Brief *curriculum vitae* – Daphne Munroe

Associate Professor
Haskin Shellfish Research Laboratory, Rutgers, The State University of New Jersey
6959 Miller Ave., Port Norris, NJ 08349

a) Professional Preparation

Education:

Simon Fraser University	Burnaby, BC	Environmental Sci	B.Sc. 2000
University of British Columbia	Vancouver, BC	Animal Science	Ph.D. 2006

Postdoctoral:

Hokkaido University	Sapporo, Japan	Coastal Ecology	2007-2009
Rutgers University	Bivalve, NJ	Shellfish Ecology	2010-2012

b) Professional Appointments

2018-current	Associate Professor	Haskin Shellfish Lab., Rutgers University
2013-2018	Assistant Professor	Haskin Shellfish Lab., Rutgers University
2012-2013	Assistant Research Professor	Haskin Shellfish Lab., Rutgers University
2010-2013	Adjunct Faculty	VIU; Fisheries & Aquaculture Department

c) Products:

(*indicates graduate student co-author; **indicates undergraduate student co-author)

(i) Five most closely related to proposed project:

Pousse, E., Poach, M.E., Redman, D.H., Sennefelder, G., White, L.E., Lindsay, J.M., **Munroe, D.,** Hard, D., Hennen, D., Dixon, M.S., Li, Y., Wikfors, G.H., Meseck, S.L. 2020. Energetic response of Atlantic surfclam, *Spisula solidissima*, to ocean acidification. Marine Pollution Bulletin. 161B: 111740. https://doi.org/10.1016/j.marpolbul.2020.111740

Poach, M., **Munroe, D.,** Vasslides, J., Abrahamsen, I., Coffey, N. 2019. Monitoring coastal acidification along the U.S. East coast: concerns for shellfish production. Bull. Jap. Fish. Res. Edu. Agen. 49: 53-64.

Acquafredda*, M.P., **Munroe, D**., Calvo, L.M., DeLuca, M. 2019. Thermal tolerance of juvenile Atlantic surf clams (*Spisula solidissima)*: a step towards diversifying the New Jersey aquaculture sector. Aquaculture Reports 13: 100176 DOI:10.1016/j.aqrep.2018.100176

Munroe, D.; D. Narvaez; D. Hennen; E. Hofmann; L. Jacobsen; R. Mann, E. Hofmann, E.N. Powell, J. Klinck. 2016. Fishing and bottom water temperature as drivers of change in maximum shell length in Atlantic surfclams (*Spisula solidissima).* Estuarine Coastal and Shelf Sciences. 170: 112–122. doi:10.1016/j.ecss.2016.01.009

Morson*, J., **Munroe, D.**, Ashton-Alcox, K., Powell, E.N., Bushek, D., Gius, J. 2018. Density-dependent capture efficiency of a survey dredge and its influence on the stock assessment of eastern oysters (*Crassostrea virginica*) in Delaware Bay. Fisheries Research, 205: 115-121. DOI: 10.1016/j.fishres.2018.04.012

(ii) Five other related products:

Acquafredda*, M., Guo, X, **Munroe, D.** 2021. Exploring the Feasibility of Selectively Breeding Farmed Atlantic Surfclams *Spisula solidissima* for Greater Heat Tolerance. North American Journal of Aquaculture, 83: 3-14. http://dx.doi.org/10.1002/naaq.10168

Hofmann, E., Powell, E., Klinck, J., **Munroe, DM.,** Mann, R., Haidvogel, D., Narváez, DA, Zhang, X., Kuykendall, KM. 2018. An Overview of Factors Affecting Distribution of the Atlantic Surfclam (*Spisula solidissima*), a Continental Shelf Biomass Dominant, During a Period of Climate Change. Journal of Shellfish Research, *37*(4): 821-831. https://doi.org/10.2983/035.037.0412

Hennen, D., Mann, R., **Munroe, D.,** Powell, E. 2018. Biological reference points for Atlantic surfclam (*Spisula solidissima*) in warming seas. Fisheries Research, 207: 126-139. https://doi.org/10.1016/j.fishres.2018.06.013

Miles, T., Murphy, S., Kohut, J., Borsetti, S., **Munroe, D.** 2021. Offshore Wind Energy and the Mid-Atlantic Cold Pool: A Review of Potential Interactions. Marine Technology Society Journal, 55(4): 72-87. https://doi.org/10.4031/MTSJ.55.4.8

Zhang*, X., **Munroe, D**., Haidvogel, D., Powell, E.N.P. 2016. Atlantic surfclam connectivity within the Middle Atlantic Bight: Mechanisms underlying variation in larval transport and settlement. Estuarine, Coastal and Shelf Science, 173: 65-78. doi:10.1016/j.ecss.2016.02.019

d) Synergistic Activities

- Working group member for 2016-17 surfclam and ocean quahog benchmark stock assessments
    - Stock Assessment Review Committee (SARC) 61 & SARC 63
- Cooperative fisheries research programs in federal surfclam, ocean quahog, sea scallop fisheries. In this capacity, I develop research programs that deliver relevant science for advancement of sustainable management objectives and deliver those science outcomes directly to relevant management and industry groups through presentations as assessment and science meetings.
- Annual participation towards science informing the assessment of oyster fishery stocks in the Delaware Bay.
    - Scientific sampling and analysis on the long-term oyster abundance timeseries to inform quota and management decisions. Results of my science are presented annually to state management agencies, relevant industry members and the public at assessment workshops.
- Development of undergraduate and graduate level courses focused on shellfish ecology in New Jersey, and collaboration with public school educators to develop K-12 teaching modules using real world science data and examples.
    - An example of K-12 teaching and outreach can be found here Website screenshot provided, full lecture and classroom materials found here: http://coseenow.net/mare/ocean-lecture-educators-night/2012-2013/ocean-lecture-munroe/

Jason M. Morson

Associate Research Scientist
Rutgers University, Haskin Shellfish Research Laboratory

Education

2018 Ph.D., Ecology and Evolution, Rutgers University;
2007 M. Sc., Biology *with honors,* Hofstra University,
2004 B. Sc., Marine Science *magna cum laude*, Rider University,

Selected Publications

Morson JM, Grothues T, Able KW. 2019. Change in larval fish assemblage in a USA east coast estuary estimated from twenty-six years of fixed weekly sampling. *PLoS ONE* 14(10): e0224157.

Morson, J. M., D. Munroe, K. A. Alcox, E. N. Powell, D. Bushek, and J. Gius. 2018. Density-dependent capture efficiency of a survey dredge and its influence on the stock assessment of eastern oysters *Crassostrea virginica* in Delaware Bay. *Fisheries Research* 205: 115-121.

Morson, J. M., D. Munroe, R. Harner, and R. Marshall. 2017. Evaluating the potential for a sex-balanced harvest approach in the recreational summer flounder *Paralichthys dentatus* fishery. *North American Journal of Fisheries Management* 37 (6): 1231-1242.

Morson, J. M., E. A. Bochenek, E. N. Powell, E. C. Hasbrouck, J. E. Gius, C. F. Cotton, K. Gerbino, and T. Froehlich. 2015. Estimating the sex composition of the summer flounder catch using survey data. *Marine and Coastal Fisheries* 7: 393-408.

Morson, J. M., E. A. Bochenek, E. N. Powell, and J. Gius. 2012. Sex-at-length of summer flounder (*Paralichthys dentatus)* landed in the party boat sector of the recreational fishery of New Jersey. *North American Journal of Fisheries Management* 32: 1201-1210.

Powell, E. N., **J. M. Morson**, K. A. Alcox, and Y. Kim. 2012. Accommodation of the sex ratio in eastern oysters to variation in growth and mortality across the estuarine salinity gradient in Delaware Bay. *Journal of the Marine Biological Association of the United Kingdom* 93(2): 533- 555.

Synergistic Activities

2018 – present – *New Jersey Delaware Bay Oyster Stock Assessment*, Lead Assessment Scientist
2018 - *Ecology, Stock Assessment, and Management of Summer Flounder;* Co-Chair, Special Session at the American Fisheries Society Annual Meeting, Atlantic City, NJ. August 19-23, 2018.
2013 - *Summer Flounder Benchmark Stock Assessment*, Working Group Member, NMFS-NEFSC

Fishery Industry Collaborators

National Fisheries Institute, Partnership for Mid-Atlantic Fisheries Science, Science Center for Marine Fisheries, Recreational Fishing Alliance, Garden Sate Seafood Association, Lunds Fisheries, Viking Village, Fishermen's Cooperative of Point Pleasant, Save the Summer Flounder Fishery Fund, Jersey Coast Anglers Association

GRACE K. SABA
Assistant Professor
Center for Ocean Observing Leadership
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Rutgers, The State University of New Jersey
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Phone: 848-932-3466
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Professional Preparation:

Institution	Location	Major/Area of Study	Degree	Year
UC-Santa Barbara	California	Aquatic Biology	B.S.	2002
College of William and Mary	Virginia	Marine Science	Ph.D.	2010
Rutgers University	New Jersey	Marine and Coastal Sciences	Post-Doc	2010 – 2011

Appointments:

From – To	Position Title, Organization and Location
Sept 2015 – present	Assistant Professor, DMCS, Rutgers University, New Jersey
Jul 2014 – Aug 2015	Technical Director of MARACOOS, Rutgers University, New Jersey
Dec 2011 – Aug 2015	Assistant Research Professor, DMCS, Rutgers University, New Jersey

Products Most Closely Related to the Proposed Project:

Saba, G.K., Bockus, A.B., Shaw, C.T., Seibel, B.A. 2021. Combined effects of ocean acidification and elevated temperature on feeding, growth, and physiological processes of Antarctic krill (*Euphausia superba*). Marine Ecology Progress Series 665: 1-18, https://doi.org/10.3354/meps13715. **Selected as a Feature Article.**

Wright-Fairbanks, E.K., Miles, T, Cai, W.-J., Chen, B., **Saba, G.K.** 2020. Autonomous observation of seasonal carbonate chemistry dynamics in the Mid-Atlantic Bight. Journal of Geophysical Research: Oceans 125(11): e2020JC016505, doi:10.1029/2020JC016505. **Selected as a Research Spotlight in American Geophysical Union Eos**, doi: https://doi.org/10.1029/2020EO151558.

Saba, G.K., Wright-Fairbanks, E., Chen, B., Cai, W.-J., Barnard, A.H., Jones, C.P., Branham, C.W., Wang, K., Miles, T. 2019. The development and validation of a profiling glider Deep ISFET pH sensor for high resolution coastal ocean acidification monitoring. Frontiers in Marine Science 6: 664, https://doi.org/10.3389/fmars.2019.00664.

Goldsmith, K.A., Lau, S., Poach, M.E., Sakowicz, G.P., Trice, T.M., Ono, R.C., Nye, J., Shadwick, E.H., St.Laurent, K.A., **Saba, G.K.** 2019. Scientific Considerations for Acidification Monitoring in the U.S. Mid-Atlantic Region. *Estuarine, Coastal* and *Shelf Science 225: 106189,* https://doi.org/10.1016/j.ecss.2019.04.023.

Saba, G.K., Goldsmith, K.A., Cooley, S.R., Grosse, D., Meseck, S.L., Miller, W., Phelan, B., Poach, M., Rheault, R., St. Laurent, K., Testa, J., Weis, J.S., Zimmerman, R. 2019. Recommended Priorities for Research on Ecological Impacts of Coastal and Ocean Acidification in the U.S. Mid-Atlantic. *Estuarine, Coastal* and *Shelf Science 225: 106188,* https://doi.org/10.1016/j.ecss.2019.04.022.

Other Significant Products:

Nazzaro, L., Slesinger, E., Kohut, J., **Saba, G.K.**, Saba, V.S. 2021. Sensitivity of marine fish thermal habitat models to fishery data sources. Ecology and Evolution 11(19): 13001-13013, http://doi.org/10.1002/ece3.7817.

Saba, G.K., Burd, A.B., Dunne, J.P., Hernández-León, S., Martin, A.H., Rose, K.A., Salisbury, J., Steinberg,

D.K., Trueman, C.N., Wilson, R.W., Wilson, S.E. 2021. Toward a better understanding of fish-based contribution to ocean carbon flux. Limnology and Oceanography 66(5): 1639-1664, doi:10.1002/lno.11709.

*Slesinger, E., Andres, A., Young, R., Seibel, B., Saba, V., Phelan, B., Rosendale, J., Wieczorek, D., **Saba, G**. 2019. The effect of ocean warming on black sea bass (*Centropristis striata*) aerobic scope and hypoxia tolerance. PLoS ONE 14 (6): e0218390. https://doi.org/10.1371/journal.pone.0218390.

Cross, J.N., Turner, J., Cooley, S.R., Newton, J., Azetsu-Scott, K., Braby, C.E., Canesi, K., Chambers, C., Dugan, D., Goldsmith, K., Gurney-Smith, H., Harper, A., Jewett, L., Joy, D., King, T., Kurz, M., Morrison, R., Motyka, J., Ombres, E., Paguirigan, M., Regula-Whitefield, C.M., **Saba, G.K.**, Silva, E., Smits, E., Vreeland-Dawson, J., Wickes, L. 2019. Building the Knowledge-to-Action Pipeline in North America: Connecting Ocean Acidification Research and Actionable Decision Support. Frontiers in Marine Science 6: 356, https://doi.org/10.3389/fmars.2019.00356.

Saba, G.K., Schofield, O., Torres, J.J., Ombres, E.H., Steinberg, D.K. 2012. Increased feeding and nutrient excretion of adult Antarctic krill, *Euphausia superba*, exposed to enhanced carbon dioxide (CO_2). PLoS ONE 7(12): e52224, doi:10.1371/journal.pone.0052224.

Synergistic Activities:

- Dr. Saba is collaborating with NJ Department of Environmental Protection towards the development and implementation of state ocean acidification initiatives (2020 – present)
- Dr. Saba is co-Lead of the Ocean Health and Ecosystems Task Team for Ocean Gliders (2019 – present)
- Dr. Saba serves as Lead of the Fish Carbon Working Group (2018 – present)
- Dr. Saba co-developed the Mid-Atlantic Coastal Acidification Network (MACAN) and serves on the MACAN Steering Committee and Science Working Group (2016 – present)
- Dr. Saba serves on various proposal review panels for agencies such as NSF and Sea Grant and reviews manuscripts for various oceaonographic and geoscience journals such as Antarctic Science, Aquatic Microbial Ecology, Biogeochemistry, Biogeosciences, Estuaries & Coasts, Functional Ecology, Geophysical Research Letters, Global Biogeochemical Cycles, Journal of Plankton Research, Limnology & Oceanography, Marine Biology, Nature Climate Change, Polar Biology, Scientific Reports (2010 – present)

THOMAS DAMERON

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MARITIME PROFESSIONAL

MILESTONES

- 2021 Completed MVP development of Overboard Solutions Safety Management Platform
- 2018 Director, Responsible Offshore Development Alliance
- 2016 – 2017 Director, US Marine Safety Association
- 2014 – Design and successful testing of a standard selectivity and juvenile survey dredge for SCeMFiS and use on the NMFS surfclam and ocean quahog stock survey
- 2005 U.S.C.G. Approved Drill Instructor
- 2002 Developed and utilized an electronic safety management system for my use on the dozens of commercial fishing vessels I serviced.
- Fished as First Mate on the F/Vs Glacier Enterprise and Arctic Rose for Artic Alaska in the Bering Sea. Twice made the, eleven to thirteen-day ,transit from Dutch Harbor AK to Seattle Washington.
- 1997 Certified Drill Conductor
- 1996 – Earned U.S.C.G. 1600 Ton Masters License of Commercial Fishing Vessels
- 1990 – Earned U.S.C.G. Master License, 200 Ton Inland – Mate 200 Ton Near Coastal
- 1983 – Chincoteague VA Began commercial fishing for surfclams and ocean quahogs.

PROFESSIONAL EXPERIENCES & AUTOBIOGRAPHY

President l Last Tow LLC l 2018 - Present – Independent consultant to the maritime industry. I'm working with private companies and public entities on the design, construction, and upgrade of vessels and efficient fishing gear.

President l Overboard Solutions LLC l 2016 - Present- As President and Founder of Overboard Solutions I'm leading an effort to develop a safety management platform modeled after Fishing Vessel Safety-Blueprint for a National Program. The platform launched to our beta testers in August/September 2020 and was approved by the Apple App Store and live for the launch of the MVP January 2022.

Government Relations and Fisheries Science Liaison l Surfside Foods LLC l 2012 - Present
With 29 years of commercial fishing experience, most of which I served as an officer on vessels ranging from 80 to 180 feet in length, with operations along the mid-Atlantic Coast and the Bering Sea I transitioned shoreside. I began as a fleet manager for what would eventually be rolled into Surfside Foods. Shoreside my interests turned to Project Management, Government Relations and Fisheries Science. I've continuously served on the U.S.C.G. Fishing Vessel Safety Advisory Committee since 2009. In 2012 I began representing Surfside Foods' membership on the Industry Advisory Board of the Science Center for Marine Fisheries, on the Interstate Shellfish Sanitation Conference and on the Surfclam and Ocean Quahog Advisory Panel.

Captain l Truex Myers Truex Group of Companies l 2007 - 2012 – I ran an efficient operation on the F/V Mary M and ESS Pursuit overseeing the crewing of the vessel with officers that worked two weeks on and two weeks off and a deck crew that worked three weeks on and two weeks off. This arrangement kept the vessel offshore working a higher percentage of the time, gave crewmembers the opportunity for both advancement and a healthful work/life balance. My practice of promoting from within attracted the best talent on the docks and I was asked to run the ESS Pursuit during the transition from an at-sea processor to the largest catcher boat in the Atlantic surfclam and ocean quahog industry.

President l Shipboard Emergency Action Companyl 1998 - 2013 – After some time fishing in Alaska my attitude toward safety was that it had to be methodical. The safety procedures I developed as captain of the Christi-Caroline for Foxy Investments led to my beinig involved in the safety management of dozens of vessels. In 2002 I developed an electronic version of my safety management system, for the newly released Dell Axim, that I successfully used in the safety management of my clientele vessels for 8 years and will ultimately lead to a safety management platform used by many to enhance their safety management efforts.

EDUCATION

- **West Virginia University - 1980 - 1983 - Major: Accounting**

Brief Curriculum Vitae: Daniel Hennen

Northeast Fisheries Science Center, National Marine Fisheries Service, Woods Hole MA

Email: Daniel.Hennen@noaa.gov Phone: (508) 495-2398 Fax: (508) 495-2393

Professional Preparation

University of California San Diego, B.S. (Biology) / B.A. (Psychology), 1998

Montana State University, Ph.D. Biological Sciences, 2004

Positions

2009-present – Operations Research Analyst, Lead Atlantic Surfclam and Ocean Quahog Assessment Scientist, Northeast Fisheries Science Center, Population Dynamics Branch, NOAA/National Marine Fisheries Service, Woods Hole MA.

2017-2018 – Acting Deputy Division Chief for the Resource Evaluation and Assessment Division, Northeast Fisheries Science Center, NOAA/National Marine Fisheries Service, Woods Hole MA.

2004-2009 – Biometrician, Alaska Sea Life Center, Seward Alaska.

Relevant Publications

Poussard, L., Powell, E., Hennen, D. 2021. Discriminating between high- and low-quality field depletion experiments through simulation analysis. Fish. Bull. 119:274–293 (2021).

Poussard, Leanne M., Eric N. Powell, and Daniel R. Hennen. 2021. "Efficiency estimates from depletion experiments for sedentary invertebrates: evaluation of sources of uncertainty in experimental design." *Fisheries Research* 234: 105806.

Jacobson L, Hennen D. 2019. Improving the NEFSC clam survey for Atlantic surfclams and ocean quahogs. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 19-06; 89 p. or online at http://www.nefsc.noaa.gov/publications/

Hennen, D. R., Mann, R., Munroe, D. M., & Powell, E. N. (2018). Biological reference points for Atlantic surfclam (Spisula solidissima) in warming seas. *Fisheries Research*, *207*, 126-139.

Northeast Fisheries Science Center. 2017. 63rd Northeast Regional Stock Assessment Workshop (63rd SAW) Assessment Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 17-10; 406 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at http://www.nefsc.noaa.gov/nefsc/publications/

Northeast Fisheries Science Center. 2017. 61st Northeast Regional Stock Assessment Workshop (61st SAW) Assessment Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 17-05; 466 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at http://www.nefsc.noaa.gov/nefsc/publications/

Hennen DR, Mann R, Charriere N, Nordahl VA. 2016. Testing the Performance of a Hydraulic Clam Dredge Modified to Capture Small Animals. NOAA Tech Memo NMFS NE 237; 15 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at http://www.nefsc.noaa.gov/publications/

Munroe, D., D. Narvaez, D. Hennen, E. Hofmann, L. Jacobsen, R. Mann, E. Hofmann, E.N. Powell, J. Klinck. 2016. The Roles of Fishing and Bottom Water Temperature as Drivers of Change in Maximum Shell Length in Atlantic Surfclams (*Spisula solidissima). Estuarine Coastal and Shelf Sciences*. 170: 112–122.

Hennen, Daniel R. 2015. "How Should We Harvest an Animal that Can Live for Centuries?." *North American Journal of Fisheries Management* 35(3):512-527.

Northeast Fisheries Science Center. 2013. 56th Northeast Regional Stock Assessment Workshop (56th SAW) Assessment Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 13-10; 868 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at http://www.nefsc.noaa.gov/nefsc/publications/

Chute A, Hennen D, Russell R, Jacobson L. 2013. Stock Assessment Update for Ocean Quahogs (*Arctica islandica*) through 2011. NEFSC Ref Doc 13-17; 156 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at http://nefsc.noaa.gov/publications/

Hennen, D.R., Jacobson, J.D., and Tang, J. 2012. Accuracy of the Patch model used to estimate density and capture efficiency in depletion experiments for sessile invertebrates and fish. *ICES J. Mar. Sci.* 69(2):240-249

Other Relevant Experience

2009-present - NEFSC Clam survey design, analysis and operation.