



## AFS Estuaries Section Newsletter July 2014

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### PRESIDENT'S MESSAGE

Happy Summer, Estuaries Section members!

Warm weather has finally arrived on Cape Cod, and I took my first swim in the Bay yesterday. It was delightfully cool and macroalgae free. I watched long clawed hermit crabs and Calico crabs scuttle over the sand, listened to kids shriek happily about catching mummichogs, and marveled at the fact that sunbathers, swimmers, fishermen, sailors, stand-up paddleboarders, and shellfish aquaculturalists were all happily sharing the same space.

I remembered a talk Dr. Jane Lubchenco gave about her experience working on the 2003 Pew Oceans Committee Report. When she traveled the country talking to people about oceans, one of their top wishes was to have safe and clean beaches. It's what I dream about all winter.

Thank you to all the Estuaries Section members who have devoted any part of their careers to doing monitoring, research, outreach, and other activities that contribute to safe and clean beaches and productive waters on all our coasts. Good work!

### Issue Highlights

President's Message  
Get Involved!

### SECTION-SPONSORED SYMPOSIA at QUEBEC CITY

#### FEATURE ARTICLE

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#### WHAT'S GOING ON IN THE LAB?

Roger Rulifson, East Carolina University

#### DR. NANCY FOSTER AWARD

#### MEETING NEWS

The other summer activity I'm looking forward to is the annual AFS meeting in Quebec City on August 17 – 21. Our annual business meeting will take place on Sunday, August 17 at 4pm in the Convention Center. We'll be meeting jointly again with our colleagues in the Marine Fisheries Section. Check out our meeting agenda on page 7. When you have some free time (ha!) please do a little brainstorming about ideas for symposia at the 2015 meeting in Portland. We'll discuss your ideas in Quebec.

I was perusing the list of plenary speakers and was intrigued by the description of Dr. David Bellas's talk. He's going to speak to us about systemic distortion, but if you check out his publications you can see he began his career working in estuarine systems:  
[http://scholar.google.com/citations?hl=en&user=2YsDGIEAAAAJ&view\\_op=list\\_works&cstart=20](http://scholar.google.com/citations?hl=en&user=2YsDGIEAAAAJ&view_op=list_works&cstart=20)  
<http://cce.engr.oregonstate.edu/people/faculty/bella.html>

I'm curious to hear his insights after such an interesting and varied career.

And speaking of interesting and varied careers, please consider nominating a colleague for the Dr. Nancy Foster award. Nomination materials are due July 31 – see the article on page 7 for all the details.

I wish you all a happy, healthy and productive summer, and I look forward to seeing many of you in Quebec City.

**--Abigail Franklin Archer, President,  
Estuaries Section**

### GET INVOLVED!

Want to be involved but not sure where to start? Here are some ways to join in:

- Join the Section LinkedIn page and post an interesting news story
- Write a newsletter article on anything estuarine related  
Contact: [lee.benaka@noaa.gov](mailto:lee.benaka@noaa.gov)
- Assist with organizing a Continuing Education course in 2015  
Contact: [lwaterho@ucsd.edu](mailto:lwaterho@ucsd.edu)
- Help us keep the website up to date  
Contact: [aarcher@barnstablecounty.org](mailto:aarcher@barnstablecounty.org)
- Design or send in some ideas for an Estuaries Section logo  
Contact: [aarcher@barnstablecounty.org](mailto:aarcher@barnstablecounty.org)
- Review Dr. Nancy Foster award applications  
Contact: [aarcher@barnstablecounty.org](mailto:aarcher@barnstablecounty.org)
- Be a regional gatherer of news stories and photos for the quarterly newsletter.  
Contact: [aarcher@barnstablecounty.org](mailto:aarcher@barnstablecounty.org)

### SECTION-SPONSORED SYMPOSIA

The Estuaries Section is sponsoring two interesting symposia at the 2014 AFS Annual Meeting in Quebec City. Please check them out and support your fellow Estuaries Section members who are presenting.

#### **Community Ecology and Trophic Interactions of Fishes**

*Part I Tuesday, August 19, 2014: 1:30 PM-5:20 PM*

*Part II Wednesday, August 20, 2014: 8:20 AM-3:10 PM*

*303B (Québec City Convention Centre)*

*<https://afs.confex.com/afs/2014/webprogram/Session2969.html>*

This symposium is inspired by the long going series of "GUTSHOP" symposia once hosted by the Physiology Section of the AFS. Its goal is to catalog approaches and applications in investigating trophic interactions in aquatic ecosystems. The theory and application of the feeding ecology of fishes has always been a consistent central theme in fisheries science. Advancements in data collection, computing power, statistics, molecular sciences, and foraging theory have thrust this sub-discipline into new era. In this session we will present a multitude of trophic approaches and applications including case studies demonstrating climate effects on trophic interactions, using fish food habits data in a management context, community ecology and trophic interactions of fishes, bioenergetic modeling, food habits data in stock assessment (multispecies and ecosystem models), statistical treatment of food habits data, food habit sampling methods, laboratory studies of growth and energy allocation, and novel tools and methods of fishing trophic ecology (i.e., molecular and genetic tools).

*Moderator: Ron Heintz*

*Chair: Jason Link*

*Organizers: Ed Farley Jr. , Anthony Overton and Richard McBride*

## Telemetry on the Atlantic Coast: Tagging Locally and Observing Globally

Part I Wednesday, August 20, 2014: 10:30 AM-3:10 PM

Part II Thursday, August 21, 2014: 8:20 AM-12:10 PM

204A (Québec City Convention Centre)

<https://afs.confex.com/afs/2014/webprogram/Session3012.html>

Telemetry studies including acoustic, radio, and satellite are used to study fish, sea turtles, and marine mammals along the eastern seaboard of North America. Study animals are as small as Atlantic salmon smolts and as large as great white sharks or baleen whales. Many of these studies are focused on relatively local issues. However, with the proliferation of telemetry monitoring at-sea, animals are often observed at very distant points from their release by researchers outside a tagger's local network. When these distant detections are noted and shared, new insights into marine animal ecology and habitat use are possible. The purpose of this symposium is to share such findings across a broad array of species to encourage collaboration and expand knowledge. Through presentations by a diverse group of marine telemetry researchers from Florida to Arctic Canada, we will share both local findings and insights gained from distant observations. Because we often work with only a limited number of species in a narrow region, we anticipate that sharing methods, analysis, and interpretation of telemetry data will result in a productive discussion and cross-fertilization of ideas. We also encourage presenters to provide insights into their results that transcend species - what did you find that is likely to be important across taxa? By taking a larger view of these data and forming new collaborations across species, we hope to refine our knowledge of seascapes and essential ocean habitats.

Organizers: *John F. Kocik*, *James P. Hawkes*, *Gayle Zydlewski*, *Heather Haas*, and *Gordon Waring*

**--Abigail Archer, President, Estuaries Section**

## WHAT'S GOING ON IN THE LAB?

### **Roger A. Rulifson, Senior Scientist and Professor at East Carolina University**

My lab has had two major research thrusts over the 30+ years at East Carolina University (ECU) in Greenville, North Carolina: long-distance migration, and habitat use. My students have studied diadromy of striped bass, American and hickory shads, and alewife and blueback herrings. They have conducted ocean tagging studies of striped bass, river herring, and the spiny dogfish shark off North Carolina and in Atlantic Canada. Many of my graduate students are in the final throes of thesis or dissertation preparation and are seeking employment. Dr. Andrea Dell'Apa, who graduated in December with a PhD in Coastal Resources Management, focusing on spiny dogfish sharks in the United States and European Union, is now on a Knauss Fellowship at NOAA in Silver Spring, Maryland, in the NOAA Fisheries Office of management and Budget. Here is a summary of the other students in my lab:

**Jennifer L. Cudney** is a Ph.D. Candidate in the Coastal Resource Management (CRM) Program of the Institute for Coastal Science and Policy (ICSP) at ECU. She received a double major B.S. from Ohio Northern University (2001) in environmental studies and biology, and her M.S. (2004) from East Carolina University in Biology. Jennifer represented the state of North Carolina as a member of the 2011 John D. Knauss Fellowship class, and was placed in the Highly Migratory Species (HMS) Management Division of the National Marine Fisheries Service. Jennifer has since continued her work with the HMS Management Division as a contractor, and more recently, joined the HMS Southeast Branch as a full time federal employee developing policy and implementing day-to-day management of shark, swordfish, billfish and tuna fisheries. Her current research is a part of the ongoing work in the Rulifson Lab to study the migration and life history strategies of spiny dogfish (*Squalus acanthias*). Her dissertation is designed to evaluate the migration and local movements of spiny dogfish, and includes the development of a novel tagging program for these sharks using acoustic tags.

**Coley S. Hughes** is also a Ph.D. candidate in the CRM Program at ECU. She received her M.S. (2003) from ECU and worked five years in a full-time supervisory position to manage natural resources at three freshwater lakes. Her current research is a part of the ongoing work in the Rulifson Lab to determine movement and life history strategies of striped bass (*Morone saxatilis*). Her project is using otolith and water chemistry to determine strategic habitat areas for the protection and conservation of striped bass in the Roanoke River/Albemarle Sound Management Area. Coley Hughes will be graduating Fall 2014 and is seeking a government position in fisheries management.

**M. Chad Smith** received his B.S. (2002) and M.S. (2006) degrees in Biology at ECU. His Master's research was on habitat use of early anadromous fishes in a small, restricted coastal North Carolina watershed. Chad is currently a Ph.D. Candidate within ECU's CRM Program, a multi-disciplinary program that combines natural sciences with human dimensions and policy. His research has shifted to citizen science where he is examining the integrity of volunteer-collected data from a citizens' water quality monitoring program in the Albemarle-Pamlico estuary. Water quality data collected from students in the Rulifson Lab and other ECU projects are being used as standards for data comparisons using multiple analyses, including geospatial statistics. He is also conducting a cultural consensus analysis through surveys to better understand what people know about water quality for the improvement of education campaigns. Chad hopes to finish up his research in early 2015. His career interests lie in scientific teaching and promoting citizen science projects in North Carolina.

**Charles S. "Chuck" Bangley** is studying coastal shark nursery and migratory habitat selection in North Carolina waters. He received his B.S. in Marine Biology from the University of Rhode Island and his M.S. in Biology from ECU. His Ph.D. research in the CRM Program focuses on the potential importance of coastal and estuarine waters in North Carolina to Atlantic coastal shark species. Chuck's goal is to identify areas of important migratory and nursery habitat for these species using a multidisciplinary approach that includes fishery-independent surveys, acoustic tagging, and interviews with local fishermen. This research will fill in knowledge gaps that have

caused controversy in shark fishery management and will hopefully clarify those questions to the benefit of both fisherman and sharks. This project is already under way and has a conservative expected completion date of December 2015. Chuck would like to continue researching sharks and other top predators either at an academic position or at a fishery management agency.

Master's student **Brie Elking** received her undergraduate degree from The Ohio State University in 2011 and is researching striped bass maternal contribution to progeny otoliths using hatchery-raised fish in the Department of Biology. This research is a part of the Rulifson Lab natal origin work. This research question was formed when analyzing adult otoliths for natal origin studies; it was noticed that some fish had high levels of strontium in the primordium. The high levels were hypothesized to be a result of maternal contribution from anadromous mothers. Brie is currently searching for a biology teaching position.

Biology Masters student **Dan Zurlo** received his undergraduate degree from The College of Charleston in 2012 and is researching adult North Carolina striped bass migrations inferred through otolith microchemistry. This is being done in order to delineate separately managed stocks of North Carolina striped bass and to determine adult habitat use within North Carolina inshore waters. This research is part of ongoing research in the Rulifson Lab to describe life history and migration patterns of striped bass in North Carolina. Dan will be finishing in July 2014, and is currently applying for fisheries research positions.

Biology Master's student **Jillian Osborne** received her Bachelor's degree in Biology from ECU in 2009 and is expected to complete her graduate work in 2014. Her research, entitled "Fish assemblage and habitat use in North Carolina and Virginia waters during the annual Cooperative Winter Tagging Cruise, 1988-2013," focuses on the spatial analysis of a long-term dataset in order to determine trends in distribution and habitat use for several species and species groups, including striped bass, Atlantic sturgeon (*Acipenser oxyrinchus*), spiny dogfish, and summer flounder (*Paralichthys dentatus*). This research contributes to the continuing work in the Rulifson Lab on striped

bass and spiny dogfish habitat use. Jillian hopes to gain employment working with state or federal fisheries agencies, in either hatchery work or a policy capacity.

**Evan Knight** is a Master's student in the Biology Department at ECU and expects to finish his degree in December 2014. Evan received his B.S. in Biology from ECU in 2011. He has been an active member in the ECU Student Sub-unit of the American Fisheries Society since 2011 and has held the executive committee positions of Secretary and Vice-president. Evan is studying the maturation and fecundity schedules of the Tar and Neuse River striped bass population in North Carolina, and comparing the maturity/fecundity rates between endemic and non-endemic striped bass. This research is important to fishery managers because it seeks to evaluate the potential effects of cross stocking non-endemic striped bass into coastal rivers. Evan is interested in working for the NCD of Marine Fisheries as a biologist in the near future.

**Walter Rogers** graduated the University of North Carolina at Chapel Hill in 2010 with degrees in Environmental Studies and Marine Sciences. He is currently an M.S. candidate in the Biology Department at ECU. The title of his research is "Population Structure of River Herring in Albemarle Sound, NC. Does Morphometric Analysis Agree with Other Stock Identification Methods?" Walt seeks to use whole-body and otolith morphometrics of juvenile and adult blueback herring and alewife to examine short-term variations in fish utilization of the various tributaries of Albemarle Sound. Previous research in the Rulifson Lab identified through otolith microchemistry that spawning river herring may "wander" to non-natal tributaries to spawn, and resulting juveniles stray from natal habitats to utilize different tributaries as nursery areas. Walt has found that juveniles occupying rivers of Albemarle Sound are a mixture of fish spawned in various tributaries. He expects to finish this December and is looking for jobs in state and federal government agencies. ■

## FEATURE ARTICLE

### The Health of Juvenile Fishes in Virginia Estuaries

by **Ryan Schloesser**

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Fisheries scientists generally accept that the health, or condition, of juvenile fishes reflects the quality of their nursery areas. Estuaries are often used as nursery areas, and a large number of fish using an estuary is often thought of as a sign of quality habitat. But what if all those fish were in poor condition and not likely to survive? Perhaps an estuary with lower fish abundance, but with much healthier fish, would be more important in contributing to the adult population.

For the last four years, my dissertation has been looking at how different estuarine habitats may prepare juvenile fish for surviving the difficult journey of life ahead of them. Specifically, I have been looking at whether different areas of estuaries in Virginia produce juvenile summer flounder, striped bass, or Atlantic croaker that are more likely to survive migrations to the continental shelf or winter residence in Chesapeake Bay. What's more, I wanted to investigate non-lethal ways of measuring condition of juveniles to determine which estuarine areas produced the healthiest fish. Fortunately, I found that length-weight ratios were suitable for measuring condition of summer flounder and striped bass (Fulton's condition factor and relative condition, respectively). Atlantic croaker condition was easily measured with the Distell fish fatmeter, which uses microwaves to measure lipids stored under the skin.

Juvenile fishes were using a variety of habitats, but these habitats were not equally suited to produce healthy fish. In fact, some of the areas most commonly used by these species produced fish in the lowest condition. For example, although the abundance of juvenile Atlantic croaker is high in the lower James River, a tributary of Chesapeake Bay, these fish were in much lower condition than the fewer juveniles that used the main stem of the Bay. But that



doesn't mean the James River is poor habitat for all juvenile fishes. In fact, juvenile summer flounder from the James were among the healthiest. Interestingly, regardless of where juvenile striped bass were found, they were usually in similar condition.

Even though all three species had suitable habitat in Chesapeake Bay estuaries, producing healthy juveniles prepared for coastal migrations or enduring the cold winters in Chesapeake Bay is another issue. The majority of Atlantic croaker was in high condition and well prepared for migration, and striped bass condition was steady throughout the year and didn't decline due to winter temperatures, but summer flounder told a different story. Throughout the summer, juvenile flounder continuously declined in condition and were actually the least healthy nearing the time to migrate to the continental shelf.

Ultimately, identifying nursery areas that produce healthy juveniles with a better chance at surviving will help focus conservation efforts to protect vital nursery estuaries. Alternatively, areas with large numbers of fish that are in poor condition could benefit from remediation to help increase production and maintain sustainable fisheries. ■



**AFS Estuaries Section 2013 Travel Award recipient Ryan Schloesser holds a summer flounder.**

## BUSINESS MEETING AGENDA

**AFS Estuaries Section Business Meeting**  
**Sunday August 17, 2014**  
**Quebec City, Quebec**  
**Convention Centre**  
**Room 2104B 4-6PM**

### AGENDA

1. Call to Order, Introduction of Section Officers
2. Acceptance of Minutes of 2013 Annual Business Meeting in Little Rock, AR
3. President's Remarks and Estuaries Section 2014 Report to AFS Governing Board
4. Treasurer's Report
5. Student Travel Awards
6. Ideas for Symposia for 2015 Meeting in Portland, OR
7. Continuing Education Class in 2015 in Portland, OR
8. Report on LinkedIn Site
9. Report on Estuaries Section History Project
10. Call for nominations for Secretary, Treasurer, and Vice President
11. Other Business

## DR. NANCY FOSTER HABITAT AWARD

### Nominations due by July 31, 2014

The AFS Estuaries Section is once again partnering with the NOAA Fisheries Office of Habitat Conservation to solicit nominations for the Dr. Nancy Foster Habitat Conservation Award. To read about Dr. Foster and her work, and see a list of past recipients of the award please visit the Award page at <http://www.habitat.noaa.gov/partners/nancyfosteraward.html>

The award honors excellence in habitat conservation work in the coastal and marine environment. Please consider nominating a colleague or mentor who you think has contributed to the field, has employed innovative approaches, techniques, and accomplishments that motivate others, and who has shown an ability to balance habitat conservation with responsible use and stewardship.

## ELIGIBILITY

1. Nominees must have demonstrated extraordinary dedication, innovation, and excellence to NOAA-related habitat conservation fields. Contributions may include any work to protect, restore, manage, study, educate, or promote the stewardship of marine, coastal, or riverine habitats and the species supported by these ecosystems.
2. Private citizens (or the groups or organizations they represent) or public servants (or the agencies they represent) may be nominated for their work, volunteer efforts, support, or other contributions to marine habitat conservation efforts.
3. Nominations previously submitted (and not awarded) may be resubmitted with an updated cover letter and any new materials.

## SELECTION PROCESS

1. An award recipient will be selected by a committee of experts familiar with marine habitat conservation fields.
2. Each application must be accompanied by a completed [nomination form](#).
3. Submit electronic examples of work, including publications, photographs, videos, or other materials as well as the completed nomination form via a single email to: [FosterAward.nominations@noaa.gov](mailto:FosterAward.nominations@noaa.gov)
4. Letters of support are welcome and must be submitted electronically with the nomination package.

### Questions?

**Email:** [Kara Meckley](mailto:Kara.Meckley)  
**Phone:** (301) 427-8642

## UPCOMING MEETINGS

### **International Congress on the Biology of Fish August 3-7, 2014, Edinburgh, Scotland**

<http://icbf2014.sls.hw.ac.uk>

This meeting will cover everything from physiology of fish aquaculture, nutrition, parasites and disease to swimming and migratory physiology, ecological physiology, environmental stress and toxicology, in both fresh and seawater environments.

### **American Fisheries Society 144th Annual Meeting August 14-17, 2014, Quebec City**

<http://afs2014.org/>

### **5<sup>th</sup> International Otolith Symposium October 20-24, 2014**

Mallorca, Spain

<http://www.ices.dk/news-and-events/symposia/otolith/Pages/Background.aspx>

### **Summit 2014: Inspiring Action, Creating Resilience**

**November 1-5, 2014, Washington, DC**

<http://www.estuaries.org/summit>

This meeting is the 7<sup>th</sup> National Summit on Coastal and Estuarine Restoration and the 24<sup>th</sup> Biennial Meeting of The Coastal Society.

### **Coastal and Estuarine Research Federation (CERF) 23<sup>rd</sup> Biennial Conference November 8-12, Portland, OR**

<http://www.erf.org/conference-home>

The CERF 2015 scientific program offers four days of timely, exciting and diverse information on a vast array of estuarine and coastal subjects. Presentations will examine new findings within CERF's traditional scientific, education and management disciplines and encourage interaction among coastal and estuarine scientists and managers.