

Fisheries and Aquatics Bulletin

A publication of the U.S. Geological Survey,

Fisheries: Aquatic and Endangered Resources (FAER) Program

Edited by Janet A Cushing

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From the Editor's Desk

This is my first issue as editor and as I have not had the pleasure of conversing with all of you, I figured it would be a good idea to introduce myself. I joined the Fisheries: Aquatic and Endangered Resources Program last December as a program analyst. In this capacity I help the



Program Coordinator and Assistant Program Coordinator to keep track of program budgets, respond to queries from Congress and other parties, and buffer the field scientists from the bureaucracy of DC (to the extent possible)!

Prior to joining the USGS, I was a biologist with the US Army Corps of Engineers in Jacksonville, FL. I began as an Enforcement Project Manager in the Regulatory Division in 1999. In 2001, I joined the Planning Division, Environmental Branch of the Corps. In that position I worked on Comprehensive Everglades Restoration Plan projects as the Environmental Team Lead. I was also the Planning Division's coordinator for manatee issues, and a member of the Manatee Recovery Team.

I hold a Bachelor of Arts degree (1991) in Geology, from Colgate University, and a Master of Science degree (1993) in Geology and Geophysics, from the University of Hawaii.

My personal goal in this job is to support collaboration among Fisheries Program scientists, not only within the Program, but also with other Biology Programs, and with other USGS Disciplines, Federal and State agencies, and Tribes. I am excited by all the great science that is happening out there, and look forward to working with you. If there is any way I can assist you, please do not hesitate to call (703-648-4093) or email (jcushing@usgs.gov) me.

FAER Program Coordinator Retires

Dear FAB Friends and Colleagues,

On April 3, I will leave USGS and excitedly enjoy new life adventures in the world of retirement. This letter is to let each of you know that it has been a distinct pleasure and a thoroughly rewarding experience to have served you as the Coordinator for the Fisheries: Aquatic and Endangered Resources Program over the past 4 years. What a delightful experience to have

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worked with so many of the top research scientists, technicians, and staff in the Nation. Your enthusiasm and commitment to quality fisheries and aquatic science

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made my job easier and continually keeps USGS in the forefront in the natural resources research world.

As for the second phase of my life, after 37 years of federal service, my wife and I will move back to our South Carolina home farm, where I look forward to spending some quality time with my elderly parents and assisting them where I can. In terms of work activities, I have my eye on a new farm tractor and plan to piddle with some hobby crop farming and aquaculture (catfish, crawfish and tilapia). To keep the mind juices flowing, I may do a little science writing and also an option as an adjunct prof at a nearby university.

Again, I would like to thank you for your support and guidance over the past 4 years and applaud your continued sincere efforts and dedication for quality fisheries and aquatic science.

Best wishes to all,

Jim

PS. Since this message is being presented in the FAB, it only seems appropriate to toss in a FAB infomercial.

Your FAB just gets better and better! *When I published the first FAB edition nearly four years ago (albeit a rather crude publication), the primary purpose was to produce a communication tool to stitch together the fisheries and aquatic scientists across the Bureau in an informal, yet informative manner. Wow, look at the FAB now. When Robin Schrock came on board, she took your invaluable science input and really raised the quality bar of the FAB. She expanded readership of the FAB outside the Bureau to the Department and beyond. And now Janet Cushing is raising the bar to yet higher levels. The FAB is a great tool to showcase your research, not only within the Bureau and the Department, but also within the Beltway among other Departments and Agencies. I encourage each of you to keep the great articles flowing to Janet and Robin.*

Science Features:

The Hydrologic Assessment Tool

-Jim Henrikson, USGS Fort Collins Science Center

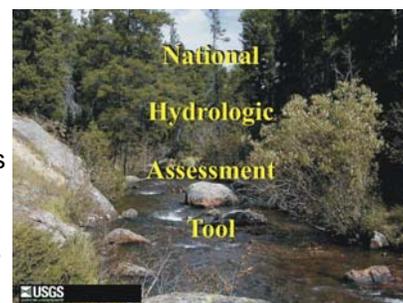
The Hydroecological Integrity Assessment Process (HIP) is based on a large body of research linking hydrological variability and aquatic ecosystem integrity. The HIP recognizes that streamflow is strongly related to many critical physiochemical components of rivers, such as dissolved oxygen, channel geomorphology, and water temperature, and can be considered a "master variable" that limits the disturbance, abundance, and diversity of many aquatic plant and animal

species.

Applying the HIP involves three steps: (1) a hydrologic classification of relatively unmodified streams in a geographic area using long-term gage records and 171 ecologically relevant indices, (2) the identification of statistically significant, nonredundant, hydroecologically relevant indices associated with the five major flow components for each stream class, and (3) the development of a stream classification tool and a hydrologic assessment tool. Four computer software tools have been developed.

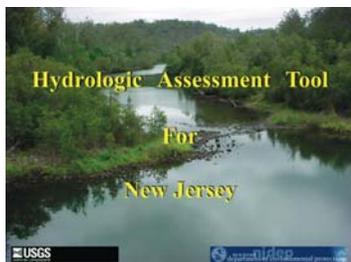
The **Hydrologic Index Tool** calculates 171 biologically relevant hydrologic indices (HIs) using daily and peak flow records. The indices are then used for a regional (State) stream-classification analysis. The program is designed to import USGS mean daily and peak flow discharges from the National Water Information System databases.

The **National Hydrologic Assessment Tool** is based on a hydrologic classification of streams performed by Poff (1996) who used 420 gauging stations across the contiguous United States. The National Hydrologic Assessment Tool has six stream-classes identified. The program is used to establish a hydrologic baseline (reference time period), establish environmental flow standards, and to evaluate past and proposed hydrologic modification.



The **New Jersey stream-classification tool** classifies any stream within the State into one of the four stream types found in the State. The four classes of streams identified in New Jersey are characterized by the relative degree of skewness of daily flows (low = stable flow, high = flashy flow) and frequency of low flow events (low = high base flow, high = low base flow). Thus, streams belonging to stream-class A are semi-flashy with moderately low base flow, class B streams are stable with high base flow, class C streams are moderately-stable with a moderately-high base flow, and class D streams are flashy with a low base flow.

The **New Jersey Hydrologic Assessment Tool** is used to establish a hydrologic baseline (reference time period), establish environmental flow standards, and evaluate past and proposed hydrologic modifications of streams in New Jersey. This is accomplished by using flow statistics, trend analysis, and 10 primary stream-class specific indices that address the five major components of flow.



The HIP is intended for use by any Federal or State agency, institution, private firm, or nongovernmental entity that has a responsibility or interest in the management and (or) regulation of streams with an objective to address ecological integrity at the reach or watershed scale. The manuals and software will be available in early April on the Fort Collins Science Center website (<http://www.fort.usgs.gov/>).

Editor's note: For more information, please contact Jim Henrikson at jim_henrikson@usgs.gov.

Science Highlights from the Leetown Science Center

-Bruce Taggart, USGS Leetown Science Center

The primary mission of the Leetown Science Center (LSC) is to conduct research on the health and habitats of aquatic species so federal, state, and local agencies, and the general public, can best manage environmental concerns on the public lands of the Nation. The LSC also hosts the U.S. Department of Agriculture (USDA) National Center for Cool and Cold Water Aquaculture (NCCCWA).

Some of the interesting and relevant fisheries investigations occurring across the LSC are summarized in this article. Future issues of the FAB will include summaries of ongoing research at each of the branches of the LSC, which include the Conte Anadromous Fish Research Branch, Northern Appalachian Research Branch, Fish Health Branch, Aquatic Ecology Branch, Restoration Technologies Branch, and Southern Appalachian Research Branch.

Smallmouth Bass and Intersex

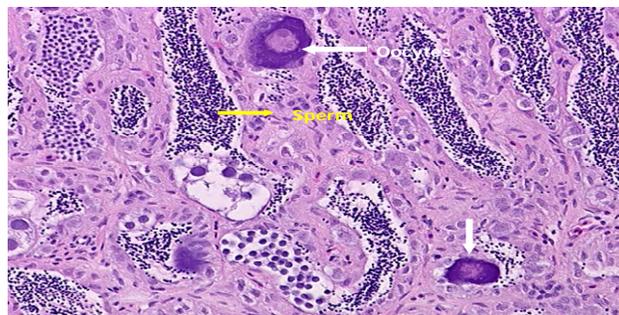
Due to concerns about external lesions and kills of bass and other fishes in the Potomac, LSC scientists initiated fish health assessments in collaboration with



External lesions on smallmouth bass

Photo credit: Vicki Blazer

the West Virginia Department of Natural Resources. An unexpected finding was the presence of intersex in the male bass. This has been most closely tied with exposure to estrogenic compounds and is an indication of endocrine disruption/modulation, an



Microscopic appearance of testes of intersex male

Photo credit: Vicki Blazer

emerging fish health and contaminant issue. LSC scientists are continuing to assess these fish health and intersex issues in the Potomac River watershed in an effort to determine the environmental factors contributing to their occurrence.

Freshwater mussels are among the most threatened groups of North American fauna. Of 297 recognized taxa, 213 are considered to be endangered, threatened or of special concern. The decline of freshwater mus-

sels can be attributed to a variety of causes, including water quality deterioration from point and non-point pollution, sedimentation, channel dredging and loss of fish species that serve as hosts for



A native freshwater mussel

Photo credit: Rita Vilella-Bumgardner

glochidia larvae during the mussels' life cycles. Loss of mussels means losses of water filtering by the organisms and food for muskrats and other river animals.

The Allegheny River, Pennsylvania, is one of the last large rivers in the East to maintain a diverse, self-sustaining community of unionid bivalves and is known to support some of the healthiest and most abundant remaining populations of two Federally listed endangered species: *Pleurobema clava* (clubshell) and *Epioblasma torulosa torulosa* (northern riffleshell). Scientists from the LSC are determining the distribution and biology of these and other species with particular emphasis on evaluations

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of impacts of bridge replacement and construction at several sites on the upper river. Their study results are used by the Pennsylvania Department of Transportation and the U.S. Fish and Wildlife Service in their conservation efforts.

Molecular genetics is a rapidly developing field of research with many applications toward the conservation of declining species and populations of aquatic and terrestrial organisms. Scientists at the LSC obtain tissue samples non-lethally, extract DNA from the tissues, and develop DNA microsatellite markers to determine the genetic population structure of a species across its range, assist in breeding programs, and resolve taxonomic questions. Some of these research efforts include work in the following areas:

Virginia – LSC scientists are determining the population structure of brook trout in streams in Shenandoah National Park and assisting managers in understanding genetic consequences of introductions of non-native trout over the past several decades. A larger scale population analysis is also underway with trout in several other National Parks in the East.

Maine – LSC scientists, working with NOAA Fisheries and the U.S. Fish and Wildlife Service, have determined the population structure of the Atlantic salmon, which provided information to assist managers in their decision to declare the species to be endangered in Maine.

Further research helped hatchery breeding programs, identified aquaculture fish with genes of European origin, and determined the North American or European origins of fish in the western Greenland North Atlantic stocks.

West Virginia – LSC scientists have determined the taxonomic relationship of the crystal darter, a small stream fish, relative to the genus and believe it should be reclassified as a separate species. They also are investigating the taxonomy of the clubshell, an endangered freshwater mussel.

Editor's note: For more information regarding the research of the LSC, please visit their website at <http://www.lsc.usgs.gov/>.

Agencies Band Together to Save Species

-Gordon Mueller, USGS Fort Collins Science Center

A group of dedicated biologists is striving to save two endangered fish found only in the lower Colorado River basin, the bonytail (*Gila elegans*) and razorback sucker (*Xyrauchen texanus*). Habitat alteration and the intro-

duction of nearly 80 non-native species have put them on the brink of extinction. The last confirmed wild bonytail was captured several years ago, and fewer than 1000 wild razorback suckers remain.



Multiple age-classes of razorback suckers

The problem is not limited to just the bonytail and razorback sucker. The lower Colorado River mainstem once supported 9 native fishes found nowhere else in the



Multiple age-classes of bonytail

world. Of those, 7 are endangered and the remaining two are in decline. In the words of Dr. Paul Marsh of Arizona State University, "The lower

Colorado River has the dubious distinction of being one of the largest rivers in the world with a totally displaced native fishery."

Nearly 12 million small razorback suckers were stocked in the 1980's and 1990's. Researchers found these fish fell victim to aggressive non-native predator fish such as channel catfish, sunfish, bass, and trout. Today, populations are being supplemented or reestablished by stocking large (35+ cm) fish. While these fish do survive and spawn, their young continue to be lost to non-native fish, as were their predecessors.

Recognizing the imminent loss of these fish, a small group of biologists, led by Tom Burke of the Bureau of Reclamation and USGS, started a program in 1989 to save the razorback sucker in Lake Mohave. Biologists from the U.S. Fish and Wildlife Service, National Park Service, Nevada Division of Wildlife, Arizona Game and Fish Department, and Arizona State University joined the effort and successfully augmented the reservoir population. That work has now been expanded to the entire lower river through the formation of the Lower Colorado River Native Fish Work Group.

The first step is capturing the hatchlings. Researchers discovered that razorback sucker larvae were attracted to lights. During late winter when these fish spawn, volunteers venture onto Lake Mohave, hang lights over the sides of their boats, and intercept larvae before



Biologists from the National Park Service (Lake Mead National Recreation Area) and USGS biologists construct brush structures that are placed in sanctuary ponds to provide small bonytail and razorback suckers protective cover

they are eaten by predators. More than 500,000 naturally born suckers have been collected thus

far. They are transported to the nearby Willow Beach National Fish Hatchery, where they are raised to a larger size. Some fish remain at the hatchery until they reach their targeted size of 12 inches, while others are raised in earthen rearing ponds until they reach that size. The approach of using wild-born fish is unique in that it maintains the genetic diversity of the reservoir population: stocked fish originate from thousands of wild parents rather than a few dozen hatchery brood stock.



State (NV, CA, AZ) and Federal (USGS, FWS, NPS, BOR) biologists pose at Davis Cove after a hard week of work renovating and stocking a new native fish sanctuary

The process of working with these fish revealed other critical secrets. Chuck Minckley (U.S. Fish and Wildlife Service) discovered that both bonytail and razorback sucker spawned and produced young in the 5-acre pond where they were being raised at Cibola National Wildlife Refuge. Prior to this, it was believed they required river conditions to successfully complete their life cycle. It became obvious that habitat was not the critical problem; predation was. Both species have

proven remarkably adaptive to environmental conditions, but their young are totally defenseless against the newly arrived predator species.

We were only seeing only half the story. For years, we recognized that off-channel habitats were important nurseries. Today, it's obvious deeper oxbows also were used by adults during floods and prolonged droughts. The real beauty of this discovery is that while we can't control predators in the river, we can eliminate them from small sanctuaries, providing these native fish with habitats where they can thrive.

Managers have been removing non-native fishes from portions of the river for over a decade without any positive response from natives. It simply hasn't been shown that we have the technology, resources, or support to eliminate economically important recreational fisheries. Acknowledgement of this fact led to the development of a conservation plan (Minckley et al., 2003, *BioScience* Vol. 53(3):219-234) that calls for the creation of isolated sanctuaries. These sanctuaries would allow native fish to establish self-sustaining populations in predator-free environments, providing both greater security for the fish and unique opportunities for researchers.

The Bureau of Reclamation is currently funding a program led by the U.S. Geological Survey to form a consortium of resource management partners in the development of a system of small native-fish sanctuaries in the Lower Colorado River basin. The goal is to pool resources among the agencies and establish 10 sanctuaries, as recommended by Minckley's conservation plan. This program provides an economically and scientifically viable approach to a difficult and complex problem. It also provides opportunities for researchers and resource managers to gain the knowledge, experience and expertise needed for these fish's eventual recovery. Developing the expertise to manage these fish on a small scale is necessary before attempting large scale recovery efforts.

Editor's note: For more information about this project, you can contact Gordon Mueller by email at Gordon_A_Mueller@usgs.gov, or by phone at 303-445-2218. You can also visit the Fort Collins Science Center website at: <http://www.fort.usgs.gov/>.

Photo credits: Gordon Mueller

U.S. Geological Survey's Museum Property Program

-Allan Montgomery, USGS-Property Management

The U.S. Geological Survey's Museum Property Program (MPP) is part of the Office of Management Service's Property Management Branch. The purpose of

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the museum program is to collect objects and specimens that document the Survey's cultural and scientific history.

Objects that represent the bureau's cultural and scientific history are collected and preserved by the Museum Property Program's staff. Guided by professional experience and the Museum Property Steering Committee, the staff actively seeks to add collections that reflect the activities of Geology, Mapping, Hydrology, and Biology.



This bird banding kit, complete with bands of various sizes and instructions for returning to the owner, was used by a biologist in New Jersey.

In most instances, objects and specimens are preserved by keeping them in museum storage facilities in Reston and the Denver Federal Center as well as at Fort Collins Science Center's Arid Lands Field Station at the University of New Mexico. Also, museum property is used for educational purposes (Lewis and Clark Bicentennial Celebration) or exhibits in the National Center in Reston, Virginia, or in USGS buildings at the Denver Federal Center. Under special circumstances, some museum objects also are maintained in individual's offices.

To find out more information about the USGS Museum Property Program, go to the following Website http://www.usgs.gov/aboutusgs/who_we_are/museum/ or contact Joanna Bloch by email at jbloch@usgs.gov or by telephone at 703-648-7326 or Allan Montgomery by email at amontgom@usgs.gov or by telephone at 7803-648-7321.

Editor's note: The Museum Property Program generated this article in the hopes that it will inspire scientists from the FAER Program to donate objects of scientific interest.

New Publications

North American Journal of Fisheries Management

USGS scientist Lew Coggins of the Grand Canyon Monitoring and Research Center led the research of the following two journal articles from the February issue of the NA Journal of Fisheries Management: "Abundance Trends and Status of the Little Colorado River Population of Humpback Chub" and "Age-Structured Mark-Recapture Analysis: A Virtual-

Population-Analysis-Based Model for Analyzing Age-Structured Capture-Recapture Data." These articles can be found on line at:

<http://afs.allenpress.com/perlserv/?request=get-toc&issn=1548-8675>.

Upcoming Meetings

Short notice alert—

Priority Watersheds Workshop

The USGS Fisheries: Aquatic and Endangered Resources Program and Leetown Science Center have joined with the Southeastern Aquatic Resources Partnership and the Alabama Department of Conservation and Natural Resources in planning and hosting a workshop on priority watersheds in the Southeastern United States. Entitled "**Aquatic Species Recovery: Identifying Priority Watersheds of the Southeast Today for Species Restoration Tomorrow**", the workshop will be held **April 24-25, 2006** at Joe Wheeler State Park located near Huntsville, Alabama.

A Resource at Risk. The rivers of the southeastern United States have the highest GLOBAL biodiversity for mussels, snails, and crayfishes. Additionally, the freshwater fish species richness is the highest of any temperate region and the herptofauna is also globally significant. Rivers with the highest total richness of each major group (fishes, crayfishes, mussels, snails, amphibians, turtles) and drainages with the highest number of G1-G2 and federally listed species for each group have been identified and recognized but are currently not regionally ranked or prioritized. The Southeast is the most rapidly growing region in the US and we will witness increasing demands on water resources for municipal and industrial needs as well as recreation. Given these trends, within the next 20 years we can expect loss of species in southeastern rivers, streams and coastal areas if adequate regional planning and conservation actions and research are undertaken.

The goal of this workshop is to assemble scientists with a working knowledge of the southeastern aquatic fauna to target watershed recovery efforts in the region. This process would rank and prioritize by extant species richness those watersheds for preservation and protection. Attendees will be asked to focus on the few critical areas remaining in the Southeast and develop a list of the top 10 freshwater biodiversity watersheds in the region, and also identify the 3 high priority watersheds for each state. To develop this list we will use multiple information sources, including Heritage data, SWG planning documents and the professional knowledge of

the participants. Attendees from State agencies will be asked to bring information developed through their SWG planning process to the workshop. Given the limited federal and state resources available for conservation, it is imperative resources dedicated for non-game habitat recovery are focused on the highest priority areas.

The Workshop will bring together taxonomic experts on key fauna, such as native fishes, mussels, snails, crayfish and amphibians. A subsequent workshop planned by the Southeastern Aquatic Resources Partnership will use the information developed by this workshop in formulating a regional fisheries habitat strategic plan.

For information contact Rita Villella-Bumgarnder (304-724-4472) or Rachel Muir (703-648-5114).

Striped Bass Mycobacteriosis Workshop

The USGS, Leetown Science Center, National Fish Health Research Laboratory and NOAA's Cooperative Oxford Laboratory are cosponsoring a striped bass mycobacteriosis workshop to be held **May 9 – 11, 2006** in Annapolis Maryland. The overarching goal of this workshop is to provide a synthesis of current understanding regarding mycobacteriosis and its ecological effects, and to provide recommendations that will facilitate a coordinated approach by funding agencies and researchers in their collective efforts to effectively and efficiently address this disease.

Specific objectives of this workshop are to:

1. Characterize the state of knowledge regarding mycobacteriosis in Chesapeake Bay striped bass;
2. Assess the striped bass – mycobacteriosis situation in Chesapeake Bay and place it into a geographic perspective relative to the conditions in other East Coast coastal systems;
3. Identify and describe ongoing research projects relevant to the disease;
4. Provide a consensus-derived prioritized research approach (with time horizons of both 2 and 5 years) that will yield understanding and management advice pertaining to mycobacteriosis issues pertinent to Chesapeake Bay ecosystem-based management and restoration;
5. Identify strategies for the implementation of research plans;
6. Produce a workshop technical report and nontechnical informational products for use by the larger research and resource management communities, law makers, and the general public.

Participants in the workshop will include researchers,

resource managers, administrators, and independent reviewers from USGS, NOAA, U.S. Fish and Wildlife Service, Maryland Department of Natural Resources, University of Maryland, Virginia Institute of Marine Science, Virginia Tech, and Cornell University. **For more information, contact Chris Ottinger at chris_ottinger@usgs.gov.**

Native American Fish and Wildlife Society Conference

The 24th Annual National Conference of the Native American Fish & Wildlife Society (NAFWS) will be during May 22-25, 2006, in Bar Harbor, Maine. This conference will be hosted by the Penobscot Indian Nation and the Northeast Region of the NAFWS. This year's conference theme is "Embrace Our Ancestor's Conservation Stewardship for Future Generations to Respect and Enjoy." This conference brings together tribal natural resource managers and affiliate U.S. government, state, and private entities for information exchange and to address issues benefiting tribal fish and wildlife resources. For more information and registration, visit:

<http://www.nafws.org> or call Sally Carufel-Williams , (303) 466-1725, ext. 4., or by e-mail at swilliams@nafws.org. For agenda and call for papers contact D.J. Monette at (413) 253-8662, or email djmonette@fws.gov.

Asian Carp Symposium

The USGS Columbia Environmental Research Center, along with the Mississippi Interstate Cooperative Resource Association, Mississippi River Basin Panel on Aquatic Nuisance Species, Illinois Chapter of the American Fisheries Society, Nature Conservancy, Upper Mississippi River Conservation Committee, Illinois Department of Natural Resources, and Professional Association of Conservation Resource Managers, is sponsoring a symposium on Asian carps in North America to be held in Peoria, IL on **August 22 and 23, 2006**. Native to Asia, the bighead, black, silver and grass carps are large fishes considered to be invasive in the United States. Bighead and silver carps are highly abundant in the Mississippi Basin. Black and grass carps, with their efficient and specialized feeding strategies, are also considered nuisance species. This symposium provides continuing education on Asian carp biology and a forum for dissemination of the most up-to-date information on the biology, management, and control of these fishes. A link to the web site for the symposium at can be found at:

<http://www.waux.cerc.cr.usgs.gov/MICRA/Asian%20arp%20Symposium.htm>. **For more information,**

you can also contact Duane Chapman of the USGS Columbia Environmental Research Center at 573-876-1866.

Gulf Sturgeon Workshop

The USGS and NOAA Fisheries are organizing the 8th Annual Gulf Sturgeon Workshop. This workshop will be held at Stephen Foster State Park in White Springs, Florida, on **11-12 October, 2006**. The purpose of this workshop is to share information in the field of sturgeon research. **For more information, contact Mike Randall of the Florida Integrated Science Center at (352) 378-8181 ext 3521.**

Meeting Notes

USGS Science Data Management Workshop

The USGS sponsored a Science Data Management Workshop on March 21-23, 2006, at the National Headquarters in Reston, VA, to discuss science data management needs, issues, and actions. USGS Acting Director, Pat Leahy, started the workshop with the following key points:

- It is important to deliver the data and information for societal use, and therein lies the value of obtaining data. The USGS should further strive to package our information more effectively for the public.
- The National Academy of Sciences vision for the USGS is as the scientific information agency. Better management of our scientific data will allow the USGS to make more effective use of declining resources.
- The USGS should continue collaborative efforts for research and data management.

The remainder of the workshop focused on existing or establishing "communities of practice" in various areas: Metadata, Data Management for Small Research Projects, Data Archiving, Digital Libraries, Monitoring Programs, and others. One of these communities of practice, Scientific Data from Monitoring Programs, is headed by Paul Geissler of the Patuxent Wildlife Research Center, and currently has a membership of about 250 people, with a core group of 22. For more information on how to join, contact Paul at pgeissler@usgs.gov. Proceedings from this workshop will be available on the web in the near future.

Go to Great Links

<http://www.usgs.gov>

Whirling Disease Initiative

The Whirling Disease Initiative 2005 Annual Report is available through this link:

<http://water.montana.edu/wdi2005/default.htm>.

GloFish™

The Nov/Dec issue of Aquaculture Magazine, featuring the GloFish™ can be downloaded from their web site:

<http://www.aquaculturemag.com/>.

Wild Fish Habitat Initiative

The *Wild Fish Habitat Initiative* is a cooperative effort between the US Fish and Wildlife Service (Partners for Fish and Wildlife Program) and the Montana Water Center at Montana State University. The *Initiative* has funded research projects to our Montana Cooperative Fisheries Research Unit. One such research project helps design habitat restoration projects that will promote the continued persistence and conservation of native westslope (*Oncorhynchus clarki lewisi*) and Yellowstone cutthroat trout (*O. c. bouvieri*) in the Northern Rocky Mountains.

For more information on this project and other case studies, please visit the website at:

<http://wildfish.montana.edu>.

Share Your Expertise through the Fisheries and Aquatics Bulletin

Communicate your fisheries and aquatic resources items of interest to gain national exposure. Thanks to all those who contributed material to this issue of the FAB. Send articles and photographs with credits and captions to:

Janet Cushing—jcushing@usgs.gov
FAER Program Analyst

or

Robin Schrock—robin_schrock@usgs.gov
FAER Assistant Program Coordinator

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