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## *American Institute of Fishery Research Biologists*

*Promoting excellence in fishery science*

### ... BRIEFS ...

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## President's Message

As some members know, I had a pretty serious heart attack in early January. After all the tests, it appears that I probably was doing too much, so I have little choice but to slow down a bit. The support my family and I received from everyone was overwhelming. In AIFRB our executive kept everything running smoothly, despite some difficult issues. Scientifically, there have been some remarkable events in the past six months that demonstrate why more research is needed to support the management of our aquatic resources in a changing environment. AIFRB is an organization that can speak out about these issues and we need to find ways to do this. Our executive will consider how to proceed at our annual meeting in a few weeks in Pittsburgh. Perhaps we need a section in *Briefs* where "AIFRB speaks out". We could express our opinion about some of the fisheries related science issues that are in the popular press. On the west coast, we are in the middle of the sockeye salmon return to the Fraser River. Last year we had the poorest return in recorded history and this year it is the largest return since 1913. You can imagine all of the opinions that everyone has. The Canadian government initiated a 22 million dollar judicial inquiry into the reasons for the poor return only to encounter the spectacular and unexpected return of 34 million sockeye salmon this year before the inquiry even started. There are lawyers everywhere and it will be an amazing time when the Judge starts hearing testimonies in a few months. I know from my job as an Editor of *Transactions of the American Fisheries Society* that there are a number of equally interesting issues in our science. This is why I think we need to get our messages out.

*Dick Beamish August/2010*

## Notice to the Membership

In accordance with the Bylaws, President Beamish established a three-member nominating committee, and comprised of past-presidents, that identified two strong, qualified candidates for President-elect. However, one candidate has asked to be withdrawn from further consideration.

The nominating committee recommends that the vote for president-elect proceed with the remaining nominee. This was discussed at the recently concluded annual meeting of the Board, with the option for a write-in candidate.

The general membership will receive a ballot for this election along with the annual dues notice in the next few weeks.

## AIFRB Fellow Wins 2010 Göteborg Award for Sustainable Development

**August 19, 2010**

**NOAA Fisheries** scientist Kenneth Sherman is one of two 2010 recipients of the **Göteborg Award for Sustainable Development**, considered the environmental equivalent of the Nobel Prize.

Sherman, recognized for his work on large marine ecosystems, will share the award with Costa Rican activist Randall Arauz in a ceremony in Göteborg, Sweden on November 17. Sherman, who is director of NOAA Fisheries' Office of Marine Ecosystems Studies and of the NOAA Fisheries Narragansett, R.I., Laboratory, developed and promoted the concept of large marine ecosystems (LMEs), which creates natural units that include socioeconomic factors and ecological considerations.

"Ken Sherman's LME model is exceptional because it's built on a holistic view with a system perspective," the award committee noted. "Ken Sherman has worked tirelessly for decades, and become more and more successful in generating acceptance for the concept among scientists and politicians. Today the LME concept is generally accepted around the world and has a global network of 64 LME areas."

The concept of LMEs was pioneered by Sherman and University of Rhode Island colleague



*NOAA Fisheries scientist  
Kenneth Sherman.*

Lewis Alexander in the 1980s as a way to manage large areas of the ocean by identifying distinct ecosystems based on topography, water depths and currents, productivity and food chain interactions. NOAA supported the concept, and the United Nations provided funding through its environmental program, which published an extensive volume co-edited by Sherman detailing the characteristics and state of the 64 LMEs in 2009. Sherman also heads the U.S. LME program.

More than 100 developing countries are implementing LME projects worldwide. Contributions total \$3.1 billion from the Global Environment Facility and World Bank and are disbursed through partnerships with NOAA, donor agencies from other countries, five UN agencies and two non-governmental institutions. "International LME projects are making significant progress in recovering depleted fish stocks, improving degraded habitats, reducing pollution and nutrient over-enrichment, and conserving biodiversity," Sherman says. "These efforts are also helping countries adopt ecosystem management policies to adapt to climate change."

Randall Arauz, the other recipient of the prize, is the founder and president of the Costa Rican environmental organization Pretoma. Arauz has worked to make people aware of and to stop the practice of shark finning in Costa Rica and internationally.

The Göteborg Award for Sustainable Development was founded in 1999 by the City of Göteborg and several businesses to stimulate and recognize strategic work in sustainable development, nationally and internationally.

## Introductions

### **Director of Florida District - S. Gregory Tolley, Ph.D.**

Dr. Greg Tolley is Professor of Marine Science and Director of Graduate Studies at Florida Gulf Coast University, where he also served as the founding Director of the Coastal Watershed Institute. Tolley has worked to secure over \$12 million in grants and contracts and is the author of publications on oyster-reef ecology and fish ecology and physiology, as well as on novel approaches in science education. Tolley has mentored both undergraduate and graduate students and teaches courses in estuarine ecology, ichthyology, and oceanography. His current research interests focus on the influence of freshwater inflow on estuarine ecosystems and aquatic resources. This research addresses how variation in the timing, amount, and quality of freshwater delivered to estuaries influences the physiology of estuarine organisms, shapes community structure of oyster-reef and zooplankton assemblages, and impacts the potential value of oyster reefs as essential fish habitat. A Certified Fisheries Professional with the American Fisheries Society, Tolley serves as Vice President of the Board of Directors for the Sanibel Captiva Conservation Foundation and as a member of the Conservation and Research Advisory Committee of the Florida Aquarium. He joined AIFRB in 1988.



### **BRIEFS Associate Editor - Jihong Dai, Ph.D**

Dr. Jihong Dai received her B.S. in Marine Chemistry from the Ocean University of China, and Ph.D in Marine Science from the University of Georgia. Her current research focuses on fishery information management at the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS). She is the National Coordinator and Project Lead in the development of the national Fishery-Independent Survey System - Survey Inventory, an online system with querying and GIS applications that characterize the fundamental components of NMFS fishery-independent data assets to support NMFS survey-related planning, budgeting and cross-program collaborations. In addition, Dr. Dai serves as a member of the NMFS Information Management Advisory Committee that advises the NMFS leadership on matters of data management and policies to ensure that NMFS data can be appropriately documented and accessed to meet the world's increasing demands for Fisheries information.



### **BRIEFS Editor – John Butler, Ph.D**

Dr. John Butler received his B.S. at the University of Washington, M.S. from Oregon State University and Ph.D from Scripps Institution of Oceanography. He is currently a Supervisor Research Fishery Biologist at the Southwest Fisheries Science Center and leads the Benthic Resources Team. His team has investigated endangered white abalone, overfished rockfish off Southern California, methane vents and rockfish in the Gulf of Alaska, and deep coral habitat in the Atlantic. Dr. Butler joined AIFRB in 1987 and was promoted to Fellow in 1999. He served as Membership Chairman from 1997 to 1999. It is with some trepidation that he attempts to fill Gene Huntsman's shoes as Editor of Briefs. All complaints about the forthcoming issues can be sent to John.Butler@noaa.gov.



# AIFRB Clark Hubbs Associate Research Awards

## Annual Award

Hubbs Associate Research Award was established in 1986 to support travel expenses associated with professional development. It is offered annually to AIFRB graduate students and other Associate members of the Institute in good standing. The award is granted to cover travel expenses associated with presenting results of an original research paper or research project of merit at scientific meetings or to conduct research at distant study sites. The Award provides a maximum of \$500.00; an individual may receive two awards in a lifetime.

**2010 Recipients:** **Ms. Abigail Lynch**, Michigan State University, Department of Fisheries and Wildlife, will present a paper entitled '*The Influence of Changing Climate on the Ecology and Management of Great Lakes Fisheries*' at the 140th Annual American Fisheries Society Meeting in Pittsburg, PA; **Ms. Elaina Jorgensen**, University of Washington, School of Oceanography, will conduct a research visit to the Smithsonian Institution National Museum of Natural History in Washington, DC, to explore the '*Systematics, holotypes and postlarval taxonomy of octopods of the Bering Sea and Gulf of Alaska*'; **Mr. Mario Espinoza**, California State University at Long Beach, will present a paper entitled '*Influence of water temperature on site fidelity and habitat use of the gray smoothhound shark (*Mustelus californicus*)*' at the 2010 Joint Meeting of Ichthyologists and Herpetologists in Providence, Rhode Island; **Mr. Douglas Larson**, Central Michigan University, will use the RA award to conduct late-season sampling in his Masters of Science Thesis study of the '*Spawning and Nursery Habitat Preferences of Fishes in the St. Claire River, Michigan*'; **Mr. Thomas Farrugia**, California State University at Long Beach, will present a paper entitled '*Abundance, habitat use, and movement patterns of the shovelnose guitarfish (*Rhinobatos productus*) in a restored southern California estuary*' at the 2010 Sharks International Conference in Cairns QLD, Australia; **Ms. Sally Roman**, University of Massachusetts Dartmouth, School for Marine Science and Technology, will present a paper entitled '*Investigation of an observer effect on data collection by the SMAST study fleet*' at the Fishery Dependent Data Conference in Galway, Ireland.

**Here are reports about two of the recipients. We will cover other recipients in a further issue.**



### INFLUENCE OF WATER TEMPERATURE ON SITE FIDELITY, MOVEMENTS AND HABITAT USE OF GRAY SMOOTH-HOUND SHARKS, *MUSTELUS CALIFORNICUS* (GILL 1863), IN A NEWLY RESTORED ESTUARINE HABITAT

#### Mario Espinoza

It is thought that some elasmobranchs use shallow temperate estuaries during warmer months because these may provide a thermal physiological advantage. However, the extensive habitat loss and degradation of southern California bays and estuaries is limiting the ability of coastal species to move between marine and estuarine environments. Estuarine restoration has emerged as a popular approach; unfortunately, studies measuring ecological function have been limited. In this study, abundance surveys and acoustic telemetry were employed to examine site fidelity, movements and habitat use of gray smooth-hound sharks (GSH) inside the newly restored Full Tidal Basin (FTB) of Bolsa Chica. GSH were more abundant inside the FTB during the spring and summer, and moved out during the winter. Over 83% of the individuals ( $n = 336$ ) caught were immature juveniles and were most abundant in waters between 20-22°C. Sharks fitted with acoustic transmitters ( $n = 22$ ) were continuously detected for 5-153 d (Mar-Dec). Forays into coastal waters were uncommon until they left for the season. GSH used mainly warmer habitats within the middle FTB; however, they also exhibited consistent diel movements along the basin. GSH selected soft mud and eelgrass more intensively at night, presumably for feeding. Behavioral and abundance data suggest that the newly restored FTB may function as an estuarine habitat for juvenile GSH, providing a seasonally thermal environment for feeding and growth.

### ABUNDANCE, HABITAT USE AND MOVEMENT PATTERNS OF THE SHOVELNOSE GUITARFISH (*RHINOBATOS PRODUCTUS*) IN A RESTORED SOUTHERN CALIFORNIA ESTUARY

#### Thomas J. Farrugia

Coastal elasmobranchs such as the shovelnose guitarfish (*Rhinobatos productus*) seasonally use bays and estuaries for mating, pupping and feeding. Monthly abundance surveys were conducted inside the restored Full Tidal Basin (FTB) of the Bolsa Chica Ecological Reserve, California between June 2008 and September 2009. A total of 269 shovelnose guitarfish were captured using beach seines and longlines and each individual was sexed, measured, weighed and externally tagged. Shovelnose guitarfish were present all year, with a decrease during the winter months. Over 96% of the individuals caught were immature juveniles and were most abundant in waters between 20° and 24°C. Concurrently, a subsample of 23 shovelnose guitarfish were fitted with coded acoustic transmitters and continuously tracked within the FTB for 16 months. Telemetry data showed individuals remain on average 73.9 d inside the FTB (range: 15-172 d) and establish 95% KUD home ranges of  $178,494 \pm 27,824 \text{ m}^2$ , representing 12% of the FTB area. Tagged shovelnose guitarfish made few movements between the FTB and the ocean, and





displayed activity patterns consistent with night foraging inside the FTB. They also disproportionately selected for mud habitats and water temperatures of 22°C, both of which are more common in the FTB than the neighboring coastal ocean. This study suggests that the restored FTB is important habitat for the feeding and growth of juvenile shovelnose guitarfish, a promising result after 3 years post-restoration.

*Thomas studied home ranges of fish species on fished and unfished reefs in Barbados during his undergrad in McGill University. Afterwards, he worked as an Alaska groundfish observer for NOAA collecting data for the management and regulation of the pollock, cod, and flatfish fishery. In 2007, he started his Masters at California State University Long Beach with Dr. Lowe, studying the movement patterns and abundances of elasmobranchs to determine the success of a wetland restoration. His PhD will focus on the ecosystem-based management and the sustainable use of living marine resources as part of the NSF funded IGERT program at the University of Alaska Fairbanks.*

## New England District Meets for Dinner

Members of the NE District and distinguished guests met for dinner at the United Fisherman's Club in New Bedford, MA, April 26, 2010. The menu featured Carne de porco e ameijoas a Alentejana (a pork stew with clams) and Portuguese fried fish fillets. After dinner, Dr. Terrance Quinn, University of Alaska Fairbanks, gave an excellent and relevant presentation about "The Crash and Failure to Recover of the Alaska Prince William Sound Herring Population after the Exxon Valdez Oil Spill." Dr. Quinn, an AIFRB member of the Northern Alaska District, was in New England on sabbatical, working on spatial modeling research at the University of Massachusetts' School of Marine Science and Technology. Richard McBride thanks Dave Martins and Steve Cadrin for helping organize this dinner, which was very tasty and fun. We hope to see more NE District members in the autumn, in Gloucester for our next dinner. If you are interested contact Richard.McBride@noaa.gov (voice: 508-495-2244).



*Dr. Steve Cadrin (right) presents the speaker, Dr. Terrance Quinn, with a hooded pullover from the University of Massachusetts' School of Marine Science and Technology and a copy of the AIFRB's book 'The Future of Fisheries Science in North America.'*



*Front row: Dan Georgianna, Sally Roman, Greg DeCelles, Terry Quinn; Back Row: Mark Wuenschel, Gary Fitzhugh, Dave Kowalske, Sean Lucey, Steve Cadrin, Ken Stokesbury, Tony Wood, Dave Martins, and Rich McBride*

## AIFRB Hubbs Research Assistance Awards (1986-2010)

**1986** - Jerald S. Ault, Gary D. Marty, Barbara Warkentine (3); **1987** - Mark Jennings, Kathleen Matthews, Barbara Warkentine (3), Katherine Yudin; **1988** - Standish Allen, Haejun An (2), Suzanne Boltz, Richard Brodeur, Roman Jesien, Raymond Newman, Gregory Ruggerone (2), Barbara Warkentine (3), Bradley Wetherbee (3); **1989** - Haejung An (2), Patrick Harris, Donald Pereira, **1990** - David Bushek (3), Jon Chen (3), Tung-Shi Huang (4), Robert McConnaughey, **1991** - Dana Aultman, Russell Brown, T. Richard Busby, David Bushek (3), Jon Chen (3), Paul Donaldson, Joseph DosSantos, Tung-Shi Huang (4), Lisa Pike; **1992** - Mark Benfield, Nancy Bower, David Bushek (3), Jon Chen (3), Gregory DeBrosse (2), Jonathan Kennen, David Love (2), Mirella Martinez, Gregory Ruggerone (2); **1993** - Steven Fischer, Martin Gutowski, Polla Hartley, Jonathan Heifetz, Dongdong Lin, Robert Neumann, Trent Sutton, Laura White; **1994** - J. Kevin Craig, Gregory DeBrosse (2), Elizabeth Hale (2), Tung-Shi Huang (4), Tein Lin (2), Edda Magnusdottir, Andrew Shadlock, Ellen van Snik (3), Vasana Weerasinghe, Bradley Wetherbee (3); **1995** - Kelly Bryan (2), Wen-Xian Du (2), Jennifer Frederick, Karen Kellogg (2), Jeongmok Kim (2), W. Ladd Knotek, David Love (2), Peter Perschbacher, Greg Peters, Siriporn Pipatsattayanuwong, Timothy Stecko, Ellen van Snik (3), Jirawat

Yongsawatdigul; **1996** - Traci Bishop, Kelly Bryan (2), Christopher Donohoe, Wen-Xian Du (2), Andrew Fayram, Matthew Gray, Elisabeth Hale (2), Lihan Huang, Tang-Shi Huang (4), Karen Kellog (2), Jeongmok Kim (2), Fugen Li, Xianbin Nickel, Kevin Pope (2), Ellen van Snik (3), Mark Terwilliger, Brad Wetherbee (3); **1997** - Lisa Kerr, Tein Lin (2), Kevin Pope (2), Douglas Snyder, Cynthia Taylor; **1998** - Alejandro Buentello (2), Andrew Hendry, David Jepsen, J. Jasper Lament (2), Edward Roseman (2), Michelle Zatcoff; **1999** - Alejandro Buentello (2), Christina DeWitt, J. Jasper Lament (2), Michael Morgan, Erin Rechisky, Edward Roseman (2), Carl Ruetz, Constance Ryan, Katherine Swiney; **2000** - Inga Fredland, Lenny Grimaldo, Haian He, Justine Hoffman, Jacek Jaczynski, Erin Rechisky (2); **2001** - Carl R. Ruetz III, Rebecca C. Jordan, Daniel P. Cartamil; **2002** - Somjintana Tungkawachara, Steven J. Cooke, Kelly S. Boyle; **2003** - David Howe, Darin Topping, Yannis Papastamatiou, Dan J. Daugherty, Marcus Drymon; **2004** - Nicholas A. Farmer; **2005** - Diane C. Tulpani; **2006** - Cyndi L. Dawson, Nicholas C. Wegner, Walter Bubley, Matthew R. Walsh; **2007** - Anna Belia de los Santos Camarillo, Allen H. Andrews, Matthew J. Breen, Kimberly S. Wieber; **2008** - Talia Bigelow, J. Marcus Drymon (*Fredin Award*); **2009** - None; **2010** - Abigail Lynch, Elaina Jorgensen, Mario Espinoza, Douglas Larson, Thomas Farrugia, Sally Roman.

## Northern California District Presides over Student Paper and Poster Competition at AFS Cal-Neva Chapter Annual Meeting

For the tenth straight year, the Northern California District of the American Institute of Fishery Research Biologists (AIFRB) presided over the judging of student presentations and posters at the 44<sup>th</sup> Annual American Fisheries Society Cal-Neva Conference and 28<sup>th</sup> Annual Salmonid Restoration Conference that took place on March 10-13, 2010, in Redding, California. Student papers and posters were in the running for cash prize awards, including \$150 each for Best Student Presentation and Best Student Poster. Best Student Presentation – Runner-up, and Best Student Poster – Runner-up each were awarded \$125, with third place in each category receiving \$75. All winners received a certificate signed by both organizations (Cal-Neva Chapter AFS, and Northern California District AIFRB).

### The 2010 award winners were:

#### Student Presentations

Best Student Paper	Ryan Slezak, Humboldt State University
Best Student Paper – Runner Up	Michael Hellmair, Humboldt State University
Best Student Paper – Third Place	Joe Sullivan, University of Nevada

#### Student Posters

Best Student Poster	Jon Reardon, Humboldt State University
Best Student Poster – Runner Up	Halley Nelson, UC Davis
Best Student Poster – Third Place	Chris Mosser, UC Davis

Congratulations to the winners and many thanks to the Northern California District judges who participated in the student evaluations. *Tom Keegan*

## Book Reviews: Mismanagement of Marine Fisheries

By Alan Longhurst, Cambridge University Press: 320 pp. 2010

This provocative book examines the proposition, central to fisheries science, that a fishery creates its own natural resource by the compensatory population growth that it induces, and that this is sustainable. His novel approach to the reproductive ecology of teleosts of cooler seas offers some support for this idea; however Longhurst also points out that fisheries that target the oldest and largest fish greatly reduce reproductive potential because many teleosts exhibit negative senescence. A review of fisheries past and present confirms the fact that few fisheries have been sustained. The strong variability of marine ecosystems is discussed in relation to the reliability of resources targeted by the industrial-level fishing that became globalized in the twentieth century. This was associated with extraordinary lack of regulation in most seas, and a widespread avoidance of regulation where it did exist. Sustained fisheries can be expected only where politicians have no personal interest in outcomes, despite the current enthusiasm for ecosystem-based approaches or transferable property rights.

This is the third important book by Alan Longhurst, the others being *Ecology of Tropical Oceans* (with Daniel Pauly), published in 1987, and *Ecological Geography of the Sea*, second edition published in 2006.

# W. R. “Nick” Nicholson

William Robert “Nick” Nicholson, 85, a long term member of AIRFB died Sunday, August 8, 2010. Born and raised in southern New Jersey in a small cottage under which the tide rose and fell, Nick was never happy nor lived far from tidewater his entire life. Being just old enough to serve at the end of World War II he was a member of the United States Army, 86<sup>th</sup> “Blackhawk” Division in France. Incurring shrapnel wounds from artillery he was awarded a Purple Heart and then was shipped to the Philippines just as the war ended. After World War II, he earned a Bachelor of Science in forestry from Rutgers University and a Master of Science in wildlife biology from the University of Maine. Nick served a stint as a waterfowl biologist with the state of Maryland before he was employed by the National Oceanic and Atmospheric Administration (NOAA) at Beaufort, North Carolina and its predecessor organizations in the Department of the Interior. Working first in the coastwide investigation of striped bass headquartered at Beaufort Nick then studied and wrote extensively on the age and size composition of the Atlantic menhaden. His inspection of those distributions led to descriptions of the movements and latitudinal size segregation of menhaden that were not changed nor improved by a later multimillion dollar tagging study of the species. He retired in 1984 after nearly 32 years of employment.

Gene Huntsman wrote an article about W.R. Nicholson in the Briefs in 2003, which included excerpted material reprinted with permission of Shooting Sportsman magazine and of outdoor author T. Edward Nickens. Nickens’ old man” character is based on a chance meeting with Nicholson, then 78, on the moss-draped White Oak River in coastal North Carolina.

“The old man was alone and happy to chat. He’d snuck upstream for five miles that morning and never fired a shot. I asked him about his canoe, a battered fiberglass boat painted tan, with simple board seats. “Made it myself,” he said proudly. “More than 25 years ago.” All he carried in it was a weathered trapper’s basket and a pair of shotguns at the ready. He chuckled at our mountain of gear. He was 78 years old, lean, like musclewood, with a deeply lined face and a quick smile. His routine was to paddle upstream and then motor back to his truck with a 2-hp outboard. I’ve hunted this river for 40 years,” he said, then looked down into the water for a brief moment, the silence widening like ripples in a pond. “But you get to be my age and you wonder how much longer you can do these sorts of crazy things.”

Nick continued to do those sorts of crazy things for eight more years. He was still chasing woodcock behind his Brittany “Slurp” ( aptly named if ever a dog were) in January of 2010 and was clamming and crabbing in the North River estuary near his house the week before his death.

Nick was the consummate humanist, a friend to all that would accept his friendship, a lover of fine food, fine drink, and classical music. He was generous to a fault, always willing to lend time, money, intellect, or just a kindly ear to someone in need. While his propensity for practical jokes drove some of his associates to distraction ( Amazing how bad a few clams can smell after riding beneath the seat of a car for a two or three days in the torrid heat of the Gulf coast. His friends all learned to do a close inspection of assigned vehicles before extensive field trips) . But they would have been disappointed had Nick not included them in his list of victims. Love takes many forms.

Gene Huntsman visited Nick only ten days before his death. Nick had just been diagnosed with apparently slowly progressing pulmonary fibrosis. Neither Nick nor his M.D. suspected that his death would occur anytime soon. Nonetheless Nick was feeling philosophical and opined” I’ve had a good life. I have no complaints. If I die now I leave life satisfied”. Could we all depart so graciously!

## ‘Four Fish: The Future of the Last Wild Food’

**A review of Paul Greenberg’s new book, “Four Fish: The Future of the Last Wild Food,” an eloquent examination of the sorry state of the world’s wild seafood, which proposes some thoughtful solutions.**

**By Craig Welch, Seattle Times Environment Reporter**

After 200-plus pages spent unspooling the sorry fate of some of the world’s most popular seafood — the virtual elimination of wild Atlantic salmon, the collapse of cod off New England, the disaster that has befallen the magnificent bluefin tuna — author Paul Greenberg does something truly courageous: He actually proposes thoughtful solutions.

Not everyone will find his suggestions entirely satisfying, but Greenberg’s fabulous new book, “Four Fish: The Future of the Last Wild Food,” is still the best kind of environmental journalism: sophisticated but not dry, serious yet marinated in wit, and so well crafted it can be inhaled in one sitting from which you rise amazed to discover how much you’ve learned.

It seems marine fish are finally getting the literary champions they deserve.

Greenberg’s story is deceptively simple: He traversed the globe, from the Arctic to Athens, to explain how human appetites destroyed populations of four significant ocean fish. But he means for those species to represent the hunt for all seafood. And he is trying to explain how it is, in 2010, that most of us still don’t think of fish as wildlife.

But Greenberg, whose work regularly appears in The New York Times Magazine and National Geographic, isn’t penning a fish-rights manifesto, nor is he building a case that it’s time we move away from seafood. Greenberg has spent much of his four

decades chasing marine life with hook and line. That background gives him a layered perspective. He details the horrors of bottom-trawling and industrial fishing, but confesses that the sustainable artisanal fisheries he adores can't by themselves feed the world. He raises significant questions about the conceits of Alaska's commercial pollock fleet, but acknowledges that it is, when compared to other white fish grounds, a relatively well-managed fishery. We see aquaculture that may in fact be made to work, and aquaculture that clearly doesn't.

No, Greenberg is on a quest to understand what we've done so humanity can hold on to a central human experience: consuming fish. And he actually manages to make this inherently sad quest fun.

In Alaska we watch as native Yupik fishermen pound the side of an oil tanker while at sea so they can trade the tanker crew's chef wild king salmon for bags of frozen chicken parts. He engages Mark Kurlansky, author of the international best-seller "Cod," in a surprising blind fish taste test.

Greenberg's saga, and his voice, are irresistible. A book that easily could have slid into cheap ideology or wonkiness instead revels in the tragicomic absurdity of nature, humans, and, of course, human nature. Yet it never shies away from the ugly, complicated truths of our modern world.

We live at a time when the ecological issues facing the sea are extraordinary and can seem maddeningly hopeless. Greenberg doesn't have all the answers, but he's done his homework exceptionally well and written an engrossing and important book. "Four Fish" is needed food for thought.

*Craig Welch, The Seattle Times environment reporter, is the author of "Shell Games: Rogues, Smugglers and the Hunt for Nature's Bounty" (Morrow).*

'Four Fish: The Future of the Last Wild Food' by Paul Greenberg, Penguin Press, 304 pp., \$25.95

## Frazer River Runs Red

Fishermen at the mouth of B.C.'s Fraser River are preparing for one of the biggest runs of sockeye salmon in nearly 100 years, but it's unclear what will happen to all the unexpected fish. On Tuesday, the Pacific Salmon Commission announced it expects as many as 25 million fish will return to the Fraser this season. That's the largest return since 1913 and more than double what was forecast just a few weeks ago.

On Tuesday night, fishermen were down on the docks preparing for what may prove to be an epic fishing trip. The tidal waters of the Fraser open to gillnet fishing at noon and many boats have been in place since Tuesday night. Stewart McDonald said he does not plan to sleep for the entire 32-hour stretch. "It's probably going to be the best fishing of our lives.... They're just coming in on hordes, it's amazing to see," said McDonald.

Steve Johansen is a salmon troller who's already been out fishing in other areas and says he's amazed by the number of fish he has seen around schooling around the river mouth waiting for a chance to spawn.

### 'Just amazing'

"The other day we were in a school of sockeye, trolling around, probably from Bowen Island right to the airport. It was just amazing, and that fish is still out there," he said. "The fish have adjusted. As you know, we've had a pretty warm summer, the Fraser's kind of warm, and they're actually waiting out front for some rain," he said. Phil Eidsvik with the B.C. Fisheries Survival Coalition said it's great news for the industry that works the river mouth south of Vancouver.

"We're not surprised that the run size was increased. We've been seeing lots of fish in the river and very large test sets in Johnstone Strait and we're still hearing reports of sockeye being caught in the Queen Charlotte Islands, on the northern tip, so we expected it to be upgraded," said Eidsvik.

Last week, the Department of Fisheries and Oceans opened the fishery for 16 hours, but McDonald said he wants it to change the openings to 12 hours at a time, with days off in between, so he can get some rest. But others are saying the openings are not long enough and the lack of commercial fishing means too many fish will be left to spawn, a situation that could cause the fisheries to crash again.

### Processors not ready

The Fraser River fishery is expected to be open for 32 hours starting at noon on Wednesday. DFO is allowing about 30 per cent to be harvested, or about seven million fish. The news comes after three years of returns so low the federal government launched a public inquiry. Fish packing plants and processors are already reporting that, after three years of low harvests, they are no longer ready to handle such a large harvest. Johansen, who works with Organic Ocean, said the industry has only about half the capacity to catch and process fish that it did a decade ago. "Half the plants have shut down over the past 10 years and half the boats are no longer fishing," said Johansen.

Guy Dean, vice-president of Albion Fisheries Ltd, a wholesale supplier of seafood, said his company is ready to handle the increased supply, and consumers should be ready for deals. "Prices are obviously going to come down with increased supply," said Dean. Dean said he's not having to turn any fishermen away at this time, but he is hearing stories of woe from other processors unprepared for the spike in volume. He's thrilled his company will be able to source most of its fish from Canadian waters this year for the first time in several years. "We source fish from all over the world. In previous years, we've had to source



fish from Russia as well as Alaska. And certainly our preference and our customers' preference is Canadian sockeye. So these early runs and large returns, it's great news for us," said Dean.

#### **Fish may not be able to enter river**

While fishermen and hungry consumers might be excited about the massive catches expected, UBC fisheries Prof. Carl Walters said he is also concerned not enough fish will be harvested. The 30 per cent harvest rate could mean millions of salmon die before reaching their spawn grounds higher up the river, said Walters. "They will be physically unable to enter the river. The river will be completely jammed with fish," he said. "We could see five million dead fish laying in Shuswap Lake at the mouth of the Adams River. To me, this would be an utterly irresponsible catastrophe." However, DFO area director Barry Rosenberger said sockeye are very well managed and the department has a proven history of adjusting harvest numbers as the projected returns change. "I think the in-season management is the important part. The forecast is important in the scheme of things, but you have to have the management, the in-season tools, and I think that's the part that we've demonstrated. We are making the right kinds of decisions," said Rosenberger.

#### **No ocean monitoring**

In 2009, the return was so low the federal government called a public inquiry to examine the apparent collapse of the Fraser River sockeye fishery. Fewer than 1.5 million sockeye returned to the Fraser River, a fraction of the 11 million forecast. The Cohen Commission began its hearing in Vancouver in June. Critics believe lice and other contaminants from fish farms are deadly to wild salmon, but the discussion paper said Fraser River sockeye experience a "suite of impacts" that must all be evaluated in order to understand the collapse. Walters said it's not clear why the fish bounced back this season because there's no way to monitor the salmon when they're in the ocean, which is the time when survival rates are established. "We think there's some complicated kind of delayed ecological interaction effects that a big run can cause poor survival down the road and maybe low runs can cause good survival down the road, but we don't understand the mechanisms at all," said Walters. *From CBC News*

*There is old saying in the Northwest. When the white man arrived, the Indians told them that the big fish swim up the river and the little fish swim down. Sometimes more, sometimes less. Now after two hundred years of study, we know that the big fish swim up the river and the little fish swim down. The numbers are highly variable.*

*Skookum! Ed.*

## **Fish or Farm?**

Replacing the global fish supply would cost 22 times the world's rainforests. If we replaced the protein we got from fish with land based agriculture, we'd need extra grazing land equal to the entire world's rainforest 22 times over.

At a recent conference in New Zealand sponsored by the New Zealand fishing industry council, noted Univ. of Washington fisheries professor Ray Hilborn shared some research on the impact of halting commercial fishing. He found that replacing the global fish supply would cost 22 times the world's rainforests. If we replaced the protein we got from fish with land based agriculture, we'd need extra grazing land equal to the entire world's rainforest 22 times over, said Hilborn.

Hilborn evaluated published research into the effects on the environment of protein production (including farming animals on land and catching wild fish). He found that on average, commercial fishing has a lesser impact on the environment than land based animal farming. Seafood industries are held to 'higher environmental standards generally' when compared with other food producers, he says. 'Protein production is always going to have some effect on the environment. But it is important that we are aware of the trade off required to feed the world. It wouldn't be smart to suggest we stop producing any single category of food, especially without thinking about how and with what we're going to replace it.'

'Commercial fishing in particular is held to higher environmental standards. If green groups were consistent and applied those same standards to other forms of food production we wouldn't have anything to eat.'

Professor Hilborn examined existing published and peer reviewed research from a wide range of scientific sources into the environmental effects of food production. 'When you think about it, it makes a lot of sense that fishing has relatively small environmental impact. In terms of water use, water pollution, pesticides, fertilizer, antibiotics and soil erosion, fishing barely figures. Then when you compare energy use and CO2 footprint, fishing in general comes out on top again.' Fishing also compared favourably in terms of biodiversity, Professor Hilborn said. 'This is interesting because biodiversity is an area where fishing has been strongly criticized.' He said the other scientists' work shows that fishing typically reduces measured biodiversity by 30 per cent and reduces abundance of fish by one half to three quarters. 'Land based agriculture has a far greater effect on biodiversity. For every acre that's ploughed you lose 100 per cent of the biodiversity.'

*Seafood. Com News*



# Menhaden study suggests overfishing may have taken place

## Fisheries agency will consider new management options

A new review of the Atlantic menhaden stock confirms that the population continues to exist at a low level and-for the first time-suggests that overfishing has taken place in a number of recent years. But the assessment stops short of blaming the commercial fishery for the ongoing low abundance of fish, especially juveniles, noting that there has been little correlation between the amount of menhaden harvested and reproduction. Nonetheless, the Atlantic States Marine Fisheries Commission, the multistate agency responsible for managing the species along the East Coast, directed its technical advisers to begin exploring new management options, with an eye toward recommending changes by the end of this year.

It's the latest development in the heated controversy over the small oily fish, which pits the Bay's largest commercial fishery against recreational fishermen and environmentalists. The industry, which catches menhaden for animal feed, Omega-3 vitamins and other products, has long insisted it has little impact on the overall population, either in the Bay or along the coast. While menhaden processors were once common along the East Coast, the only remaining plant is operated by Omega Protein in Reedville, VA. Menhaden landings there averaged 154,980 metric tons annually between 2005 and 2008, the years examined by the assessment. Most of those fish are caught in the Chesapeake or near its mouth. (The ASMFC in 2006 established a 109,020-metric-ton annual limit on the amount of menhaden that can be caught inside the Bay.)

Menhaden are an important food source for striped bass and many other predators, and anglers say the commercial fishery leaves too few menhaden for other fishes, and even birds such as osprey, to eat. They cite figures showing that the overall size of the stock is only about a quarter of what it was three decades ago, and that the number of juvenile fish produced has been at low levels since the early 1990s.

Both sides found points in the assessment to bolster their positions. Omega noted that the stock assessment showed that overfishing was not taking place in 2008, the most recent year reviewed, and that the overall stock was not in an overfished condition, which would have indicated the population was not sustainable. "The findings of this stock assessment validate that Omega Protein and other menhaden fishermen have been fishing in a manner that does not negatively impact the sustainability of the menhaden fishery," Ron Lukens, senior fisheries biologist for Omega, said in a statement. But the assessment also noted there was enough uncertainty in estimates to "raise concern about...potential overfishing in 2008." Further, it said overfishing had occurred in a number of recent years, including 1999, 2002 and 2006. "The science is clearly saying the coastal menhaden population needs help," said Bill Goldsborough, a fisheries scientist with the Chesapeake Bay Foundation and an ASMFC commissioner.

The new assessment was the first "benchmark" stock assessment for menhaden since 2004. A benchmark assessment is a full, new analysis of stock health and is subject to peer review. Part of the reason for different results from the previous assessment, which gave no indication of overfishing, was that the new assessment used updated methods and new information, including new information about predator-prey interactions. Rob Latour, a fisheries professor with the Virginia Institute of Marine Science who chairs ASMFC's Menhaden Technical Committee, cautioned that the old and new assessments used different methodologies and, as a result, direct comparisons among assessments over time are difficult. "It's not an apples to apples comparison," he said. "Each model configuration used to assess stock status is unique." But the assessment outlined the paradox facing managers.

The goal of current menhaden management is to ensure that the adult stock is large enough to produce the minimum 13.3 trillion eggs considered necessary to maintain the population. Although that number of eggs has been produced in most years, the actual number of larval fish that survive to "recruit" into the population has remained at very low levels for nearly two decades. In fact, the assessment report said it found "a complete absence" of any evidence showing that high egg production led to high recruitment. "We are producing the eggs, but we are not getting the survival," and subsequently, adequate numbers of young fish coming into the fishable stock, said Doug Vaughan, a fisheries scientist with the National Oceanic and Atmospheric Administration who chaired the stock assessment panel. If egg production is not translating into young fish, the assessment report said other factors may be more important in the production of young fish, such as predation and climate patterns affecting offshore waters where menhaden release their eggs.

Indeed, the assessment said that menhaden showed cyclical patterns of recruitment that may correspond with long-term regional climate patterns, with high levels of young in the 1950s, 1970s and 1980s, and low recruitment in the 1960s, 1990s and 2000s. As a result, Vaughan and Latour said it's unclear that menhaden fishing was a major factor in persistent low levels of young menhaden. Over the past decade, the commercial catch has trended downward, but recruitment has not increased as a result. Consequently, the ASMFC at its May 5 meeting directed the menhaden technical committee to explore alternate management goals for the stock. Critics of past menhaden management hailed the action. "That's what we want to come out of this," said Ken Hinman, president of the National Coalition for Marine Conservation.

Traditionally, management goals are designed to achieve something close to a maximum sustainable fisheries yield. Critics say that fails to fully account for the ecological role of fish such as menhaden, herring or mackerel, which are important food for other species. Hinman argued that, despite the stock assessment findings, the reduced harvest would likely result in more fish,

noting that almost two-thirds of adult fish are harvested, some before they spawn and most before they are able to spawn a second time. Even if reduced fishing did not reverse the long-running trend of low production, he said it would make more fish available to predators. “For species like this we should be more conservative, we should leave more in the water, we should err on the side of the ecosystem,” Hinman said. That would be a big change. It pits traditional fishery management, which manages single species to maximize harvests, with emerging ecosystem concepts that place more importance on the interaction between species. Hinman and others said that deciding the proper allocation of menhaden between the fishery and predators is a judgment call, not a scientific question. “They are not likely to get a scientific solution to this,” said Latour, whose panel is charged with making recommendations to the ASMFC. “The two management approaches are not always compatible. Which is most important may depend on whether you’re a menhaden fisherman or a recreational angler.”

#### **Menhaden’s role in cleaning up the Bay may be overrated**

The popular image of menhaden is that of a swimming vacuum cleaner, sucking up huge amounts of algae and clearing the water as they go along. But new research suggests their actual behavior is more like that of a broom sweeping dirt under a rug. While they remove phytoplankton from the water, they in some cases excrete enough dissolved nitrogen to fuel new algae production that may replace what they consumed. The findings were recently reported in a paper by Virginia Institute of Marine Science researchers who studied menhaden feeding patterns to help develop ecosystem models. During that study, they found that algae in the Bay are often too small for many menhaden to eat. Rather than feeding like a vacuum cleaner, menhaden algae consumption “is more like running a sieve through the water,” said Patrick Lynch, a Ph.D. student and lead author of the paper which appeared in the Feb. 22 issue of *Marine Ecology Progress Series*.

Menhaden swim with their mouths open so their gill rakers-comblike projections inside their mouths-can catch particles. The fish consume those particles after they close their mouths and water is expelled through their gills. But much of the phytoplankton in the Bay is actually too small to be caught on the gill rakers, and ends up being expelled with the water. Except for the youngest fish-those less than 1 year old-menhaden instead eat a lot of larger zooplankton and detritus. “The youngest fish, the age zeros, have the closest (gill raker) spacing which gave them the most potential for filtering smaller phytoplankton in our study,” Lynch said. “As they get older, the spacing increases and they become less able to filter the smaller particles.” The study found that small menhaden did remove nitrogen from the water when phytoplankton concentrations were high. But when concentrations were low, and menhaden were consuming a greater mix of food, the fish were actually excreting more nitrogen than they were removing by eating phytoplankton. That nitrogen, in turn, could produce more phytoplankton, possibly worsening water quality. “It’s enormously complicated,” Lynch said.

Another complication, Lynch said, is that when menhaden remove zooplankton, they are consuming a small predator that would otherwise be eating smaller phytoplankton. Others have suggested that menhaden may remove a huge percentage of the Bay’s nitrogen from the water, but Lynch said those estimates did not relate menhaden to the composition of the plankton community, and did not consider what component of that community would actually be consumed by fish of different ages. Estimates made by Lynch and his colleagues indicated that in some cases, large numbers of small menhaden might have an impact if they encountered dense algae populations, but the overall impact of menhaden on Bay nitrogen levels is probably negligible. The study used typical species found in the York River during late spring and early summer. It’s possible, Lynch said, that the outcome could be different in other places or different times of the year. “The number of species available for menhaden consumption may be in the thousands,” he said. *From the Bay Journal*

## **South Atlantic Fishery Management Council**

**Red Snapper Closure** The South Atlantic Fishery Management Council modified the size and configuration of a proposed area closure for all snapper grouper fishing during its March meeting in Georgia, choosing a smaller area as its preferred management alternative than previously selected.

The area closure is one measure being considered in Amendment 17A to the Snapper Grouper Fishery Management Plan to end overfishing and rebuild the red snapper stock in the South Atlantic. In December, the Council selected a larger preferred alternative that included an area off the coast of South Carolina. The current preferred alternative, known as Alternative 3C, encompasses 6,161 square miles in waters off the coasts of Georgia and northern Florida ranging from 98 feet to 240 feet deep. The area makes up approximately 3% of federal waters off the South Atlantic.

The choice for the closure configuration came after much discussion of alternatives for rebuilding strategies to use for the red snapper stock. A 2008 stock assessment found red snapper severely overfished and undergoing overfishing. The Council continued to choose a more conservative rebuilding strategy, choosing a proxy for estimating Maximum Sustainable Yield (MSY) that follows the recommendation of its Scientific and Statistical Committee. Using this approach, an 83% reduction in the total number of red snapper killed (harvested and estimated bycatch mortality) is necessary to end overfishing.

**Deep Water Corals** The South Atlantic region is home to what may be the largest continuous distribution of deepwater corals in the world. The South Atlantic Council has adopted new management measures to protect these sensitive habitats.

Five areas, located off the southeastern coast of the U. S. and encompassing more than 23,000 square miles will be designated Coral Habitat Areas of Particular Concern (Coral HAPCs). Management regulations in the Coral HAPCs enhance protection of the sensitive habitats from impacts associated with bottom fishing practices. 'The use of bottom damaging gear such as longlines, trawls, dredges and pots plus the use of grapples, chains and anchors are prohibited within the designated areas.

While the Council's mandate is limited to conservation and management of fisheries, there is now heightened concern regarding future offshore energy development. The designation of these extensive coral areas as Coral HAPCs also elevates their importance in the permitting process.

# **NOAA, fishing interests discuss troubled waters**

**By JAY LINDSAY, Associated Press Writer**

Tuesday, August 3, 2010

Boston, MA (AP) — The nation's top fishery managers met Tuesday with industry leaders from California to Maine to discuss ways to improve the troubled fishery law enforcement system amid findings of mismanagement, misspending and questionable fines. The summit at a Washington hotel, broadcast on the Internet, followed months of revelations about the National Oceanic and Atmospheric Administration's law enforcement division that have fractured relations between the agency and fishermen and have prompted lawmakers to call for the resignation of NOAA head Jane Lubchenco.

Recent findings by U.S. Commerce Department Inspector General Todd Zinser described the misspending of millions of dollars in fishing fines and showed heavier fines for Northeast fishermen, who have long complained of unfair treatment. Zinser also said the head of the law enforcement division, Dale Jones, wrongly ordered dozens of files shredded during his investigation. Jones has since been replaced and NOAA has made various changes to better track fines and mend relations with the industry. NOAA hopes to have broader changes in place by October 2011. "We know we must earn the confidence of the public," Lubchenco said in opening remarks. "We seek to be good partners, accessible and open, as well as tough, but only when necessary."

Vincent O'Shea, head of Atlantic States Marine Fisheries Commission, said with only about 170 agents to enforce the law in an area 1.5 times the size of the continental U.S., both law enforcement and the fishing industry must cooperate with each other. NOAA is charged with enforcing the nation's fisheries laws, aimed at protecting species through such measures as closing sensitive fishing grounds or mandating gear that allows smaller fish to escape.

Maggie Raymond, co-owner of two fishing boats and head of Associated Fisheries of Maine, urged enforcement officers to understand the burden that complex regulations place on the average fisherman. She showed a multicolored map illustrating the numerous regulations and urged officials to educate fishermen before punishing them when they spot consistent violations. "I would suggest that signals confusion and not intent," Raymond said. "Some outreach on the docks may be a way to get people into compliance quickly." Tuesday's summit included about 60 attendees, including recreational and commercial fishermen from both coasts, academics, environmentalists, regional fisheries managers and fisheries attorneys. Lubchenco ordered Zinser's investigation last year after fishermen complained that they were being assessed five- and six-figure fines for minor violations by investigators who viewed them as criminals. Fishermen also claimed the fines amounted to a sort of bounty since NOAA kept the money.

In January, Zinser's office released a report that said Northeast fishermen have been fined more than double the amount levied against fishermen in other regions and said there was no process to review if the fines were fair. It also criticized the disproportionate number of criminal investigators in an agency where most violations are non-criminal. In addition, findings from an audit conducted by Zinser's office and released last month showed that money collected from fines was poorly tracked and misspent on items such as a \$300,000 luxury boat for undercover work. NOAA's comptroller now controls revenue from the fines. In calling for Lubchenco to step down last month, congressmen including Reps. John Tierney and Barney Frank of Massachusetts and Walter Jones of North Carolina cited the problems with NOAA's law enforcement office in describing what they said were the agency's broader troubles with fishermen. Frank said the White House told him replacing Lubchenco wasn't the answer.

On Tuesday, fisheries attorney Eldon Greenberg said recent steps to ensure high-level NOAA review of all proposed charges and penalties was a good first step to ensure fairness. But he urged various other measures, including reopening some closed cases and releasing to the public the resolution of cases so the rules are better understood. Cameron Kerry, general counsel for the Commerce Department, which includes NOAA, said fair and vigorous enforcement is key to protecting the fish and fishing communities, even if some bristle under it. "We can't make everyone happy," Kerry said. "A law without enforcement is just an aspiration."



## **District Directors**

### **Alaska, Northern**

Christian Zimmerman  
USGS Alaska Science Center  
4230 University Drive Suite 201  
Anchorage, AK 99508  
czimmerman@usgs.gov

### **Alaska, Southeast**

Bruce Wing  
P.O. Box 210265  
Auke Bay, AK 99821-0265  
bruce.wing@noaa.gov

### **Arizona - New Mexico**

G. Morris Southward  
4155 Sotol Drive  
Las Cruces, New Mexico 88011  
morlor31@comcast.net

### **California, Northern**

Michael McGowan  
Maristics, Inc.  
1442-A Walnut Street, Ste. 188  
Berkeley, CA 94709

### **California, Southern**

Traci Larinto  
California Department of Fish and Game  
4665 Lampson Avenue, Suite C  
Los Alamitos, CA 90720

### **Capital**

Frank M. Panek  
National Fish Health Research Laboratory  
1705 Leetown Rd.  
Kearneysville, WV 25430

### **Carolinas**

Vacant

### **Florida**

Vacant

### **Great Lakes, South Central**

Edward F. Roseman  
USGS Great Lakes Science Ctr.  
1451 Green Road  
Ann Arbor, MI 48105-2897  
eroseman@usgs.gov

### **Gulf of Mexico, Northeast**

Vacant

### **Keystone**

Joseph W. Rachlin  
Dept. Biological Sciences  
Lehman College of CUNY  
250 Bedford Pk. Blvd. W.  
Bronx, NY 10468-5189  
joseph.rachlin@lehman.cuny.edu

### **New England**

Richard McBride  
NOAA/NMFS/NEFSC  
166 Water Street  
Woods Hole, MA 02543  
Richard.McBride@noaa.gov

### **Oregon-SW Washington**

Vacant

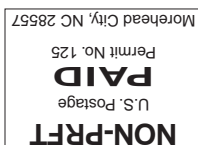
### **Texas**

Lance Robinson  
Texas Parks and Wildlife Dept.  
Seabrook Marine Lab  
Seabrook, TX 77856

### **Washington, NW**

Katherine Myers  
School of Aquatic & Sciences  
University of Washington  
Box 355020  
Seattle, WA 98195-5020

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*American Institute of Fishery  
Research Biologists*  
NMFS, Office of Science and Technology  
c/o Allen Shimada  
1315 East West Highway  
Silver Spring, MD 20910  
Return Service Requested