

# Fisheries and Aquatics Bulletin

A publication of the U.S. Geological Survey,  
Fisheries: Aquatic and Endangered Resources (FAER) Program  
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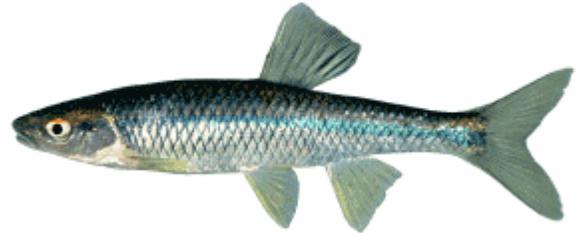
## From the Assistant Program Coordinator's Desk

The recent identification of a new species of fish in western Tennessee reminds us that there are still new frontiers for fishery biologists, be it in the field or in the laboratory at the molecular level. Traditional morphometric methods, as well as genetic evaluation helped identify the Chicksaw darter (*Etheostoma cervus*) as a unique species.

USGS fishery scientists at the Florida Integrated Science Center are working with other regional fishery agencies to assemble a database of the unique and diverse ichthyofauna of the southeastern US, an area with the richest global temperate freshwater fish diversity. The need for this information is critical as nearly one-third of the over 660 fishes in the southern U.S. from west-central Texas eastward through the central, southern and mid-Atlantic states are considered imperiled.

These new challenges demand new attitudes, new approaches, and new research technologies. How fortunate we are to be in a position to make new discoveries, develop new methods, and see the results of our effort contribute to

the conservation and restoration of nature's wonderful creatures.



**Threatened Blue shiner** (*Cyprinella caerulea*)  
<http://cars.er.usgs.gov/>

### **Congratulations: Dr. William Walker: Biology Chief of Staff**

Dr. William Walker (Bill) was recently appointed Chief of Staff for the Associate Director of Biology, Dr. Susan Haseltine. Bill is located in the USGS headquarters in Reston. An aquatic ecologist, Bill received M.S. and Ph.D. degrees in Ecology from Emory University. After an early academic career teaching and conducting research, in 1983 Bill joined the National Park Service to work on Man and the Biosphere projects. Then, for ten years beginning in the mid-1980s, he managed the NPS Natural Resources Management Trainee Program, coordinating training

and placement of more than 100 resource managers in NPS units. From 1993 to 1998, Bill coordinated the Washington Programs Office of the NPS Water Resources Division before moving to USGS as Program Coordinator for the Ecosystems Program. He was also team leader for the USGS Invasive Species Program and Status and Trends Program. Bill began his duties as Chief of Staff for Biology in November, 2003.

**Special Thanks to Acting Chief Scientists:**

**Dr. Leslie Holland-Bartels**, Center Director of the Upper Midwest Science Center, served as the Acting Chief Scientist in February. Leslie earned a B.S. degree in Marine Fisheries from the University of Massachusetts (1975) and a Master of Science in Fisheries and Experimental Statistics from Louisiana State University (1977). She earned a Ph.D. in Aquatic Ecology from Purdue University (1980). Her research interests are ecology and management issues of large rivers, and marine and coastal issues in Alaska. She has been with the U.S. Department of Interior since 1980 and became the Director of UMESC in 1998.

**Dr. Douglas Johnson** of the Northern Prairie Wildlife Research Center also served a stint as Chief Scientist during the month of March. Doug is a Supervisory Statistician at the Northern Prairie Wildlife Research Center. His areas of research interests include the development of quantitative methods for ecological research, and the effects of habitat fragmentation, fire and wind generators on birds. Check out the NPWRC website for more information

about Doug's research and the unique northern prairie ecosystem at:

<http://www.npwrc.usgs.gov/>

**Special Thanks:** Biological Resources Science Program Coordinators have also stepped in to ably fill the Chief Scientist's position. Many thanks to Paul Dresler (Status and Trends), Sarah Gerould (Contaminant Biology), William Gregg (Invasive Species), Gregory Smith (Wildlife and Terrestrial Resources), James Preacher (Fisheries: Aquatic and Endangered Resources) and Stan Coloff (Ecosystems).

**USGS and FAER Websites have a new look**

The GIO (Geographic Information Office), the newest Program in the USGS, is tasked with bringing science information to the public through the Science Information Office.

EWeb, the new Enterprise Web project <http://www.usgs.gov/eweb/> is coordinating forums to determine regional and program web support needs. Comments can be made at the same site to the Online Customer Service Center.

The FAER website has been updated:

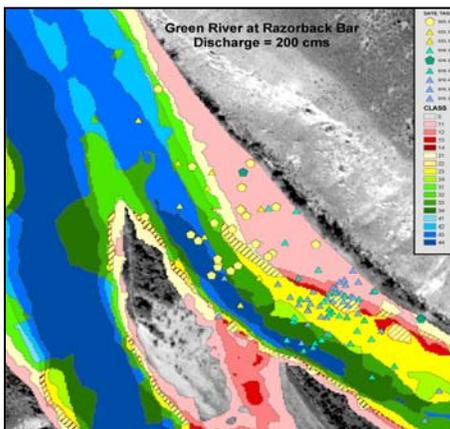
<http://biology.usgs.gov/farp/index.htm>

Many thanks to Cara Campbell, a landscape ecologist at the Northern Appalachian Research Laboratory for her technical expertise and assistance. We welcome current items for the **What's New** section. If you have workshop or meeting announcements or new, exciting research or field activities you would like to highlight, please send your materials to: [jpreacher@usgs.gov](mailto:jpreacher@usgs.gov) or [robin\\_schrock@usgs.gov](mailto:robin_schrock@usgs.gov)

## FAER scientist part of Venture Capital Science Impact Team

**Dr. Zack Bowen** of the Fort Collins Science Center is part of the integrated science team that submitted a winning proposal for the Director's Venture Capital Funding for FY 2004. Seven proposals were selected from a total of 156 under the Integrated Science category and seven under the Science Impact category. Zack joins Christine Turner (Geology); George Leavesley (Hydrology); and Richard Zirbes (Geography) on the project: Integrating Science with Resource Management through Collaborative Approaches and Adaptive Modeling Systems.

Zack is the Ecosystem Dynamics Science Program Director at FORT and is currently working on the Yellowstone River. His research focuses on the effects of channel modification on fish habitat and fish abundance. He is involved in the evaluation of new technologies for habitat assessment and the development of models of fish habitat in natural and altered systems.



**Model of discharge**

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## Seminars

### Spilling Waters: Salmon Survival and the Federal Columbia River Power System

John Beeman  
Western Fisheries Research Center



**John Day Dam, Columbia River**

New research is providing scientific data to improve spill efficiency to protect salmon stocks while generating power in a cost-effective manner. Research at hydroelectric dams on the Columbia River has demonstrated that survival of juvenile salmon and steelhead migrating to the Pacific Ocean is greatest when water is released through spillways. However, spilling water for fish passage is expensive, because of the potential power revenue losses. For example, the cost of spill provided for fish passage at John Day Dam, the third largest producer of hydroelectric power in the United States, is estimated at 40 million dollars annually. Managers of the Federal Columbia River Power System need reliable data on fish passage routes at dams and subsequent survival of juvenile salmonids to use spill most efficiently. Scientists at the USGS Western Fisheries Research Center, Columbia River Research Laboratory recently completed studies at John Day

Dam that indicate spill can be reduced while spring migrants pass without altering fish survival, saving millions of dollars in power revenues annually. Conversely, increased spill enhanced the survival of summer migrants, with subsequent power revenue losses. These studies also investigated fish migration behavior and survival in response to gas supersaturation at the dams. Data from these studies are used by regional hydroelectric power producers to arrive at new operations of the Federal Columbia River Power System in response to fishery management efforts to conserve and restore endangered and threatened fish species.

This seminar was presented on January 14, 2004. For more information about this research contact:

John\_Beeman@ usgs.gov

or visit:

<http://wfr.usgs.gov/research/fishbehaviorintro.htm>

## Upcoming Seminars

### River Fishes at the Confluences of Biology, Hydrology and Society

Dr. Steve Gutreuter of the Upper Midwest Environmental Science Center will present a Biological Resources seminar in Reston on June 3, 2004. Steve's research focuses on the quantitative ecology of fishes in large floodplain river systems. His background in statistics and fisheries is applied to developing statistical models for ecological problem solving. Currently he is investigating the potential effects of commercial navigation on fishes of the Upper Mississippi River. The study, funded by

the U. S. Army Corps of Engineers, is determining how production of fishes of the Upper Mississippi River System responds to major uses including commercial navigation, water-level management and ecosystem restoration. Commercial navigation in confined river channels results in mortality of valuable fishes, such as shovelnose sturgeon. River managers seek restoration strategies, including water level management and habitat rehabilitation, for which assessment of impacts and identification of remediation strategies remain a challenge. Effective restoration will alleviate limiting factors. Steve will discuss research that suggests the commonplace assumption of habitat limitation is unfounded, and will provide recommendations to improve the success of restoration efforts. This research on the production of river fishes underscores the need for integration of biology, hydrology, hydraulics and geomorphology to discover new options for improved management of large rivers. You can find more information about the project at: [http://www.umesc.usgs.gov/aquatic/fish/sgutreuter\\_5002533.html](http://www.umesc.usgs.gov/aquatic/fish/sgutreuter_5002533.html)

## Science Feature

### Barriers to Fish Passage



Dam on the Connecticut River

## Effects of barriers on fish populations

USGS fishery scientists in different parts of the country are evaluating the effects of barriers to fish passage on resident, anadromous and catadromous fishes. Concerns are not limited only to fishes. Impacts have been noted on eels, lamprey, and mussel populations from the Connecticut River to the Columbia River. Two USGS research laboratories have major projects that are investigating how these barriers affect behavior, dispersal, and survival.

**Conte Anadromous Fish Laboratory**, a facility of the Leetown Science Center, houses a unique hydraulics laboratory that allows testing of the effects of dams and fish passage systems on fish life history behavior, developmental biology and physiology. Based on this research, new fishway designs are created for species ranging from anadromous salmon, to catadromous eels, and riverine species including sturgeon.

For more information visit:

<http://www.lsc.usgs.gov/facts.asp>

**Columbia River Research Laboratory**, a facility of the Western Fisheries Research Laboratory, is applying radio telemetry to evaluate the behavior and survival of fish past multiple dams and through different passage routes. The studies focus on yearling and sub-yearling chinook salmon, *Oncorhynchus tshawytscha*, and juvenile steelhead *O. mykiss* in the Columbia River Basin. Similar to the advantages provided by Passive Integrated Transponder (PIT) tags over other marking techniques, the

high detection rates observed in radio-telemetry studies of migrant salmonids in the lower Columbia River allows a means of validating survival rates throughout the system.

Operators of the dams on the main-stem Columbia and Snake rivers build prototype passage devices to move fish



Paths of juvenile chinook salmon showing their behavior on approach to Lower Granite Dam on the Snake River

around the dams. USGS researchers are conducting studies to examine juvenile salmon movements in relation to water velocity and flow patterns, particularly near fish passage structures. Behavioral responses could make the difference in completion of a safe migration to the ocean. Important cues for juvenile salmon migrating to the ocean are water velocity and flow patterns, which may provide fish a route to navigate complex rapids and the turbulence of large rivers, as well as man-made barriers. Water velocity patterns may provide juvenile salmon a road map to use in navigating the prototype fish passage structures being built at dams. USGS provides information on fish response to these environmental variables to aid in the design of fish passage at man-made barriers. For more information contact: [john\\_beeman@usgs.gov](mailto:john_beeman@usgs.gov) [tim\\_counihan@usgs.gov](mailto:tim_counihan@usgs.gov)

## Mercury in Fish

There have been many recent articles about the dangers of mercury levels in fish. The best, balanced source of information about dietary guidelines can be found at:

<http://www.fda.gov/oc/opacom/hottopics/mercury/background.html>

The site provides mean levels of mercury in commercial fish and shellfish, and documents the source of the data.

## Meetings

**4th World Fisheries Congress** will be held in **Vancouver, B. C., Canada, May 2-6, 2004**. The international congress, sponsored by the American Fisheries Society features sessions on [Reconciling Fisheries with Conservation: The Challenge of Managing Aquatic Ecosystems](#). The meeting focuses on how fish are valued, ownership, achieving benefits, and the management of fisheries ecosystems. Session descriptions and speakers can be viewed at: [http://www.worldfisheries2004.org/program/program\\_sessions.htm](http://www.worldfisheries2004.org/program/program_sessions.htm)

**The 28th Annual Larval Fish Conference** will be held at Clemson, South Carolina, May 23-26, 2004. Registration has been extended through April 30 and is online at: <http://www.lfc2004.org/> The South Carolina Cooperative Fish and Wildlife Research Unit in Clemson, SC is hosting this conference with Clemson University, and the SC Department of Natural Resources. View earlier conference publications at: <http://www2.ncsu.edu:8010/elhs/elhspublications.html>

**The 134th Annual American Fisheries Society Meeting** will be held in Madison, Wisconsin August 22-26, 2004. The meeting is co-sponsored by the Wisconsin Department of Natural Resources. Online registration begins May 1st at: <http://www.afs2004madison.org/pages/registration.shtml>

**2nd National Conference on Coastal and Estuarine Habitat Restoration** will take place at the Washington State Convention & Trade Center and the Grand Hyatt Seattle, September 12-15, 2004 · Seattle, Washington. Check: <http://www.estuaries.org/2ndnationalconference.php> for more information about the conference, and to view proceedings from the Inaugural National Conference on Coastal and Estuarine Habitat Restoration that was held April 13-16, 2003 in Baltimore, Maryland.



## Share Your Expertise through the Fisheries and Aquatics Bulletin

The **“FAB”**: **Fisheries and Aquatics Bulletin** is a great opportunity to communicate your fisheries and aquatic resources research notes and other items of interest to gain national exposure. Thanks to all those who contributed material to this issue of the FAB. To have your articles published in FAB -  
*Contact: Robin\_Schrock@usgs.gov*  
*Asst. Program Coordinator*  
*or Jim Preacher, FAER Program*  
*Coordinator at jpreacher@usgs.gov.*