



Fisheries Management Section

May 2010

President's Message

RON ESSIG

I am using this column to share a few highlights from the March 2010 AFS Management Committee and Governing Board (GB) meetings in Nashville that I attended on behalf of the Fisheries Management Section (FMS). These highlights and some follow up actions are:

Finances – The calendar year 2010 AFS budget is projected to be balanced. This is largely due to the Nashville meeting making a profit of about \$100K despite earlier projections of losses.

Website Advertising – There have been critics (myself included) of past advertising that has been posted on the AFS website was large in size and unrelated to fisheries. These are Goggle ads triggered by certain keywords and generate five cents per hit to AFS. The GB approved continuing advertising on AFS web page with the statement that we don't endorse the products and the thought that ads could be removed if deemed objectionable.

Student Membership Fee Proposal – The Education Section proposed to add \$3 to the student member fee with automatic enrollment into their Student Subsection. This was defeated because of the sentiment that members should not be forced to belong to any particular AFS Section.

Pebble Mine Resolution – The GB voted to move a resolution on a proposed mine on Alaska's Bristol Bay back to Resolutions Committee for rework and potential submission later. It was thought that this resolution was premature because data for a more informed decision will become available through an EIS process going on now. President Jackson would like this topic to be written up as a feature article in *Fisheries*.

Draft Resource Policy Statements – The GB approved moving draft resource policy statements on "climate

change" and "lead in sport fishing tackle" through the process leading to another GB vote then a member vote at the annual meeting in Pittsburgh. I emailed these to you recently and then submitted a consolidated list of comments from FMS members to the Resource

Policy Committee chair. Regarding climate change, FMS member comments were supportive and there were several suggestions offered: emphasize other fishes in addition to the threats to trouts/salmon; mesh better with the National Fish Habitat Action Plan; add loss of CRP acres to sod busting; and reestablish USGS stream gauging stations. Regarding lead in sport fishing tackle, comments were also supportive except for one member whose opinion is that AFS should not pursue a policy issue since lead doesn't affect fish. He feels that there are dozens of things done through sport and commercial fishing that affect fishery resources and that policy statements are not needed for them. FMS member suggestions offered for the lead sinker policy were to form a committee and to establish specific timelines to ensure action on the issue. Please note another article in this newsletter with more information on this issue. Regarding other FMS business, please consider nominating a worthy individual for one of the FMS awards that are described later in this newsletter. Also, expect to see an email ballot for FMS officers and Regional Representatives in the near future. So please take just a couple minutes to cast your vote. I hope to see many of you at the annual FMS business meeting from 3-5 pm on Sunday September 12 in Pittsburgh, PA. The FMS will be sponsoring two symposia as part of AFS 2010 – American shad/river herring restoration and genetics/ecosystem connectivity. Feel free to contact me at ron_essig@fws.gov if you have any questions on the information I've shared above.

Ron Essig

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Permanent Rock Ramp Fishway Installed in the Peconic River

By Laura Stephenson

For over a decade, the Peconic Estuary Program and the New York State Department of Environmental Conservation have been working relentlessly with federal, state, and local agencies and non-profits to install a rock ramp at the Grangebel Park South Spillway on the main stem of the Peconic River; the headwaters of the Peconic Estuary, an estuary of national significance. After 10 years of project planning, permitting, and contracting delays, the much anticipated rock ramp in is!

The first phase of the project, extensive repairs to the structural integrity of the Grangebel Park North Spillway, was completed in late December 2009. The second phase of the project, the South Spillway rock ramp, commenced shortly thereafter and was completed in early February 2010; just in time for the spring migration. This new fishway allows permanent access to 24 acres and 1.5 miles of prime, critical habitat and spawning grounds in the Peconic River, and will provide an impetus for additional fish passage restoration projects upriver.

The rock ramp replaces an Alaskan steep pass ladder which was installed every spring since 2000 in Grangebel Park's North Spillway. The steep pass was very costly to maintain and remove seasonally, was not suitable to pass American eels, and was a safety hazard. The more natural looking and functioning rock ramp in the South Spillway creates permanent alewife and American eel resting pools to allow unimpeded access, and has been more effective at passing alewives than anticipated.

Project design, planning, and construction was supported by numerous entities and partners including: United States Fish and Wildlife Service, National Oceanic and Atmospheric Administration, Peconic Estuary Program, New York State Department of Environmental Conservation, New York State Department of State, Suffolk County, Town of Riverhead, FishAmerica Foundation, American Rivers, NY- Corporate Wetlands Restoration Partnership, Spectra Energy, and National Grid.



Photo Credits: Byron Young

Hatchery reared burbot released for the first time in British Columbia Canada and Idaho USA

Nathan Jensen¹, Sue Ireland², Matt Neufeld³, Paul Anders⁴, Ray Jones⁵, Vaughn Paragamian⁶ and Ken Cain¹

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Burbot (*Lota lota maculosa*) are freshwater cod native to the Kootenai River in Idaho, Montana, and British Columbia. Burbot are culturally significant to the Kootenai Tribe of Idaho (KTOI) and Idaho's Kootenai River burbot population once supported tribal sustenance harvests and popular sport and commercial fisheries. Drastic population declines have occurred over the last half-century, primarily due to habitat alteration and loss, now this population is considered functionally extinct within Idaho borders. According to Idaho Department of Fish and Game (IDFG), most recent abundance estimates for Kootenai River burbot were approximately 50 fish.

To re-establish a burbot population in the Kootenai River, the Kootenai Valley Resource Initiative (KVRI) convened a burbot sub-committee to help develop a coordinated burbot conservation strategy. Development of burbot culture is one component of a larger multifaceted, international conservation approach that includes habitat restoration. Beginning in 2003, the KTOI, the University of Idaho's Aquaculture Research Institute (UI-ARI) and the British Columbia Ministry of Environment (BCMoE) initiated a research program to assess the feasibility of conservation aquaculture as an interim burbot restoration measure.

Spawning and semen cryopreservation methods were developed first, followed by incubation methods and larval and juvenile rearing strategies involving intensive, semi-intensive, and extensive culture methods. Additional research to characterize burbot disease susceptibility and to establish burbot cell lines for diagnostic purposes was recently completed. With these fundamental methods in place, aided by the knowledge gained through recent disease susceptibility studies conducted at the UI-ARI, the experimental program enabled the first experimental release of cultured burbot in British Columbia and Idaho.

During October and November of 2009, 247 burbot cultured at the UI-ARI were released into the Kootenai River system in four different locations in BC and Idaho. The experimental release component of this project provides the foundation for studying post-release survival, growth, and condition of hatchery produced burbot. Thirty of the 247 released fish were two years old and implanted with ultrasonic transmitters. These fish are expected to provide valuable information concerning habitat use, movement and migration patterns, spawning habitat selection, and reproductive behavior.

These releases represent a historical milestone for the program, the species, and the Subbasin, as this is the first time burbot have been artificially propagated and subsequently released jointly into U.S. and Canadian waters for conservation purposes. The success of this experimental project paves the

(Continued on page 5)

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way for ongoing burbot conservation aquaculture research, and facilitates needed post-release in-river burbot studies. Ongoing burbot aquaculture research is focused on optimizing techniques for intensive rearing, semi-intensive and extensive culture methods, and determining temperature related growth performance.

As part of this collaborative international project, numerous reports and peer reviewed papers have been published on various aspects of burbot aquaculture, pathology, and management since 2005. This body of literature has contributed substantially to this developing field and would not have been possible without the support and cooperation of the Bonneville Power Administration, the Northwest Power and Conservation Council, KVRI, the KTOI fisheries program, the BCMoE, the U.S. Fish and Wildlife Service, the IDFG, Cramer Fish Sciences, and the UI-ARI. University of Idaho researchers continue to communicate with European burbot researchers and culturists, further contributing to the success of the Idaho program, and to burbot conservation and restoration in Europe and North America.



Caption: RIGHT: Nathan Jensen and UI-ARI hatchery manager Scott Williams spawning the first captive burbot in the winter of 2004. Photo credit: Jorge Slim-Lopez. LEFT: Adult burbot broodstock in a rearing tank at the UI-ARI aquaculture laboratory. Photo credit: Nathan Jensen.

Caption: Burbot cultured at the UI-ARI ready for release. Photo credit: James Hearsey.



Ongoing funding for this burbot conservation aquaculture project is provided by the KTOI and the Bonneville Power Administration (Project No. 198806400).

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The following papers and reports are available by Sue Ireland (Ireland@kootenai.org) at the KTOI or Ken Cain / Nathan Jensen at the UI-ARI (kcain@uidaho.edu / njensen@uidaho.edu).

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* Not yet available electronically (1/2010).



Changing of the Guard: A Summary of Louisiana's Management Response to Aquatic Plant Infestations Since 2006

By Alex Perret

**Louisiana Department of Wildlife and Fisheries,
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For a very long time, water hyacinth (*Eichhornia crassipes*) infestation was the main focus of aquatic plant control in Louisiana, covering an estimated 256,000 acres in 1986. Introduced to the state in 1945, the submersed exotic plant hydrilla (*Hydrilla verticillata*) covered nearly 72,000 acres of public waters by 1995. That same year a growing concern was the proliferation of common salvinia (*Salvinia minima*), which had increased its coverage to approximately 30,000 acres throughout the state. In 2006 giant salvinia (*Salvinia molesta*) spread from Toledo Bend Reservoir to several different areas of the state, thus introducing a new competitor for the role of dominant invasive macrophyte in Louisiana. Since that time, there have been fluctuations in coverage amounts by these different plants, and successful efforts to control their infestations have likely been influenced by the presence of giant salvinia (Figure 1).

In 2006 water hyacinth and common salvinia comprised the majority of Louisiana plant infestations with 133,972 and 119,600 acres of coverage, respectively. Hydrilla inhabited 66,715 acres while giant salvinia was present in a mere 1,866 acres of public waters at that time. The Louisiana Department of Wildlife and Fisheries (LDWF) spent \$294,042 on herbicide alone to treat 26,009 acres in fiscal year 2005-2006. Common salvinia increased its coverage to 207,862 acres in 2007 while water hyacinth and hydrilla also expanded to inhabit 158,920 and 119,610 acres, respectively. Giant salvinia quadrupled its presence across the state and covered over 7,500 acres, and LDWF spent \$786,939 on herbicide to treat 30,179 acres in fiscal year 2006-2007. In 2008 common salvinia exploded to an estimated coverage of 223,000 acres while water hyacinth, hydrilla, and giant salvinia all decreased slightly to cover 152,225, 104,717, and 7,130 acres, respectively. During the 2007-2008 fiscal year LDWF spent \$2,231,872 on herbicide to treat 58,514 acres. This trend continued in 2009 when water hyacinth and hydrilla estimates dropped to 138,013 and 98,352 acres, respectively. Even though common salvinia coverage fell to 188,815 acres that year, giant salvinia showed its explosive potential by occupying an estimated 17,300 acres. In fiscal year 2008-2009 LDWF treated 68,433 acres of aquatic plants at a cost of \$2,820,068 for the herbicide alone. (Continued on next page)

Aquatic Plant Infestations (Continued)

Many years of control experience and the availability of effective herbicides, coupled with expanding aquatic plant control budgets, have resulted in a decline in water hyacinth and hydrilla coverage in Louisiana over the past four years. As the impact of these two perennial pests decreased, the relative newcomer, common salvinia, flourished briefly until giant salvinia became established throughout the state. The giant version of this water fern is making its case as the state's top aquatic weed problem. The high reproductive rate of this plant, along with limited knowledge of herbicide effectiveness on it, allowed the giant salvinia to dominate many systems in a short time, suppressing the growth potential of the other three formerly dominant weeds. The visibility of the plant's massive floating mats and its negative effects on recreational access to lakes and fisheries resources have raised the profile of this problem such that funding for aquatic plant management in Louisiana has become a high priority. This revamped focus by LDWF on invasive plant control also supports the long standing fight against water hyacinth, hydrilla, and common salvinia. Even though the current coverage of giant salvinia in the state has been reduced substantially following the recent harsh winter, it has received the bulk of our attention and completely changed the focus and importance of aquatic plant control efforts in Louisiana in a very short time. It is safe to say that giant salvinia has taken water hyacinth's place as the main focus in what is sure to be a long battle with invasive aquatic plants across the state.

Additional methods of control are currently being used by LDWF to limit the spread of giant salvinia. On appropriate waterbodies, water level fluctuation has proven to be a valuable tool. The act of drawing the water down slowly strands large amounts of the plant on shorelines and in bushes where it desiccates. Water levels are then allowed to rise which moves remaining giant salvinia mats to the shoreline where they will be stranded during the subsequent drawdown. The costs associated with water level fluctuation are not usually monetary, but are incurred by the public who experience times of limited access and recreational use. An effective long term biological control for giant salvinia in the form of the giant salvinia weevil (*Cyrtobagous salviniae*) is currently being researched and implemented by LDWF with the help of the LSU Agricultural Center. The weevils are introduced into small ponds containing giant salvinia infestations during the spring of the year. When weevil densities reach appropriate levels, the infested plant material is collected, placed into sealed transport bins, and transplanted throughout the state to waterbodies containing the plant. Giant salvinia weevil introductions have recently been shown to be effective in infested south-central Louisiana marshes because of their ability to survive the milder winters experienced by that part of the state. Introductions in north Louisiana waterbodies have been less effective because colder temperatures lower the survival rate of the weevil populations. Expenditures associated with the weevil program in fiscal year 2009-2010 totaled approximately 10% of the \$7.9 million aquatic plant control budget for LDWF. (Continued on next page)

Aquatic Plant Infestations (Continued)

It will require an indefinite commitment to multiple resources and control methods to keep these invasive plants at bay, but along with that commitment comes a reasonable amount of success in sustaining Louisiana's reputation as the Sportsman's paradise.



Figure 1. Giant Salvinia forms dense, floating mats near shorelines, effecting boater access to fish and wildlife as well as property values for waterfront real estate. (Top) shoreline view of Lake Bistineau in northwestern LA. (Bottom) aerial view of Giant Salvinia mat in Lake Bistineau.

Web-Accessible Database of Standard Fish Sampling Data

Contact: Scott A. Bonar, Unit Leader, USGS Arizona Cooperative Fish and Wildlife Research Unit, 104 Biological Sciences East, University of Arizona, Tucson, AZ 85721, (520)-349-1894 sbonar@ag.arizona.edu

Managing fish populations is enhanced through use of standard capture and monitoring methods that encourage easy communication among biologists and comparison with data standards. Recently, the American Fisheries Society developed standard methods and published them in the book *Standard Methods for Sampling North American Freshwater Fishes*. This book is currently a best-seller and was initiated by the AFS Fish Management Section, who now receives a percentage of the royalties. Partners also include the USGS Cooperative Research Units System, the US Fish and Wildlife Service, the National Fish and Wildlife Foundation, and seven other agency and private organizations. The book's final chapter includes summaries of growth, condition, length-frequency, and catch per unit effort for the fifteen most common North American fishes, averaged by ecoregion and rangewide, collected using standard gears, and available for comparison. However, these data are inconvenient to access and use.

We propose to develop a website and database that will accompany *Standard Methods*. This website will (1) have an online expandable database of standard sampling data for comparison, (2) provide an overview of the standard sampling project, and (3) serve as a repository of comments on the published AFS standard sampling procedures. For the database, we will (1) provide on-line summaries of 4,092 data sets of condition, length-frequency, CPUE and growth indices of common freshwater fishes, collected using standard gears, from 42 states and provinces across North America, (2) allow entry of new data collected using standardized methods, so averages and percentiles of commonly-used fishery indices can be updated in the future, (3) allow queries, graphical, and tabular output of the data summaries so they can be easily accessed and integrated into projects across North America. Users will be able to compare condition, growth and abundance of fish collected in a particular waterbody with regional and rangewide averages and percentiles, thus increasing resource information in a variety of areas.

We plan to develop the website and database at the University of Arizona's Advanced Resource Technology (ART) laboratory and the USGS Arizona Cooperative Fish and Wildlife Research Unit in collaboration with Federal, State, and private partners. The database will be regularly examined by University of Arizona staff to ensure it is working correctly, and is updated with advancements in computer science. This will consist of periodic small periods of maintenance, and one in-depth update once per year. All website/database development, housing, and maintenance will be designed in close collaboration with Federal, State and Private partners.

Similar to the development of *Standard Methods*, we are currently soliciting partners to develop this website and accompanying database. We have already received funding from the USGS Coop Units System, and the National Park Service, and have promising opportunities to collaborate with other groups. Since the AFS Fish Management Section initiated *Standard Methods*, we would like to determine the interest of the Section to partner on this database for \$5,000. Thank you for your consideration of participation in this important complementary project to *Standard Methods*.

Lead in Sport Fishing Tackle: Information from the Fisheries Administration Section

I had the opportunity to participate via conference call for two hours of the Fisheries Administration Section meeting on May 6, 2010. Much of this two-hour portion of the meeting was devoted to the draft AFS policy statement on lead in sport fishing tackle. I thought there was good information shared, albeit mostly against the policy statement. Hoping that I'm not advocating one side or the other, I wanted to pass on some of what I heard to better inform FMS members on this topic.

Geographic Scale of the Problem - Most of the reports of problems associated with lead in sport fishing tackle have been from several northern tier states, Canada, and the United Kingdom. Lead poisoning of loons and swans has been the main impetus for action on lead. States outside this geographic area with smaller loon and swan populations have suggested that the issue is regional in scope and should be dealt with on a state-by-state basis. They feel that the potential economic hardships to the angling community from this policy statement are not justified by applying it across all states.

Scientific Information – Concern was expressed that the scientific evidence is weak that the loss and subsequent ingestion of lead sinkers and jigheads is a biological issue, and not just a societal issue. Questions were raised about the linkage of lead weights in aquatic ecosystems with lead toxicity of organisms. Management at the individual waterbird level versus population level is a concern.

Alternatives to Lead Sinkers – Current information from the sportfishing industry is that there are not a lot of economical alternatives to lead. Tin is the only practical alternative to lead for split shot and jigheads because the other materials are not malleable enough and have higher melting points. The cost of tin is about six times more than lead. Steel and tungsten are alternatives to lead for tie-on or slide-on sinkers. Steel is in the ballpark on price with lead, but tungsten is about 15 times its cost. Bismuth is no longer being used for fishing weights because of its expense and difficulty in manufacturing.

New Technologies – There may be new ways of coating lead sinkers in the future that would allow them to pass through gullets of waterbirds without harm. Outright bans of lead sinkers would prevent this kind of new technology development.

The process to adopt this policy statement (as well as climate change) is as follows. A notice will be published in the June issue of *Fisheries* and sent by direct email to all members directing them to the AFS website where an edited version of policy will be posted. Members can provide comments to the AFS Executive Director. After 60 days from posting, depending on member comments, the policy may be revised again and will go back to the Governing Board for consideration. If approved by a majority vote, the policy will be voted on by the membership at the annual meeting or by electronic means. It would then be adopted by AFS with a majority approval of members voting.

Ron Essig

A Rapid Response Effort to Remove Invasive Tilapia (*Oreochromis* spp.) in Port Sulphur, LA

By Melissa Kaintz

An introduced population of tilapia (*Oreochromis* spp.) was discovered in Port Sulphur, LA in April 2009 (Figure 1). The Louisiana Department of Wildlife and Fisheries (LDWF) immediately established an Incident Action Plan (IAP) to evaluate the extent of the infestation, and remove the tilapia from impacted waters, and monitor the success of the response effort. Over 100 locations were sampled throughout Plaquemines Parish (Figure 2) to determine the geographic extent of the tilapia. Specimens were sent to the Louisiana State University Agricultural Center where they were electrophoretically identified as a blue tilapia (*Oreochromis aureus*) and a Nile tilapia (*Oreochromis niloticus*)-blue tilapia (*Oreochromis aureus*) hybrid. The Secretary of LDWF invoked a fishing closure in May 2009 that covered all public and private water bodies within a 915 hectare zone surrounding Port Sulphur, LA. After further evaluation of tilapia in the impact zone, a decision was made to remove the fish by means of rotenone application. Results from several impromptu experiments indicated that rotenone concentrations of 5 ppm were most effective at eliminating adult tilapia and tilapia eggs.

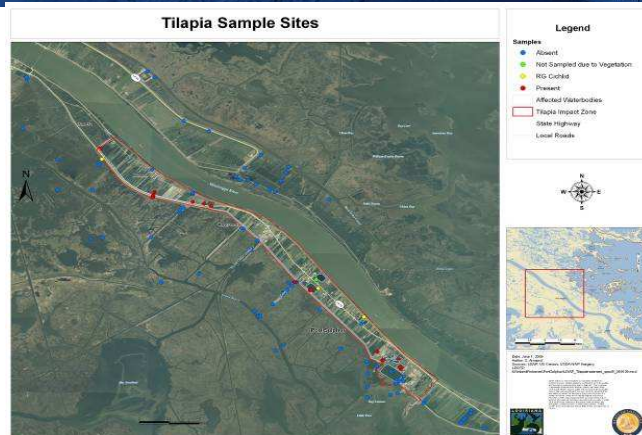
LDWF held two public meetings in Plaquemines Parish prior to rotenone applications. These meetings were used as an opportunity to inform the public about the invasive species and to provide information regarding control methods.

In June 2009, approximately 74 hectare-meters of water (33 surface hectares) were treated with a total of 10,270 liters (i.e., 2,260 gallons) of rotenone over a 7 week period. The treatment zone consisted of a 7.5 mile long canal, two large borrow pits ranging from 6-8 hectares with an average depth of 3 meters, and a network of surface drainage ditches and subsurface drainage pipes. Application methods included roadside truck sprayers and back pack sprayers for the canal and boat-mounted pumps for the borrow pits. One of the most difficult challenges during this effort was the treatment of the subsurface drainage system. A network of underground pipes was used to drain neighborhoods and roads into the canal, providing a refuge for fish during periods of high water. (continued on next page).

Figure 1. Port Sulphur, LA



Figure 2. The tilapia impact zone and sampling locations in Plaquemines Parish, LA.



TILAPIA INVASION CONTINUED

Five thousand gallon water trucks were used to treat the subsurface drainage system (Photos 1 and 2). Appropriate amounts of rotenone were added as the tank trucks filled with water and a blue dye was used to indicate when the full length of a pipe had been treated (Photos 3 and 4). The road-side truck sprayers were not an effective rotenone application method for the canal tilapia, because rotenone did not penetrate water deep into the water column. Upon monitoring of the rotenone kill, some tilapia were observed gasping for air at the surface a day following the application. Subsequently, large aerators were added to both borrow pits and additional boats were used in the canal and borrow pits to successfully aid in mixing the rotenone throughout the water column. A multitude of organizations, including faculty and graduate students from several universities, non-governmental conservation groups, as well as state, federal, and local agencies, volunteered to help count dead fish following rotenone treatment. Approximately 1,043,823 tilapia were eliminated from the drainage canal and borrow pits following the first rotenone application.

In July and August 2009, several native fish species, including bowfin (*Amia calva*), spotted gar (*Lepisosteus oculatus*), alligator gar (*Atractosteus spatula*), largemouth bass (*Micropterus salmoides*), a variety of sunfishes (*Lepomis* spp.), and catfishes (*Ictalurus* spp., *Pylodictis olivaris*, and *Ameiurus* spp.) were collected from the Bonnet Carre Spillway, which diverts Mississippi River water into Lake Pontchartrain, and the Atchafalaya River Basin. After the impacted water bodies were deemed safe for restocking, these fish were placed into the impacted water bodies to serve as a biological control against the potential repopulation of tilapia. In December 2009, tilapia were observed during post-treatment monitoring. Despite record low temperatures in the winter of 2010, tilapia were able to use the subsurface drainage system in Port Sulphur as a thermal refuge. The extent of their reestablishment is still unknown. Further monitoring will continue on a quarterly basis over the next 2 years to determine the effectiveness of the removal effort, monitor changes in population abundance, and monitor changes in community structure.



Photo 1 (Upper Left). Five thousand gallon water truck used to treat part of the subsurface drainage system. Photo 2 (Upper Right). The water hose from the tank truck used to apply rotenone to the subsurface drainage system. Photo 3 (Lower Left). Water tank truck used to treat subsurface drainage system. Photo 4 (Lower Right). Blue dye used to indicate when the full length of the subsurface drainage pipes had been treated.

AWARDS NOMINATIONS!!!!

Hello AFS Fisheries Management Section (FMS) Members,

Each year the FMS accepts nominations for induction into the Fisheries Management Hall of Excellence, Conservation Achievement Award, Award of Merit, and Award of Excellence. There is a brief description of each award below and more information is on the FMS web site (<http://www.sdafs.org/fmsafs/index.html>) including past recipients and nomination criteria.

Please take the time to nominate a mentor or colleague who has made significant contributions in fisheries management. Most of you know someone who is deserving of one of these awards. Please consider submitting a nomination by June 15, 2010 in the form of a letter describing the nominee's qualifications for the specific award. Electronic versions of nominations are requested to facilitate Awards Committee review. I look forward to your nominations. Please feel free to contact me if you need more information.

Thanks,
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SEE NEXT PAGE FOR SPECIFICATIONS ON EACH OF THE AWARDS



AWARD DESCRIPTIONS

The Fisheries Management Hall of Excellence (HOE) is located at the AK-SAR-BEN Aquarium in Gretna, Nebraska. It was established in 1992 with the stated objectives: 1) to recognize fisheries management professionals who have made outstanding contributions to the advancement of fisheries management; 2) to provide a site where the contributions of those honored can be displayed and viewed by the public and other fisheries professionals; 3) to emphasize the accomplishment, dedication and principles of those honored in the HOE; and 4) to describe the fisheries management profession. Selection to the HOE is the highest honor given by the Fisheries Management Section.

The Conservation Achievement Award recognizes any significant action, program, or initiative by a nonmember individual, non-governmental organization, or state (provincial), local, or federal agency that contributes substantially to fishery conservation or fishery science.

The Award of Excellence is given for inspirational leadership in the fishery profession and substantial achievements for AFS and the fisheries resource. The recipients must have effectively communicated their work at the national and/or international level. This award is given for cumulative accomplishments rather than a singular effort as recognized by the Award of Merit.

The Award of Merit recognizes a singular accomplishment or an individual or group acting as a team or committee for contributions in fisheries management and research. The award can be given for outstanding leadership, administration, or project-related accomplishment in any aspect of the fisheries profession.

AFS FISHERIES MANAGEMENT SECTION

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Pittsburgh is renowned for its arts, entertainment and recreational opportunities. With fabulous dining, world-class museums and innovative art galleries, Pittsburgh is one of the top travel destinations in the world. Sporting opportunities are diverse. Pittsburgh is home to Super Bowl Champion Pittsburgh Steelers, Stanley Cup Champion Pittsburgh Penguins and the Pittsburgh Pirates. On the water, enjoy fishing along Pittsburgh's river banks for bass and other game fish.

Explore beyond the city. You will find solace in the mountains of western Pennsylvania for hiking or native brook trout fishing. Try white water rafting in the rapids of the Youghiogheny River.

With so much to see and do, you'll find Pittsburgh is a city with a warm and welcoming atmosphere. We look forward to seeing you in September 2010.

