Water Quality Matters

The Newsletter of the Water Quality Section of the American Fisheries Society

Summer 2004 Volume 27, Number 1

PRESIDENT'S MESSAGE

By Georgina Lampman

HELLO, WATER QUALITY SECTION MEMBERS!

First, I want to say thank you to all who have helped by volunteering, participating, and giving me advice during my first year in office. I've learned a lot and have only increased my respect for the vast knowledge and wisdom of our Water Quality Section membership.

I was recently reflecting on my reasons for following Larry Brown's suggestion that I run for office three years ago. I remember wondering if it made sense. After all, except for one position, I've never had a job description that had the phrase "water quality" in it. At the time, though, Larry explained more of what the Section addressed and convinced me that it was the right thing to do. After this past year, I am convinced more than ever that for my area of interest—conservation through ecosystem management—the Water Quality Section is absolutely the best Section to be in, and participating in Section activities is the right thing to do.

As a fish biologist with a resource management agency, my belief has been that fish and aquatic management *is* ecosystem management. Fish and aquatic resources reflect everything happening around them; conversely, managing for fish and aquatic resources can influence everything happening around them. No other section in AFS encompasses as much of the ecosystem management arena as does the Water Quality Section.

In the U.S. Forest Service, my employer, ecosystem management is an ecological approach to natural resource management to assure productive, healthy ecosystems by blending social, economic, physical, and biological needs and values. Numerous other ecosystem management definitions exist, and they are all fairly similar. We need to think ecologically; consider the interactions among the physical, chemical, and biological; and include the role of humans.

The links between our Section's objectives and ecosystem management are clear, and supported by the activities of the Section and its members during the past year.

- We are involved in the *protection of watersheds*. We all know that water affects and is affected by everything it contacts – interaction with the natural and human-influenced environment.

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Water Quality Section Officers

President
Georgina Lampman, USFS
(801) 625-5358
glampman@fs.fed.us

President-elect
Tom Simon, USFWS
(812) 334-4261 Ext 213
Thomas_Simon@fws.gov

Past-President
Larry Brown, USGS
(916) 278-3098
lrbrown@usgs.gov

Secretary-Treasurer
John Meldrim,
Montgomery Watson Harza
(312) 831-3177
john.w.meldrim@us.mwhglobal.com

Editor
Bob Hughes
(541) 754-4516
hughes.bob@epa.gov

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By addressing the landscape through which water passes, we address the full range of these interactions. For example, Section members have expressed interest in the effects of impervious surfaces on water quality and transportation systems. We are publishing a book from a 2003 symposium, *Effects of Urbanization on Stream Ecosystems*, and we are co-sponsoring 2004 symposia on the *Role of Agriculture in Aquatic Ecosystems* and *Influences of Landscape on Stream Habitat and Biological Communities*. In addition, the Section has demonstrated the need to think outside of the watershed for any particular water body to any interaction that could influence it. This was evident when the Section provided comment on USEPA's proposed rules for hazardous emissions standards and the harmful effects of atmospheric mercury on aquatic organisms.

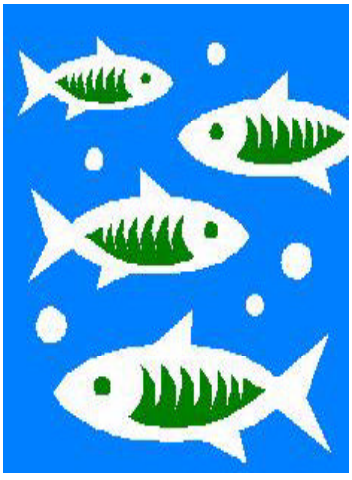
- We have concerns about *water quality* directly. We have provided comment and input on social and economic values based on the need for the health of the system from the resource perspective. We addressed the effect of air pollutants on water quality and what those pollutants can do to aquatic biota. As a Section we have identified the need for monitoring programs at appropriate scales to enable us to know what effects our various activities to meet social and economic values are having on water quality. We provided input on the importance of the various laboratories that do important research on effects of water quality on aquatic biota and effects of our activities on water quality. We opposed a proposal to limit the definition of waters of the U.S. to navigable systems only.

- We have provided input and raised issues concerning *aquatic habitat* in its broader sense. Questions continually arise on how to maintain or restore the health of ecosystems through use of or in spite of human influence. This includes Section input for the Society's pending policy statement on dam removal and its effects on water quality, water quantity, and aquatic habitat. We participated in discussions involving aquatic community integrity, including serving on the steering committee for the *Propagated Fish in Resource Management Workshop*. Finally, the WQS is sponsoring a book, *Historical Changes in Large River Fish Assemblages of America*, which examines how those systems have responded to physical, chemical and biological habitat changes.

I'd say we've covered a lot of ecosystem management, wouldn't you? Again, to those of you who have participated in any and all of the above, many thanks on behalf of the Section. These folks have come from universities, federal and state resource and research agencies, other resource and regulatory agencies, private consulting firms, and several states and countries. We have a diverse group of active folks from an even more diverse Section membership.

Because of our objectives, the Water Quality Section can influence almost, if not all, facets of ecosystem management, in other words, all human influences that can affect our fish and aquatic resources. That is to say, there's a lot that we can do. You all have a role in ecosystem management, and you all most certainly can find a role in meeting the objectives of the Water Quality Section. The only question for you to ask is, *"What can I do to help?"*

Please take the time to ask and see if you have an answer. See you in Madison!



Deadline for Fall 2004 Newsletter

November 1, 2004

Contact: Gregg Lomnicky, Editor
lomnicky.gregg@epa.gov

Water Quality Section Mission

The objectives of the Water Quality Section are to:

(1) maintain an association of persons involved in the protection of watersheds, water quality, and aquatic habitat and in the abatement of water pollution and aquatic habitat and watershed deterioration;

(2) encourage improved professional and technical standards in the investigation, abatement, and regulation of water pollution, aquatic habitat, and watershed problems;

(3) objectively focus attention on aquatic habitat, watershed, and water quality concerns, and improve methods for addressing relevant issues by conducting workshops and projects, collecting and assembling information for publication, and distributing results to Society members and the public.

LETTER TO USEPA CONCERNING MERCURY EMISSIONS

Submitted by Georgina Lampman

26 April 2004
EPA Docket Center
Subject: Docket ID No. OAR-2002-0056

The Water Quality Section of the American Fisheries Society represents the parent Society (over 8,600 members) in matters dealing with water quality, habitat structure, and watershed condition. Our members are professional fisheries scientists and managers employed by a broad spectrum of society, including state and federal agencies, Native American tribes, universities, and private and public corporations. As such professionals, the Water Quality Section wishes to offer comment on the Proposed National Emission Standards for Hazardous Air Pollutants; and, in the Alternative, Proposed Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units, Fed Reg 69(20):4652-4752 (Docket ID No. OAR-2002-0056).

We applaud the effort of the USEPA to develop national emission standards. Hazardous air pollutants—sulfur dioxide (SO2), nitrogen oxides (NOx), and mercury (Hg)—that are targeted for reduction can have serious effects on water quality, aquatic habitat, and watershed conditions that affect our aquatic biota, as identified in USEPA's "Section B of the 2003 Clear Skies Technical Package." We are, however, concerned that the proposed rules will allow continued levels of hazardous air pollutants that are detrimental to aquatic ecosystems. Of particular concern is that the proposed regulations would result in less control of mercury emissions than would be accomplished by implementing the existing requirement, per legal settlement reached pursuant to the Clean Air Act Amendments of 1990, for USEPA to promulgate mercury emissions standards according to the explicit language of the Clean Air Act, reflecting the utilization of "Maximum Achievable Control Technology" (MACT) by December 2007.

We have an interest in the proposed rules because of a growing concern over the effects on mercury on the environment, especially bioaccumulation in fish.

- The American Fisheries Society has been associated with USEPA for the past 15 years in conducting federal-state forums on contaminants in fish, prompting the USEPA to monitor state fish and wildlife advisories over this time period, revealing the increasing trend in mercury advisories each year through 2001. State fish consumption advisories for mercury were widespread, occurring in at least 44 states. An additional nine states have issued statewide advisories for mercury in their coastal waters.

- Nationwide, almost 30% of our nation's lake acres (12,069,319) were under mercury advisories in 2002. Mercury contamination is so widespread in nineteen states that statewide advisories are in place for all lakes and/or streams. Mercury contamination is responsible for 502 fish consumption impairments and 746 water impairments on the 2000 nationwide Clean Water Act 303(d) list. Mercury advisories are also increasing, by 18% in lakes from 2001 to 2002, and by 138% in all waters from 1993 to 2002 (EPA Fact Sheet Update: National Listing of Fish and Wildlife Advisories, 2003).

- Air emissions are a major source of mercury pollution.

    - Mercury research in the Everglades over the last 12 years showed that the new mercury deposited from the air was mostly from local sources, not global; was mostly available for methylation; and once methylated was available for bioaccumulation up the food chain. In south Florida, control of atmospheric mercury emissions from incinerators in the early 1990's was followed by a decline in mercury in fish and wading birds in the late 1990's and continuing to the present. The south Florida example demonstrates that control of local atmospheric sources is one of the most effective means of reducing the body burden in fish and risk to human consumers.

- Minnesota estimates that 70 to 90% of mercury entering the water comes from atmospheric sources (Mercury Reduction Program, Progress Report to the Legislature, 2002). Methyl mercury in the water is biologically available to fish and aquatic life.

- Peterson et al. (2002 Environ. Tox. Chem. 21:2157-2164) concluded that the narrow range of mercury in fish tissues across Oregon suggested atmospheric transport was an important vehicle for mercury distribution. Where they occurred, salmonids, bass, and pikeminnows respectively exceeded 0.1ug Hg/g in 15%, 70%, and 96% of stream/river lengths statewide.

Not only are fish and shellfish part of the diets of the general public but they are also the basis for revenues for the commercial and sport fishing industry. Members of the Society or their constituents manage fisheries and aquatic habitats or are responsible to those who depending on them for their livelihoods. As such, we feel we are stakeholders in this issue, and we have concerns with the proposed rules, as follows:

- The proposed rule would be another step backward from reducing mercury emissions.

  - Various studies on calculating the results of implementing the MACT standard indicate that resulting mercury emissions could be reduced to levels of 2 to 13 tons per year (Northeast States for Coordinated Air Use Management report on MACT assessment by various stakeholders, May 2003).

  - The Clear Skies Initiative, which the proposed rules are purportedly designed to accomplish, sets a target of 26 tons per year in 2010 and at 15 tons per year in 2018

  - The proposed rule to replace the MACT standard by the cap and trade approach has as its goal 34 tons per year.

  - Under the industry's calculations the MACT standard would result in 20 to 30 tons per year, which would result in lower mercury emissions by 2007 than under the proposed rule.

  We do not support any changes that would result in lowering the reduction of mercury emissions.

- The proposed rule would extend the time to meet targeted levels of mercury emissions.

  - The proposed rule would result in reaching its higher than desired target in 2018, 11 years later than under implementing the MACT standard, required by 2007.

  - Because of a lag time of about 5 to 10 years from regulatory action to reductions in fish tissue concentrations, regulations should require the most aggressive control possible.

  We do not support changes in regulations that would prolong the continued emissions of this hazardous pollutant and extend the time when the public would expect cleaner fish with reduced risk. Regulations requiring implementation of the MACT standard by 2007 should be kept.

- We are concerned that the proposed shift in regulating mercury emissions from Section 112 to 111 is based in part on rationale that information regarding hazards of mercury emissions to the environment was considered to have arrived after the December 2000 finding.

  - This rationale ignores the link known for decades between the environment, fish, and human health.

  - It dismisses information that has been available to USEPA from the American Fisheries Society since the early 1990's, including the Society's work with USEPA in conducting federal-state forums on contaminants in fish.

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LETTER TO USEPA CONCERNING MERCURY EMISSIONS
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- It ignores the published research of USEPA's own scientists, grantees, and contractors (Peterson et al. 1977 EPA-600/3-77-083, Rada et al. 1989 Arch. Environ. Contam. Toxicol. 18:175-181, Grieb et al. 1990 Environ. Toxicol. Chem. 9:919-930, USEPA 1993 EPA/822/R-93/007, Stafford & Haines 1997 Trans. Am. Fish. Soc. 126:144-152, Porcella 1997 EPA-905-R-98-003, Yeardley et al. 1998 Environ. Toxicol. Chem. 17:1875-1884, USEPA 1999 EPA-823-F-99-016, Kaiser 2000 Science 289:371-372).

We feel that USEPA should acknowledge that even in December 2000 it had knowledge of the hazardous effects of mercury emissions to the environment, fish, and consumers of fish, or it should explain why it chose to ignore its own scientists.

- A cap and trade policy for mercury, a persistent bioaccumulative toxicant cannot be supported by the known risks to the environment or human health and represents a radical departure from previous USEPA policy on the regulation of environmental toxicants.

  - There should be no opportunities to address mercury emissions that have already been recognized as causing environmental harm, as in the high mercury in fish in areas with a high frequency of wetlands (upper mid-west, southeast) and widespread mercury contamination down wind in the north-east from mid-west power plants.

For a pollutant that has serious public health and environmental hazards, the expectation should be that all measures possible would be taken to reduce the pollutant as much and as quickly as possible. This would provide the greatest amount of certainty that the problem will be treated.

- We note the requirement for continuous compliance monitoring under the MACT standard alternative; however, the MACT alternative does not identify consequences of non-compliance. The lack of enforcement under this alternative provides no reason for operators to bring their plants into conformance. Without enforcement, the regulation is meaningless. We recognize the concern to the power industry and consumer with the cost of implementing the MACT standard; however, according to USEPA (2000 fact sheet), "there are cost effective ways of controlling mercury emissions from power plants . . . at a cost far lower than 1 percent of utility industry revenues." Even if passed on to the consumer, costs should increase by only a few percent. Such minimal costs should be weighed against the chronic, serious, or non-recoverable health and environmental costs resulting from the detrimental effects of bioaccumulated mercury.

We also wish to highlight for USEPA the need to consider in the near future the concern and control of mercury emissions and hazards associated with it, not only in the United States, but also in a global context. The study in the Everglades indicated an indirect interaction with excess nutrient loading and mercury methylation in the Everglades, which has not been completely recognized. Contamination of fish with mercury in the Gulf of Mexico is a growing problem and there could be a significant interaction with the large hypoxic zone off the mouth of the river resulting from excess nutrients. This interaction needs definition on a much larger scale than has occurred thus far. We offer to work with USEPA to investigate this further. In the meantime, we feel that the USEPA should maintain regulations that would control the input of mercury as stringently and quickly as possible.

In conclusion, the Water Quality Section of the American Fisheries Society recommends that the existing Maximum Achievable Control Technology standard should not be relaxed and that it should be supported by effective enforcement. There is no other action that can clean up mercury in fish than active and vigorous controls on all sources, and power plants are one of the largest remaining sources. Thank you for considering the comments of the Water Quality Section of the American Fisheries Society.

Water Quality Section Web Page

By Larry Brown

The Water Quality Section is one of the few AFS units that still lacks a web page, but one is currently being developed. With a little luck the web page will be operational by the time of the Annual Meeting in Madison. The page will include the usual sections including the mission, bylaws, history, and current officers of the section. There will also be information on joining the section, past and recent correspondence, past newsletters, minutes of the annual business meeting, and awards information. Past-president Larry Brown is developing the page and will be the initial webmaster. If there are any members interested in contributing to WQS by taking the opportunity to be webmaster, please step forward!

Water Quality Section Sponsored Books

By Larry Brown and Bob Hughes

The WQS-sponsored book, *Historical Changes of Fish Assemblages in Large American Rivers*, edited by John Rinne, Bob Hughes, and Bob Calamusso, is progressing. Twenty-six of the 32 chapters have been submitted for technical editing with page proofs expected in July. The remaining chapters will be submitted by August and publication is scheduled for late 2004. Chapters describe changes in Canadian, Mexican, Brazilian and USA rivers.

The AFS Symposium book, *Effects of Urbanization on Stream Ecosystems*, is based on a WQS sponsored symposium held at the 2003 annual meeting in Quebec City. Thanks to the efforts of the co-editors Larry Brown, Bob Hughes, Bob Gray, and Mike Meador, this book project remains on schedule with revised manuscripts due back to the editors in early July. The book will include just over 20 articles. The articles are mainly case studies addressing the effects of urbanization on algae, macroinvertebrate, or fish assemblages in stream systems from across the United States and in Brazil (1 article). One of the highlights of the book is a group of five related articles comparing the effects of urbanization in different regions of the United States based on studies in the metropolitan areas of Boston, MA, Birmingham, AL, and Salt Lake City, UT. This book should be available for purchase by early 2005.

Water Quality Section Sponsored Symposia at the 2004 AFS Madison Meeting

By Georgina Lampman and Bob Hughes

The Water Quality Section and Michigan State University are co-sponsoring the symposium *Heartland to Habitat: The Role of Agriculture in Aquatic Systems*. In his Land Ethics essay, Leopold describes the effects of agricultural practices on the landscape and the minimal conservation effects when practices are minimally applied. Sixty years later, the symposium offers AFS members and others the information for the collective understanding needed to expand a land ethic conscience that includes aquatic ecosystems in the agricultural landscape. It will set the aquatic ecosystem stage through providing an understanding of the ecology and status of the aquatic resources in agricultural landscapes. It will also set the socio-cultural stage through providing information on the agricultural practices in agriculture-dependent cultures and communities. Finally, the symposium will provide a forum for the interchange and education needed to expand the land ethic conscience that includes both aquatic ecosystem conservation and agriculture into the 21st century. Thirteen speakers are featured and the symposium will begin on Monday, August 23, from 1:40p.m. to 5:40p.m. and continue on Tuesday, August 24, from 8:20a.m. to 12:00p.m.. Hope to see you there!

Another WQS-sponsored symposium, *Influences of Landscape on Stream Habitat and Biological Communities*, is scheduled for August 25 and 26 (Wednesday and Thursday). The objectives of this symposium are to: (1) bring together and synthesize current knowledge of the influences of landscape on stream ecosystems; (2) evaluate priorities and potential for watershed management and instream restoration; and (3) identify knowledge gaps to direct future research in linking landscape features and instream physicochemical and biological conditions. The Symposium will include presentations on a number of topics, including: 1) GIS and statistical tools that best link landscape with stream conditions; 2) effects of natural landscape features on stream conditions; (3) effects of human induced land cover on stream conditions; and (4) influences of spatial and temporal scales on the effects of the natural landscape and human induced land cover on stream conditions. The symposium features 30 presentations that will form the foundation for an AFS book, edited by Bob Hughes, Lizhu Wang and Paul Seelbach, which is scheduled for completion in 2005.

EMAP Western and National Wadeable Stream Assessments

Since its beginning in 2000, the USEPA's EMAP pilot study in the 12 western USA states will have sampled 955 unique probability sites by the end of this summer, which will be used to generate population estimates. In addition, 339 least-disturbed reference sites, and 26 indicator development sites were sampled. Both streams and rivers were sampled for physical and chemical habitat, fish, benthos, and periphyton assemblages, fish tissue metals, and watershed condition. A draft report to Congress on the ecological condition of all mapped, permanent streams/rivers in the region is scheduled for September 2005.

EMAP and the USEPA Office of Water, through cooperative agreements to the 36 individual States, is scheduled to sample 512 probability sites and 100 reference sites this summer. Currently only physical and chemical habitat and benthos assemblages are scheduled for sampling in streams, but fish assemblages are being sampled in a sister survey in the upper Midwest.

The President's 2005 budget provides $17 million in grants and $3 million in technical assistance to help States and Tribes develop and implement a new water-quality monitoring initiative to provide statistically representative water quality monitoring. This consistency across programs will eventually allow EPA to make a national determination of water quality and ensure resources target the highest priority problems.

For further information, contact David Peck (**peck.david@epa.gov**), John Stoddard (**stoddard.john@epa.gov**), or Susan Holdsworth (**holdsworth.susan@epa.gov**).

2004 Annual Business Meeting

The Water Quality Section will hold its annual business meeting Tuesday, 24 August,12:00–2:00p.m. in the Tenney Room of the Madison Hilton. In keeping with the WQS tradition, food and beverage will be provided.

The Agenda will include approval of last year's minutes, the Section financial report, status of two section-sponsored books, website status, and suggestions for 2005 symposia and books. ***See you there!***

Fish Quiz - Test Your Skill...

By Gregg Lomnicky

The USEPA's Environmental Monitoring and Assessment Program (EMAP) has evaluated the first three years of its probability survey of streams and rivers in the 12 conterminous western USA states (AZ, CA, CO, ID, MT, ND, NV, OR, SD, UT, WA, WY). From the 542 randomly-selected sites with fish, EMAP can infer the proportion of stream length occupied by each fish species. Since you are a fish biologist and likely knowledgeable about such matters, which five native fish species are the most commonly occurring across those states? And what are the three most commonly occurring nonnative fish species in the same region?

Send your replies to Gregg Lomnicky (**lomnicky.gregg@epa.gov**). The species, and persons providing the correct answers, will be announced in a subsequent issue of Water Quality Matters.

INTERNATIONAL MEETINGS - By Bob Gray

2004

International Congress on the Biology of Fishes. Manaus, Brazil. August 1-5. Contact: Chris Kennedy, ckennedy@sfu.ca, 604-291-5640.

Second International Symposium on Riverine Landscapes. Bredsel, Alvsbyn, Sweden. August 15-22. Contact: Roland Jansson, roland.jansson@eg.umu.se, +46-90-786 95 73.

Fifth International Symposium on Ecohydraulics: Aquatic Habitats: Analysis and Restoration. Madrid Spain. September 12-17. Contact: ecohydraulics@tilesa.es, +3491-361 2600, www.tilesa.es/ecohydraulics.

The Wildlife Society 11th Annual Conference: Excellence in Wildlife Stewardship through Science and Education. Calgary, Alberta, Canada. September 18-22. Contact: tws@wildlife.org, 301-897-9770, www.wildlife.org.

Coastline Conference: Coastal Fisheries in Latin America and the Caribbean: Assessing, Managing and Balancing Actions. Merida. Yucatan, Mexico. October 4-8. Contact: Silvia Salas Merquez, coastline@mda.cinvistav.mx, 999-981-2960, ext.525, www.mda.cinvistav.mx/enentos/Coastfish.

Aquaculture Europe 2004: Biotechnologies for Quality. Barcelona, Spain. October 20-23. Contact: ae2004@aquaculture.cc, www.easonline.org/agenda/en/AquaEuro2004/default.asp.

24th International Symposium of the North American Lake Management Society. Victoria, British Columbia, Canada. November 3-5. Contact: www.nalms.org.

Fourth International Fisheries Observer Conference. Sydney, Australia. November 8-11. Contact: Katie Scott, katie@ozacom.com.au, www.fisheriesobserverconference.com.

2005

Sixth Conference on Fish Telemetry. Sesimbra, Portugal. May 5-11. Contact: fishtelemetry@fc.ul.pt.

4th World Recreational Fisheries Conference. Trondeheim, Norway. June 12-16. Contact: www3.nina.no./wrfc2005/

29th Annual Larval Fish Conference. Barcelona, Spain. July. Additional details pending.

Second North American Lake Trout Symposium. Yellowknife, Northwest Territories, Canada. August 16-19. Contact: Dave Tyson, tyson@dfo-mpo.gc.ca, www.laketroutsymposium2005ca/.

IX International Symposium on the Biology and Management of Coregonid Fishes -2005. Olsztyn, Poland. August 21-27. Contact: www.uwm.edu.pl/wosir/ISBMCF/.

New Editor of Water Quality Matters

By Bob Hughes

I offer my heartfelt thanks to Gregg Lomnicky for agreeing to edit Water Quality Matters beginning with the fall 2004 issue. His appointment will be formally announced on August 24, 2004, at the WQS business meeting. Gregg received his Ph.D. in Fisheries from Oregon State University and is employed as a fish ecologist by Dynamac Corporation. He is a Renaissance man, with expertise in fly fishing, guitar, and orchidology, and previously pitched four years for the Stanford University baseball team. Contact Gregg at: (541) 754- 4472, lomnicky.gregg@epa.gov.

I thank the current and past officers of the Water Quality Section for making my editing role enjoyable and painless, and plan to continue working closely with them in my new role as vice-president of the AFS Western Division. Like Gina often states, I encourage all members to become more involved with the WQS. You do receive more than you contribute.

Remember to Renew!

This is just a reminder to renew your AFS membership and your Water Quality Section membership. You can do this online at **www.fisheries.org.**

While you're at it, ask a colleague to join and update our directory information as well.

Water Quality Section
American Fisheries Society
PO Box 722
Corvallis OR 97339

ADDRESS SERVICE REQUESTED