

SCEMFIS 2020 Annual Report

February 1, 2021, Karen Reay

1. 2020 publications (including the pdfs)
2. 2020 presentations
3. A list of all press releases from Stoveboat
4. all participating undergraduates, graduate students, post-docs
5. all graduating graduate students
6. any additional products such as
 - a. unpublished reports posted on our website
 - b. software created/inventions and other products of any kind not covered above
 - c. any participation/appointments to committees/groups that promote distribution of SCEMFIS products
7. Research monies leveraged by SCEMFIS funded research
8. In-kind contributions to SCEMFIS-funded research

1. 2020 publications (including the pdfs) – a total of 17 publications as a result of direct or indirect SCEMFIS funding

Finfish

- Cadrin SX. 2020. Defining spatial structure for fishery stock assessment. Fisheries Research 221 <https://doi.org/10.1016/j.fishres.2019.105397>. (black sea bass stock assessment project)
- Cadrin, S. 2020. [Review of Atlantic Menhaden Ecological Reference Points](#), Science Center for Marine Fisheries, July 27, 2020.
- Cadrin, S. 2020. [Providing for Forage of Atlantic Menhaden](#), Science Center for Marine Fisheries, July 13, 2020.
- Cadrin, S. 2020. [Review of SEDAR69 Atlantic Menhaden Stock Assessment and Ecological Reference Points](#), Science Center for Marine Fisheries (SCEMFIS), February 2020.
- Leaf, R.T. (2020) [Characterization of the Atlantic Chub Mackerel fishery and stock - \(2020 update\)](#)
- Liang, D., Nessler, G.M., and M.J. Wilberg (2020) [A spatial simulation approach to hydroacoustic survey design: A case study for Atlantic menhaden](#), Fisheries Research, Volume 222, (2020) 105402, ISSN 0165-7836, <https://doi.org/10.1016/j.fishres.2019.105402>.
- Murray, T.J. (2020) [Economic Impacts of Reduced Uncertainty Associated with Fishery Management Actions with Summer Flounder](#)
- Nessler, G.M., Leaf, R.T., Wilberg, M.J., Mroch, R.M., III and Schueller, A.M. (2020), [A Simulation-Based Evaluation of Commercial Port Sampling Programs for the Gulf and Atlantic Menhaden Fisheries](#). North American Journal of Fisheries Management.

Shellfish

- [Uncovering the Life Cycle of the Ocean Quahog Can Balance Economic and Ecologic Goals](#) - June 2020
- Poussard, L. (2020) [An Analysis of Dredge Efficiency for Surfclam and Ocean Quahog Commercial Dredges](#). University of Southern Mississippi.
- Powell, E.N., A.M. Ewing, K.M. Kuykendall. (2020) Ocean quahogs (*Arctica islandica*) and Atlantic surfclams (*Spisula solidissima*) on the Mid-Atlantic Bight continental shelf and Georges Bank: the

death assemblage as a recorder of climate change and the reorganization of the continental shelf benthos. *Palaeogeogr. Palaeoclimatol. Palaeoecol.* 537: #109205, 16 pp.

- Powell, E.N., J.M. Trumble, R.L. Mann, M.C. Long, S.M. Pace, J.R. Timbs, K.M. Kuykendall. (2020) [Growth and longevity in surfclams east of Nantucket: Range expansion in response to the post-2000 warming of the North Atlantic](#), Continental Shelf Research. 195 (2020): 104059
- Scheld, A. (2020) [Economic Impacts Associated with the Commercial Fishery for Longfin Squid \(*Doryteuthis pealeii*\) in the Northeast U.S.](#), Virginia Institute of Marine Science. March 2020.

*leveraged using partial SCMFIS funds - that is they built on expertise funded in whole or part by SCMFIS:

- Mann R., E.N. Powell, D.M. Munroe. (2020). The Case of the “Missing” Arctic Bivalves and the Walrus, the Biggest [Ignored] Clam Fishery on the Planet. *Journal of Shellfish Research*. 39(3):1-9. <https://doi.org/10.2983/035.039.0301>
- Cronin K.E., S.E. Walker, R. Mann; A.S. Chute, M.C. Long; S.S. Bowser (2020). Growth and longevity of the Antarctic scallop *Adamussium colbecki*, an ecosystem engineer, under annual and multi-annual sea ice. *Antarctic Science*. 32 (6) 466-475. <https://doi.org/10.1017/S0954102020000322>

Marine Mammals

- Punt et al. 2020. [Estimating the Maximum Net Productivity Rate for Gray Seals in US waters of the western North Atlantic](#). October 2020. 5 p.
- Moreno et al. 2020. [Estimates of human-caused removals of gray seals in the northeast US Atlantic and adjacent Canadian waters: Preliminary implications for PBR-based management](#). 36 p.

2. 2020 Presentations

Andrew Scheld gave a presentation on a BOEM funded project where several SCMFIS members and researchers have contributed (presented at NOAA facilitated 'Fishing Operations and Offshore Wind Research Webinar' on July 29).

Tom Sproul gave “The State of Navigation Safety Risk Assessments for Offshore Wind” at NOAA/BOEM Synthesis of the Science Workshop, October 16, 2020. <https://rodafisheries.org/portfolio/synthesis-of-the-science/>

Based on this talk, invited to (and joined) US Coast Guard "AIS Data Analyst Forum" on December 16, 2020, held by USCG Deputy Division Chief of Waterways Amilynn Adams and featuring risk modeling discussion with worldwide risk assessment consulting firms (Anatec and DNV-GL).

3. A list of all press releases from Stoveboat – total of 13 press releases

- [New Study Finds Ways to Potentially Reduce Uncertainty in Shellfish Assessments](#) - December 2, 2020

- [Science Center for Marine Fisheries Welcomes Atlantic Red Crab Company as Newest Member](#) - November 5, 2020
- [SCEMFIS Research Provides New Insights on Gray Seals: Suggests Alternatives to Current Management](#) - September 28, 2020
- [New Analysis Shows Minuscule Impact of Fishing on Atlantic Menhaden](#) - August 3, 2020 also in <http://menhadencoalition.org/>)
- [Study Confirms Summer Flounder Fishery Vital for Mid-Atlantic Fishing Communities; \\$259 Million in Economic Impacts](#) - August 10, 2020
- [New Report Points Out Major Flaws in Wind Farm SEIS](#) - Pages 62-63
- [99.5 Percent of an Atlantic Menhaden Year Class is Left in the Water to Serve Its Ecological Role, New SCEMFIS Report Finds](#) - July 29, 2020
- [Latest Federal Report on Offshore Wind Pays ‘Insufficient Attention’ to Overall Impacts, SCEMFIS Researchers Find](#) - July 28, 2020
- [Uncovering the Life Cycle of the Ocean Quahog Can Balance Economic and Ecologic Goals](#) - June 2020
- [Science Center for Marine Fisheries Funds over \\$173,000 in New Research](#) - June 8, 2020
- [New Study: Squid Fishery Responsible for Over 2,500 Jobs, \\$240 Million in Economic Impact](#) - May 6, 2020
- [Science Center for Marine Fisheries Releases Evaluation and Summary of Latest Atlantic Menhaden Assessments](#) - February 4, 2020
- [Science Center for Marine Fisheries heads into 2020 with \\$190,000 in funding for new projects](#) - January 3, 2020

4 & 5 all participating undergraduates, graduate students, post-docs and all graduating graduate students – total of 13 students

Sarah	Borsetti	Rutgers University
Joshua	Carnaghi	Virginia Institute of Marine Science
David	Duval	University of Southern Mississippi
Mojtaba	Enayati	Cornell University
Kathleen	Hemeon	University of Southern Mississippi
Alexis	Hollander	Virginia Institute of Marine Science
Alyssa	LeClaire	University of Southern Mississippi
Sarah	Murphy	Rutgers University
Leanne	Poussard	University of Southern Mississippi
Kasea	Price	University of Southern Mississippi
Daniel	Rennier	University of Southern Mississippi
Laura	Solinger	University of Southern Mississippi
Jillian	Sower	University of Southern Mississippi

Graduate Student Internships:

During the winter of 2020, [Kathleen Hemeon](#) participated in an NSF non-academic internship during her second year as a PhD student with the University of Southern Mississippi. This internship funded a six-

month collaborative research study between Kathleen and Eric Robillard, a Supervisory Research Fishery Biologist in the Population Biology Branch of the NMFS Northeast Fisheries Science Center in Woods Hole, MA. The objectives of this internship were to develop age-error estimations and protocols that arise when aging the long-lived, commercially harvested ocean quahog (*Arctica islandica*). These data will help researchers identify age-reader bias and precision to report with age estimations, in addition to standardizing aging procedures for an animal that is notoriously difficult to age. The results of the internship led to the development of ocean quahog aging-error analyses that align with federal methods, and aging protocols to improve precision between current and future age readers. Currently, resource managers do not use age-based models for designating ocean quahog harvests but with better age and aging-error data, the application of age-based models may become more feasible.

Laura Solinger was awarded an NSF non-academic internship to collaborate with the stock assessment lead for Atlantic surfclam, Daniel Hennen, at the Northeast Fisheries Science Center. Due to the historically patchy nature of Atlantic surfclam, the fishery relies on identifying dense patches of surfclam that can be fished efficiently enough to promote economic sustainability. While management control rules focus on preventing a population from becoming overfished, metrics used by managers to determine fishery sustainability are not sufficient to estimate how patch density and distribution may shift under fishing pressure. During the winter of 2020, Laura and Daniel worked to develop a method of estimating future economic sustainability of the surfclam fishery given uncertainty in biological parameters and future management decisions. This work furthers efforts to account for stakeholder impacts in the development of management strategy evaluations of US fisheries.

Graduate Student Employment:

Leanne Poussard graduated from University of Southern Mississippi and has accepted a job at NOAA National Centers for Coastal Ocean Science in Silver Spring, MD. She is also interviewing for a PhD position at University of Miami RSMAS related to the study of disease immunity in corals.

6. Additional products such as unpublished reports posted on our website, software created/inventions and other products of any kind not covered above, any participation/appointments to committees/groups that promote distribution of SCEMFIS products

unpublished reports posted on our website

- Abbaspourrad, A and M. Enyati (2020) [Developing process and procedures for the refinement of surfclam and ocean quahog shells into calcium carbonate \(CaCO₃\)](#)
- Free et al. 2020. [Precautionary catch limits on forage fish would rarely advance marine predator conservation](#) - manuscript
- Moreno et al. 2020. [Estimates of human-caused removals of gray seals in the northeast US Atlantic and adjacent Canadian waters: Preliminary implications for PBR-based management](#). 36 p.
- Nesslage et al 2020. [A Simulation-Based Evaluation of Commercial Port Sampling Programs for the Gulf and Atlantic Menhaden Fisheries](#). (Published but asked not to be on public website – on private IAB page)

- Powell et al 2020. [The conundrum of biont-free substrates on a high-energy continental shelf: Burial and scour on Nantucket Shoals, Great South Channel](#) (published but full article only accessible on private IAB page)
- Powell et al 2020. Review of “Vineyard Wind 1 Offshore Wind Energy Project Supplement to the Draft Environmental Impact Statement”
- Punt et al. 2020. [Estimating the Maximum Net Productivity Rate for Gray Seals in US waters of the western North Atlantic](#). October 2020. 5 p.
- Scheld, A. (2020) [Economic Impacts Associated with the Commercial Fishery for Longfin Squid \(*Doryteuthis pealeii*\) in the Northeast U.S.](#), Virginia Institute of Marine Science. March 2020.

software created/inventions and other products of any kind not covered above

- Software product developed by Punt and Brandon to evaluate the performance of various PBR-based management approaches to gray seal-commercial fishing interactions using a two-region age and sex-aggregated population dynamics model, which included the use of Bayesian methods.
- R Package developed by Robert Leaf “Environmental Tools” <https://github.com/rtleaf/Envrionmental-Tools>

participation/appointments to committees/groups that promote distribution of SCEMFIS products

- DeMaster now serves as a member of the Pacific Marine Mammal Scientific Review Group.
- DeMaster now serves as a member of the North Pacific Research Board Scientific Panel.
- Cadrin provided testimonies to ASMFC Menhaden Management Board
- Scheld is co-PI on wind related projects (with Daphne, Eric, and others) that have benefited from SCEMFIS members but are not funded by SCEMFIS
- Sproul was invited to (and joined) US Coast Guard "AIS Data Analyst Forum" on December 16, 2020, held by USCG Deputy Division Chief of Waterways Amilynn Adams and featuring risk modeling discussion with worldwide risk assessment consulting firms (Anatec and DNV-GL).

7 & 8 Research monies leveraged by SCEMFIS funded research and In-kind contributions to SCEMFIS - funded research

Cadrin:

all participating undergraduates, graduate students, post-docs: Laura Solinger, USM

In-kind contributions to SCEMFIS-funded research: graduate committee guidance for Laura Solinger

Mann:

Research Set Aside Funds for scallops that uses methods developed in part under SCEMFIS

- 3/1/2020-2/28/2022. Age based assessment in the sea scallop *Placopecten magellanicus*. Roger Mann and David Rudders, co-PI's. \$ 692,772. NOAA scallop RSA program

INTERN funds for Alexis Hollander, and VET support for Jay Carneghi:

- 1/1/2021-12/31/2021. INTERN DCL NSF 18-102: Fisheries and climate change. NSF. \$54,927. Stipend, technical and travel support to graduate student Alexis Hollander for collaborative work at NEFSC Woods Hole, MA.
- 11/1/2019-10/30/2020. Research Experience for a Veteran (VET) in the SCEMFIS project entitled "Ocean quahogs (*Arctica islandica*) age structure." - \$10,000. National Science Foundation. Stipend, technical and travel support to veteran participant.

In-kind contributions to SCEMFIS-funded research

- Mann: partial salary for admin and direction of SCEMFIS, and half-time stipend and tuition money for Alexis Hollander from VIMS Academic Studies support. \$67,080

Munroe:

Munroe, Kohut and Miles participated in the Cold Pool project at no cost to the project (estimate at ~\$30K in salary in-kind).

Sproul:

On the basis of SCEMFIS project preliminaries (AIS data analysis infrastructure), received \$250,000 grant from Massachusetts Clean Energy Center (MassCEC) to create spatial planning tools to lessen conflict between commercial fishing and offshore wind: "Fishing Status of Vessels Using the AIS: A Big Data and Machine Learning Approach." Announcement here: <https://www.masscec.com/about-masscec/news/massachusetts-rhode-island-boem-award-11-million-regional-fisheries-studies-guide>