AFS Estuaries Section News

Pre-meeting/Fall 2021

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Guide to the Baltimore Meeting

This newsletter will serve as a brief guide to the 2021 Annual Meeting of the American Fisheries Society in Baltimore, MD. It includes the description, dates, times, and location of our sponsored symposium at the meeting. Announcements of our executive committee election winners and student travel award winders are also included, as well as an updated treasurer's report. There will be no in-person business meeting this year as our joint business meeting with the Marine Fisheries Section was held virtually prior to the meeting on September 23, 2012. Hope you all have a great meeting whether attending in-person or virtually.

-Geoff Smith, newsletter editor

Sponsored Symposium: Advances in Life History and Environmental Reconstruction using Biogenic Structures from Marine and Aquatic Organisms

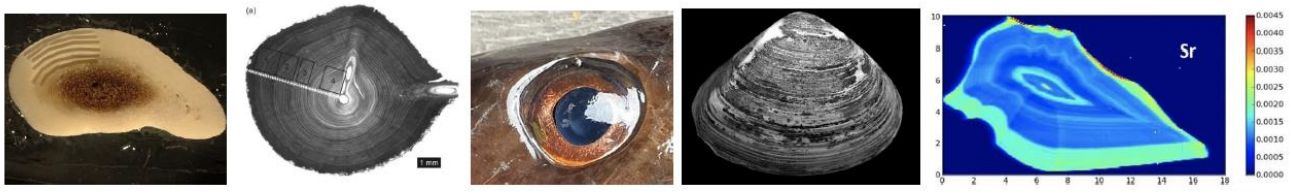
Conveners: Jessica Lueders-Dummont, Karin Limburg, Ben Walther, Matthew Ramirez

Sponsored by: Estuaries Section, Marine Fisheries Section, International Fisheries Section

Dates/Times and Location: Sunday November 7th morning session, Peale A Hilton; Sunday November 7th poster session, Hilton Ballroom; Monday November 8th afternoon session, Peale A Hilton;

Description: This session aims to highlight recent advances in physiological, biogeochemical, and biomineralization effects on isotope and trace element incorporation into hard parts (e.g., otoliths, bones, shells, scales), semi-hard (eye lenses) and soft tissues (e.g., muscle tissue) to improve life history, environmental, and physiological reconstructions. We also encourage talks on the physiological impacts on biomarkers such as fatty acid profiles in tissues for reconstructing habitat use and feeding ecology, and other applications of chemical ecology to environmental or dietary reconstruction.

Studies using chemical approaches for environmental reconstruction (e.g., temperature, pH, salinity) or ecological reconstruction (e.g., habitat use, diet, or metabolism) using trace elements and stable isotope analysis of shells, skeletons, and tissues are commonly used in marine and freshwater ecosystems. New methods and approaches continue to advance life history and environmental reconstruction using biogenic structures from marine and aquatic organisms. In some cases, the filtering of the chemical signal b the organism's metabolism, energetic status, or by biomineralization processes can confound the environmental or ecological information. These effects are often viewed as an artefact to be subtracted from the signal of interest (whether environmental or dietary reconstruction is the goal) but may also be an underutilized source of metabolic information. In this symposium, we encourage papers focusing on biomineral structure including shells, skeletons, otoliths, and other chronometric structures used as chemical archives. We also encourage papers focused on animal tissues including eye lenses, muscle, and mineralized tissues (e.g., scales, bones, and spines). Studies focused on new methods, including small samples, or new signals in biological archives, are welcomed.



Credits (L to R): Matthew Ramirez, Sherwood and Edinger 2009, Yvette Heimbrand, Matthew Ramirez, Karin Limburg

2021 Student Travel Award Winners

This year the Estuaries Section awarded travel awards to three students. Please show your support for our travel award winners by viewing their presentations.

Student: Jeff Plumlee, PhD candidate, University of North Carolina at Chapel Hill
Oral presentation: Identifying Gillnet Bias in the Sampling of Estuarine Predators within a Temperate Estuary
Date/Time: Sunday November 7th, 1:00-1:20 pm
Location: Stadium 3

Experimental gillnets used in fishery-independent sampling are designed to uniformly sample mobile fishes as they accumulate in the net. However, as prey species are caught, they may create a trophic-related sampling bias towards predators. To test if baited gillnets alter the relative abundance of predators caught, we set large mesh gillnets comprising two treatments, baited (n = 80) and unbaited (n = 78), using a paired design in Back Sound, North Carolina. We further investigated whether habitat composition or the presence of captured prey in a gillnet would be more important to the catch rate of predators using data collected during the North Carolina Department of Marine Fisheries (DMF) fishery-independent monitoring program. We modeled the probability of occurrence for several predators collected in DMF surveys using boosted regression tree models with environmental factors (salinity, temperature), habitat composition, and prey groups as predictor variables. In our experimental manipulation, neither relative abundance (ind/hr) or community composition statistically varied between treatments. However, species richness did increase in baited gillnets (S = 15) compared to unbaited treatments (S = 10), with one frequently caught species, Atlantic sharpnose sharks (n = 9) collected exclusively in baited gillnets. Similarly, we observed strong relationships between abundance of prey predictors and predator occurrence responses in DMF surveys. On average, prey predictor variables were substantially more important (average model importance; 10% $\pm$ 2% SE) than habitat quality predictors (2% $\pm$ 0.4%) to the presence of predators. These results indicate the presence of a potential unintentional trophic-related sampling bias towards predatory fish collected in widely selective experimental gillnets. We hope to use these results to refine the methods used to sample predators as a part of currently existing fishery-independent sampling regimes in temperate estuaries like those in North Carolina.

2021 Student Travel Award Winners

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Student: Abigail Hayne, MS student, University of New England
Poster presentation: Exploring Element Patterns in Shark Vertebrae Cartilage to Enhance Understanding of Biomineralization
Date/Time: Sunday November 7th, 5:30-7:30 pm
Location: Key Ballroom (Hilton)

Successful management of elasmobranchs relies on accurate age estimates. While vertebrae band pairs have traditionally been utilized to determine age in sharks, very little is understood regarding biomineralization of band pair periodicity, a crucial component of age validation. Recently, elemental chemistry has been utilized to better understand the mineralization patterns in shark vertebrae; specifically, manganese concentrations may reflect band pair deposition. The shortfin mako shark (*Isurus oxyrinchus*) is a highly migratory species that exhibits biannual band pair deposition in juvenile life stages and shifts to annual deposition after sexual maturity within populations in the eastern Pacific Ocean. However, it is unknown if this shifting biomineralization occurs in separate populations. Given the overall importance of age information as well as the threatened status of shortfin mako populations in the Atlantic Ocean, the goal of this study was to improve age estimates of this species by investigating the consistency of shifts in biomineralization rates across sharks from different ocean basins and compare the life stage or age the band pair shift occurs. To do so, we analyzed sectioned vertebrae of adult and juvenile shortfin mako sharks 63 (F=29, M=34) collected from the Atlantic, Pacific, and Indian Ocean basins (size range= 65-295 cm FL) by relating visual band pair counts to manganese concentrations. We compared results from each ocean basin in order to determine if biannual to annual deposition is consistent in males and females of this species across its range. This study increases our understanding of the age information of a highly migratory species and will help to better inform population models throughout different ocean basins.

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Amanda Bevans, MS student: Morgan State University
Poster presentation: Forecasting Blue Crab Commercial Landings in the Chesapeake Bay: Using the PEARL Blue Crab Survey as a Pre-Recruit Index
Date/Time: Sunday November 7th, 5:30-7:30 pm
Location: Key Ballroom (Hilton)

The Blue Crab, *Callinectes sapidus*, is a keystone species within the Chesapeake Bay estuarine system and is the most valuable seafood species harvested in the estuary. Over the past two decades, landings have been relatively low while effort was relatively high. In the mid-2000's, however, landings were comparatively high and effort was low. During the most recent 5 years both landings and effort have decreased. Morgan State University's Patuxent Environmental & Aquatic Research Laboratory (PEARL) has conducted a 50+ year fishery-independent monitoring survey along the western shore of the Chesapeake Bay in southern Maryland. Catch trends from the PEARL Blue Crab Survey (BCS) were explored for relative abundance, relationships to environmental factors, and the potential application as a pre-recruit index of commercial harvests in the following year. Study results suggest that abundance of Blue Crab has declined over the last decade. Environmental variables examined were only weakly predictive of BCS catch, with the exception of the Atlantic Multi-decadal Oscillation (AMO). Our analyses indicate that the BCS catch of sub-legal crabs could be used as a pre-recruit survey to predict commercial landings for the following spring in Maryland, and annual harvests for the larger Chesapeake Bay.

Election Results

The Estuaries Section held executive committee officer elections for president-elect, secretary, and treasurer this year. Congratulations to our election winners:

President-elect: Justin Stevens

Secretary: Amanda Croteau

Treasurer: Konstantine Rountos

Estuaries Section Treasurer's Report

respectfully submitted on 011/04/2021 by
Dr. Konstantine J. Rountos (Treasurer)

Date	Balance	Credit	Debit	Note
09/23/21	4,954.52			Treasurer's Report (2021 Estuaries Section Business Meeting)
10/12/21	4,554.52		400.00	Check #135 (Student Travel Award – Amanda Bevans)
10/12/21	4,154.52		400.00	Check #136 (Student Travel Award – Aigail Hayne)
10/12/21	3,754.52		400.00	Check #137 (Student Travel Award – Jeff Plumlee)
11/04/21	*3,754.52			Current balance

*Amount does not reflect the outstanding check (#134) for a $200 donation that has been received by AFS offices for the Hutton Funding Challenge 2.0, but has not been deposited yet.

Check us out online!

Website: http://estuaries.fisheries.org

Twitter: @Estuaries_AFS

Facebook: http://www.facebook.com/EstuariesSectionAFS

LinkedIn: https://www.linkedin.com/groups/7443198