 27 species and 13 subspecies of fishes from North America have become extinct, nearly half since 1964. In reports published by the American Fisheries Society, researchers said the listing underscores concerns regarding loss of biological diversity, "a problem that is not restricted to the tropics, but is a concern in every state and province of the continent." According to the study, "The health of aquatic habitat continues to decline. A major commitment to the conservation of entire ecosystems, rather than the inconsistent recovery efforts for individual species, is needed to reverse this trend."

JOBS

Assistant Chief

Fisheries Management Division, Research and Management Section, New Mexico Department of Fish and Game, Santa Fe, New Mexico. Salary range: 24 ($11.98 to $20.17 per hour). FLSA status: Exempt. Minimum requirements: B.S. degree in fisheries, wildlife or biology; three years' experience in wildlife or fisheries management; one year experience as a supervisor with three or more subordinates. Contact: Stephen E. Henry, Chief, Fisheries Management Division, 505/827-7905.

Aquaculture Professionals

Prince William Sound Aquaculture Corporation (PWSAC), a non-profit regional aquaculture association in Alaska's Prince William Sound, operates four remote salmon hatcheries, including the largest production salmon hatchery in the world. PWSAC is soliciting professional resumes (hatchery managers, fish culturists, etc.) to fill positions as they become available during our rapid expansion. Resumes will remain active for two years. Send a resume and statement of interest to Personnel, PWSAC, Box 1110, Cordova, Alaska 99574 or FAX 907/424-7514.

Fishery Population Dynamics/Ecology

The Southwest Fisheries Center (National Marine Fisheries Service, U.S. Department of Commerce) anticipates permanent, full-time, Ph.D.-level openings in La Jolla, California, for population dynamists and/or quantitative ecologists. Responsibilities include assessment/management of exploited fish populations and research. Salary $35,825-$46,571. Contact Dr. Larry Jacobson, Southwest Fisheries Center, National Marine Fisheries Service, P.O. Box 271, La Jolla, California 92038. Southwest Fisheries Center is an Equal Opportunity Employer.

Virology/Immunology Post-Doctoral

A post-doctoral research position and two graduate research positions are currently available on diagnostic procedure development for certain viral and other pathogens of farm-reared penaeid shrimp. These USDA and Sea Grant funded positions will concentrate on development of serologic and molecular diagnostic procedures for certain virus diseases, but may be expanded to include studies on pathogenesis and host response, with possible study on other viral, rickettsial, chlamydial and bacterial agents of shrimp. Applicants are sought that have an interest and training in virology, bacteriology, immunology and/or molecular biology. Applicants should send a letter of intent, curriculum vitae, University transcripts and two letters of recommendation to Dr. D.V. Lightner, Dept. Veterinary Science, University of Arizona, Tucson, Arizona 85721. 602/621-8414 or FAX 602/621-6366. The University of Arizona is an Equal Opportunity/Affirmative Action Employer. Women and minorities are urged to apply.

Assistant Production Manager

Assistant production manager for established catfish farm. Employee will work with manager in all phases of catfish farming. Salary commensurate with experience/education. Send resume to Fish Producers, P.O. Box 1004, Niland, California 92257.

Managerial, Technical and Entry Level

Bodega Farms is looking for self-motivated, hard working individuals for one newly constructed salmonid hatchery and one currently under construction. Contact D. Wilkerson, 625 Martin Avenue, Rohnert Park, California 94928.

Position Wanted

Marine biologist with M.S. degree and 16 years in private aquaculture and academic research seeks managerial position or consultancy in domestic or overseas start-up or existing aquaculture project. Six years experience as owner/operator of private aquaculture firm. Background primarily in bivalve hatchery and nursery culture. Also extensive work with microalgae, fish and crustaceans. Contact David L. Berg, 77 Abbott Drive, Huntington, New York 11743. 516/385-2417.

Civil Engineer/Hydrologist

The Columbia River Inter-Tribal Fish Commission is seeking qualified candidates to provide technical assistance to the four Columbia River treaty tribes of the Commission on matters related to the operation of the Columbia River Basin's water resources projects. This is a new position at the Columbia River Inter-Tribal Fish Commission, which is a coordinating fisheries agency for the Nez Perce, Umatilla, Warm Springs and Yakima Indian tribes that have treaty fishing rights within the Columbia River basin. Employee will focus on means of securing stream flows for adult and juvenile anadromous fish and will provide input at appropriate technical/policy levels in order to affect the operation of the Columbia River Basin's water resource projects. Employee will be experienced to interact with technical staffs of various state and federal fish and wildlife agencies, the Corps of Engineers, Bonneville Power Administration, regional utility groups, Northwest Power Planning Council, Bureau of Reclamation, British Columbia Hydro and other entities affecting water resources management of the Columbia River Basin.

Initial efforts are to be directed toward becoming thoroughly familiar with on-going and proposed Columbia Basin system flow-related actions and studies. Employee will then be expected to identify and synthesize available information, develop innovative approaches to solving large scale problems and provide recommendations to tribal policy makers. This position will influence the direction and scope of on-going and proposed studies to improve juvenile fish passage. This requires maintaining close contact and developing good rapport with the various study personnel. Employee will review fish passage problems related to tributary stream activities and make operational recommendations. Employee will provide technical support to CRITFC to secure needed streamflows, from whatever source, through the appropriate processes. Salary negotiable, dependent on qualifications. Contact Columbia River Inter-Tribal Fish Commission, 975 SE Sandy Blvd., Suite 202, Portland, Oregon 97214. 503/238-0667, FAX 503/235-4228.

Associate Fisheries Biologist

Responsibility for technical biological work which focuses on fisheries management relating to resource conservation and restoration including analyzing instream flow requirement, monitoring and modeling of water quality, evaluation of watershed hydrology, estimation of trout and non-game fish population parameters, establishing habitat development plans and improvement projects, preparation of technical reports and organizing and carrying out aquatic ecological research. Only candidates with fishery experience will be considered.

B.S. with speciality in fishery biology, zoology or closely related field plus four years of fisheries management experience required. For at least two years, this experience must have been at least equivalent to level two planning, supervising and performing technical biological work in connection with a major fisheries management field activity. Possession of a M.S. may be substituted for two years of the required general experience. This position also requires knowledge of methods, materials and equipment used in the improvement of fish habitat, computer modeling, environmental impact reporting, statistical methods and their applications to fishery research and fish population dynamics. Salary $2814-$3591 per month plus a benefits package. Submit resume to General Manager, Kings River Conservation District, 4886 E. Jensen Ave., Fresno, California 93725.

Biologists

Crystal Fisheries, Inc., an Alaskan Observer Contractor, is placing qualified biologist on groundfish vessels and shoreside processing plants in Alaska. A B.S. or college senior status in fisheries, wildlife, biometrics, or natural resource emphasis is required. Qualified applicants will be certified as observers by successfully completing three weeks of paid training in Seattle, Washington. Minimum contracts are three months plus training. Contracts are renewable as desired. Send resume and request an application from Crystal Fisheries, Inc., 282 Crest Dr., Soldotna, Alaska 99669.

Fisheries Biologist I, Fisheries Biologist II

Two positions for technical biological work which focuses on fisheries management relating to resource conservation and restoration. This includes analyzing instream flow requirement, monitoring and modeling of water quality, evaluation of watershed hydrology, estimation of trout and non-game fish population parameters, establishing habitat development plans and improvement projects, preparation of technical reports and organizing and carrying out aquatic ecological research. Both positions require knowledge of methods, materials and equipment used in the improvement of fish habitat, computer modeling, environmental impact reporting, statistical methods and their applications to fishery research and fish population dynamics. Biologist I (salary range $1912-$2440 per month) requires B.S. with speciality in fishery biology, zoology or closely related field. Biologist II (salary range $2331-$2975 per month) requires B.S. with speciality in fishery biology, zoology or closely related field plus two years experience performing the duties of a fishery biologist. Salary plus benefits package. Submit resume to General Manager, Kings River Conservation District, 4886 E. Jensen Ave., Fresno, California 93725.

CALENDAR

November 26-28, 1990
Geographic Information Systems (GIS) Research Applications Symposium for Environmental Sciences. Center for the Management, Utilization and Protection of Water Resources at the Tennessee Technological University, Nashville, Tennessee. Contact Christopher J. O'Bara or Yvette Robinet Clark, P.O. Box 5033, Tennessee Technological University, Cookville, Tennessee 38505. 615/372-3507.

November 27-29, 1990
Symposium on New Perspectives for Watershed Management: Balancing Long-term Sustainability with Cumulative Environmental Change. University of Washington, Seattle, Washington. Contact Betty Johanna, College of Forest Resources, University of Washington, AR-10, Seattle, Washington 98195. 206/543-0867, FAX 206/685-0790.

January 7-11, 1991
Shortcourse/Workshop: *Sampling of Biological Populations and Resource Selection Studies.* University of Wyoming, Laramie, Wyoming. Contact Lyman McDonald, Department of Statistics, University of Wyoming, Laramie, Wyoming 82071-3332. 307/766-5291, FAX 307-766-3927.

March 3-8, 1991
Third International Symposium on Off-Flavors in the Aquatic Environment. Los Angeles Airport Hilton Hotel, Los Angeles, California. Contact Michael McGuire, Metropolitan Water District-Southern California, P.O. Box 54153, Los Angeles, California 90054. 213/250-6647, FAX 213/250-6951.

March 12-15, 1991
Biodiversity of the Rocky Mountains. Colorado State University, Fort Collins, Colorado. Contact Dr. Fritz L. Knopf, Fish and Wildlife Service, National Ecology Research Center, 4512 McMurray Ave., Fort Collins, Colorado 80525. 303/226-9462.

May 27-June 2, 1991
Technical Session: *Introduction of Aquatic Organisms in the Pacific Basin*, XVII Pacific Science Congress 1991. Sponsored by the Hawaii Chapter of AFS. Submit titles and brief abstracts for papers or posters for presentation to the chairperson. Dr. James D. Parrish, Hawaii Cooperative Fishery Research Unit, 2538 The Mall, University of Hawaii, Honolulu, Hawaii 96822. 808/956-8350, FAX 808/956-6751. Posters will be accepted upon arrival and displayed at a central location.

July 4-8, 1991
Warmwater Fisheries Symposium, Phoenix, Arizona. To promote communication and interaction among scientists, managers, educators and anglers concerning warmwater fisheries and fishing opportunities in the western states. A call for papers has been issued. Contact William D. Zeedyk, Director of Wildlife and Fisheries, USFS, SW Region, 517 Gold Avenue, SW, Albuquerque, New Mexico 87102.

FIRST CALL FOR PAPERS

1991 Western Division American Fisheries Society Annual Meeting. Call for sessions and papers. The agenda and meetings to be devoted to topics in fisheries. Montana State University, Bozeman, Montana July 16-19, 1991.

Current session topics are Monetary Values of Fisheries, Innovations in Fish Culture, electrofishing, a Fish Chiefs Meeting and Walleye in Trout Waters. Contact Don Chase immediately to submit papers or sessions.

Lodging arrangements can be made at Montana State University. Registration if $150.00 (approximate at press time) will include university lodging and meals. Bring your family and make a vacation.

Contact Don Chase (Program), Washington Department of Wildlife, 600 Capital Way N., Olympia, Washington 98501 or Pat Dwyer (Local Arrangements), 27 Border Lane, Bozeman, Montana 59715.