

Gail Schwieterman, Ph.D.

Assistant Professor
School of Marine Sciences
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EDUCATION

Doctor of Philosophy in Marine Science 2020

Virginia Institute of Marine Science (VIMS), William & Mary
“The impacts of acute hypoxic exposure and other concomitant stressors on the cardiorespiratory physiology of coastal elasmobranch fishes”

Bachelor of Arts, Major: Biology Minor: Chemistry 2012

Oberlin College

POSTDOCTORAL POSITIONS

Chesley Postdoctoral Faculty Fellow; Biology Department 2021-2022

Carleton College

Postdoctoral Fellow; Ecology, Evolution, & Marine Biology Department 2020-2021

University of California, Santa Barbara
“Serological Drivers of Cardiorespiratory Collapse at High Temperatures in a Marine Ectotherm”

PEER-REVIEWED PUBLICATIONS (*indicate undergraduate mentee)

Journal Articles – In Review

14. Bouyoucos IA, Simpfendorfer CA, **Schwieterman GD**, Eustache KB, Thiault L, Planes S, Rummer JL. Submitted. No effects of abiotic and anthropogenic factors on reef shark neonate abundance within a shark nursery area system. *Marine and Freshwater Research*.

Journal Articles – Published

13. **Schwieterman GD**, Hardison EA, Cox G, Van Wert J, Birnie-Gauvin K, Eliason EJ. 2023. Mechanisms of cardiac collapse at high temperature in a marine teleost (*Girella nigricans*). *Comparative Physiology and Biochemistry Part A*. <https://doi.org/10.1016/j.cbpa.2023.111512>
12. Hardison EA, **Schwieterman GD**, Eliason EJ. 2023. Diet changes thermal acclimation capacity, but not acclimation rate in a marine ectotherm (*Girella nigricans*) during warming. *Proceedings of the Royal Society: B*. <https://doi.org/10.1098/rspb.2022.2505>
11. Shiffman D, Arguedas Alvarez T, Bangle CW, Boyt R, Cote I, Daly-Engel TS, Davis ACD, Gaskins LC, Graham J, Graham R, Johri S, Macdonald CC, Paig-Tran E, Roca A, **Schwieterman GD**, Whitenack LB, Wiley TR, Ferry LA. 2022. What can Professional Scientific Societies do to Improve Diversity, Equity, and Inclusion: A

Case Study of the American Elasmobranch Society. *Frontiers in Education*, 7:842618. <https://doi.org/10.3389/feduc.2022.842618>

10. **Schwieterman GD**, Hardison EA, Eliason EJ. 2022. Effect of thermal variation on the cardiac thermal limits of a eurythermal marine teleost (*Girella nigricans*). *Current Research in Physiology*, 5 109-117. <https://doi.org/10.1016/j.crphys.2022.02.002>
9. Bouyoucos IA, Simpendorfer CA, Planes S, **Schwieterman GD**, Weideli OC, Rummer JR. 2022. Applying ecological and physiological concepts to identify coastal reef shark nursery areas. *Marine Ecology Progress Series*, 682 137-152. <https://doi.org/10.3354/meps13941>
8. **Schwieterman GD**, Rummer JL, Bouyoucos IA, Bushnell PG, Brill RW. 2021. A lack of red blood cell swelling in five elasmobranch fishes following air exposure and exhaustive exercise. *Journal of Comparative Biology and Physiology Part A*, 258: 110978. <https://doi.org/10.1016/j.cbpa.2021.110978>
7. **Schwieterman GD**, Winchester MM, Sheils HA, Bushnell PG, Bernal D, Marshall HM, Brill RW. 2021. The effects of elevated potassium, acidosis, reduced oxygen levels, and temperature on the functional properties of isolated myocardium from three elasmobranch fishes: clearnose skate (*Rostoraja eglanteria*), smooth dogfish (*Mustelus canis*), and sandbar shark (*Carcharhinus plumbeus*). *Comparative Biology and Physiology: Part B*. 191 127-141. <https://doi.org/10.1007/s00360-020-01328-8>
6. Bouyoucos IA, Watson S, Planes S, Simpendorfer CA, **Schwieterman GD**, Whitney NM, Rummer JL. 2020. The power struggle: Assessing interacting global change stressors via experimental studies on sharks. *Scientific Reports*, 10(1) 1-12. <https://doi.org/10.1038/s41598-020-76966-7>
5. **Schwieterman GD**, Bouyoucos IA, Rummer J, Brill RW. 2019. Analyzing elasmobranch blood samples in the field: Blood stability during storage and validation of the Hemocue® hemoglobin analyzer. *Conservation Physiology* 7(1), cozo81 <https://doi.org/10.1093/conphys/cozo81>
4. **Schwieterman GD**, Crear DP, Anderson BA, Lavoie D*, Sulikowski JA, Bushnell P, Brill RW. 2019. Combined effects of acute temperature change and elevated pCO₂ on the metabolic rates and hypoxia tolerances of Mid- and North-Atlantic fishes: clearnose skate (*Rostaraja eglanteria*), summer flounder (*Paralichthys dentatus*) and thorny skate (*Amblyraja radiata*). *Biology*, 8(3), 56. <https://doi.org/10.3390/biology8030056>
3. Crear DP, Brill RW, Bushnell PG, Latour RJ, **Schwieterman GD**, Steffen RM*, Weng KC. 2019. The impacts of warming and hypoxia on the performance of an obligate ram ventilator. *Conservation Physiology*. 7 (1): cozo26; <https://doi.org/10.1093/conphys/cozo26>
2. Whitney NM, White CF, Gleiss AC, **Schwieterman GD**, Anderson P, Hueter RE, and GB Skomal. 2016. A novel method for determining post-release mortality, behavior,

and recovery period using acceleration data loggers. *Fisheries Research*. 183: 210-221. <https://doi.org/10.1016/j.fishres.2016.06.003>

1. Whitney NM, Taquet M, Brill R, Girard C, **Schwieterman GD**, Dagorn L, and KN Holland. 2016. Swimming depth of dolphinfish (*Coryphaena hippurus*) associated and unassociated with fish aggregating devices. *U.S. Fishery Bulletin*. 114 (4): 426-434. <https://doi.org/10.7755/FB.114.4.5>

Book Chapters

1. Eliason EJ, Van Wert J, **Schwieterman GD**. 2022. Applied Aspects of the Cardiorespiratory System, in: *Fish Physiology 39A: Conservation Physiology for the Anthropocene – A Systems Approach*. Elsevier, London. <https://doi.org/10.1016/bs.fp.2022.04.005>

CONFERENCE PRESENTATIONS (*indicate undergraduate mentee)

Oral Presentations

10. Schwieterman GD, Hardison, EA. Incorporating Variability into Physiological Experiments. Society for Experimental Biology, Prauge, Czech Republic, July 2024
9. Schwieterman GD. Anthropogenic Impacts on Maine's Marine Organisms: A Physiological Approach. Maine Biological and Medical Sciences Symposium, Mount Desert Island Biological Laboratory, ME, April 2024
8. Schwieterman GD. Dueling Stressors: The Impacts of Hypoxia on Upper Thermal Tolerance in Coastal Fishes. American Physiological Society. San Diego, CA, Oct 2022
7. Schwieterman GD, Hardison, EA, Eliason, EJ. When they go low, we go high: Jensen's Inequality in a eurythermal marine teleost. Society of Experimental Biology. Virtual, July 2021
6. Schwieterman GD, Hardison, EA, Eliason, EJ. A Change of Heart: Jensen's Inequality in a eurythermal marine teleost. Canadian Society of Zoologists. Virtual, May 2021
5. Schwieterman GD, Lavoie D*, Crear D, Anderson B, Sulikowski JA, Brill RW. Temperature and pH Changes on Metabolic Rates and Hypoxia Tolerance of clearnose skate (*Rostroraja eglanteria*), summer flounder (*Paralichthys dentatus*), and thorny skate (*Amblyraja radiata*). Joint Meeting of Ichthyologists and Herpetologists, American Elasmobranch Society, Snowshoe, UT, Jul 2019
4. Schwieterman GD, Bouyoucos IA, Rummer J, Brill RW. Analyzing elasmobranch blood samples in the field: Blood stability during storage and validation of the Hemocue® hemoglobin analyzer. AFS Tidewater Chapter Meeting, Salisbury, MD, Feb 2019

3. Schwieterman GD, Lavoie D*, Crear D, Anderson B, Sulikowski JA, Brill RW. Interactions of Acute Temperature and pH Changes on Metabolic Rates and Hypoxia Tolerance: A Comparison Between Mid- and North-Atlantic Species. AFS Annual Meeting, Atlantic City, NJ, Aug 2018
2. Schwieterman GD, Winchester MM, Bushnell P, Brill RW. The Impact of Simulated Capture Stress on the Elasmobranch Heart. Sharks International, Joao Pessoa, Brazil, Jun 2018
1. Schwieterman GD, Winchester MM, Bushnell P, Brill RW. Capture Stress and the Elasmobranch Heart. American Fisheries Society, Tidewater Chapter Annual Meeting, Moorehead City, NC, Jan 2018

Poster Presentations

8. Schwieterman GD, Hardison EA, Cox G, Van Wert J, Birnie-Gauvin K, Eliason EJ. Oxygen limits cardiac thermal limits in a marine teleost (*Girella nigricans*). Society for Experimental Biology, Montpellier, France, Jul 2022
7. Schwieterman GD, Lavoie D*, Crear D, Anderson B, Sulikowski JA, Brill RW. Temperature and pH Changes on Metabolic Rates and Hypoxia Tolerance of clearnose skate (*Rostroraja eglanteria*), summer flounder (*Paralichthys dentatus*), and thorny skate (*Amblyraja radiata*), Ocean Sciences, San Diego, CA, Feb 2020
6. Olive D*, Schwieterman GD, Bushnell P, Brill RW. Red Blood Cell Swelling in the Clearnose Skate (*Rostroraja eglanteria*). Association for the Sciences of Limnology and Oceanography, Puerto Rico, Feb 2019
5. Lavoie DR*, Schwieterman GD, Brill RW. Aerobic Scope and Hypoxia Tolerance of the Clearnose Skate (*Raja eglanteria*) Under Different Temperature and pH Conditions. Biennial Mtg. Ocean Sciences Meeting, Portland, OR, Feb 2018
4. Schwieterman GD, Brill RW. The influence of acute temperature changes on metabolic scope and hypoxia tolerance of clearnose skates (*Raja eglanteria*) under rising temperatures. American Fisheries Society, Tidewater Chapter Annual Meeting, Virginia Beach, VA, Mar 2017
3. Schwieterman GD, Lear K, Marshall H, Morris J, White C, Hueter R, Skomal G, Whitney N. Post-Release Mortality of Coastal Sharks in a Commercial Longline Fishery. Joint Meeting of Ichthyologists and Herpetologists, American Elasmobranch Society, New Orleans, LA, Jul 2016
2. Schwieterman GD, Copeman L, Ryer C. The effect of dietary lipids and fatty acids on growth rates of juvenile tanner crabs (*Chionoecetes bairdi*). Association for the Sciences of Limnology and Oceanography, New Orleans, LA, Feb 2013
1. Schwieterman GD, Copeman L, Ryer C. The effect of dietary lipids and fatty acids on growth rates of juvenile tanner crabs (*Chionoecetes bairdi*). Society for the Advancement of Chicanos and Native Americans in Science, Seattle, WA, Oct 2012

AWARDS AND HONORS

Nominee, Faculty Mentor Impact Award, University of Maine	2024
Finalist, Presidents Award, Canadian Society of Zoology	2021
Best Paper, Biology	2021
Dean's Fellowship, VIMS (\$6,000)	2019
Third Place Best Student Oral Presentation, AFS Tidewater Chapter	2019
Norfolk Southern Fellowship (\$3,800)	2017
Best Poster, AFS Tidewater Chapter Meeting	2017
Hargis Fellowship, VIMS Foundation (\$2,200)	2016
VIMS Foundation Fellowship (\$4,000 over two years)	2015 & 2016
Young Professionals Recruitment Award, American Elasmobranch Society	2015
Outstanding Poster Presentation in Marine Science, Society for the Advancement of Chicanos and Native Americans in Science	2012

RESEARCH FUNDING (\$337,450 Total)

NSF Postdoctoral Research Fellowship in Biology (\$168,000, Declined)	2021
Tri-County Blood Bank Post-Doctoral Fellowship (\$57,000)	2020
American Elasmobranch Society Travel Grant (\$500)	2019
VIMS Graduate Student Travel Grant (\$600)	2019
NSF Graduate Research Opportunities Worldwide (\$5,000)	2018
International Women's Fishing Association Scholarship (\$1,750)	2017 and 2018
VIMS Travel Grant (\$1,500 over three years)	2017 - 2019
VIMS Graduate Student Association Research Grant (\$1,000)	2017
VIMS Academic Studies Research Grant (\$3,900 over two years)	2016 and 2017
Seaside Foundation Scholarship (\$1,200 over two years)	2016 and 2017
VIMS Equipment Trust Fund Grant (\$3,000)	2016
NSF Graduate Research Fellowship (\$138,000 over three years)	2015 - 2020
Thomas J. Watson Fellowship (\$28,000)	2013 - 2014
NSF-BIO REU Travel Scholarship (\$1,000)	2013
Mote Intern Scholarship (\$2,000)	2013
Battelle Scholarship (\$2,000 for tuition)	2011 and 2012
John F. Oberlin Scholarship (\$91,000 tuition over four years)	2009 - 2012

RESEARCH EXPERIENCE

Researcher and Grant Writer, Mote Marine Laboratory, FL	2014 - 2015
Fisheries Observer, Pretoma, Costa Rica	2013
Intern, Behavioral Ecology and Physiology, Mote Marine Laboratory, FL	2013
NSF REU Intern, Hatfield Marine Science Center, OR	2012
Winter Fellow, Woods Hole Oceanographic Institute, MA	2012

TEACHING EXPERIENCE

Lead Instructor

SMS 491 "Marine Ecological Physiology", University of Maine	2023
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SMS 304 “Integrative Marine Sciences IV: Comparative Physiology, Cell and Molecular Biology”, University of Maine	2023, 2024
BIOL 262 & 263 “Ecological Physiology with Lab”, Carleton College	2022
BIOL 360 “Climate Change Beneath the Waves”, Carleton College	2021 and 2022
MSCI 398 “Caught! Implication of Capture Stress”, William & Mary	2020
EXCO 334 “One Fish Two Fish: An Introduction to Marine Life”, Oberlin College	2012

Teaching Assistant

MSCI 330 “Introduction to Marine Science”, William & Mary	2020
MSCI 331 “Field Studies in Marine Environments”, William & Mary	2018 and 2019

Classroom Guest Lectures

What is Ecological Physiology?, SMS 500, University of Maine	2023
Oxygen in water-breathers, SBE, University of Maine	2023
Hormonal Control of Metamorphosis, University of North Florida	2022
Applied Shark Physiology, University of California, Santa Barbara	2021
Thermal Physiology, University of California, Santa Barbara	2020
Introduction to Marine Science, William & Mary	2020
Field Studies in Coastal Marine Environments, William & Mary	2017-2019
Ocean Acidification, William & Mary	2017

Instructional Development

Teaching at UMaine New Faculty Learning Community, Center for the Innovation of Teaching and Learning, University of Maine	2023
New Faculty Workshop, Learning and Teaching Center, Carleton College	2021
- Role-played difficulty teaching scenarios, critiqued colleagues’ teaching, practiced integrating UDL into our course design	
Center of Innovative Teaching, Research and Learning Workshops, University of California, Santa Barbara	2021
- Towards more inclusive active learning classrooms: How groups of students are differentially impacted by active learning	
Engaging Teaching Symposium, University of California, Santa Barbara	2020
- Attended workshops on decolonizing the classroom, recipes for learning, and virtual instruction	
MSCI 508: College Science Teaching, VIMS	2019
- Developed curriculum to include active learning strategies, inclusive language, and techniques for undergraduate student engagement	

GRADUATE MENTORING EXPERIENCE

Primary Advisor

Emma Smith, Ph.D., School of Marine Science, University of Maine	2023-Present
Madeleine Yung, M.S., School of Marine Science, University of Maine	2024-Present

Committee Member

Eric Brown, Ph.D., School of Biology and Ecology, University of Maine	2023-Present
Halli Bair, M.S., School of Marine Science, University of Maine	2024-Present

External Examiner

Sophia Emmons, Ph.D., James Cook University, Australia	2023-Present
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UNDERGRADUATE MENTORING EXPERIENCE

Honors Committee Member

Abe Grunwald, SBE, University of Maine	2023-3024
Sarah Janson, SMS, University of Maine	2023-2024
Courtney Stow, SMS, University of Maine	2023-2024

Supervisor

Olivia Durham, SMS, University of Maine	2023-Present
Brynn Cleary, SMS, University of Maine	2023-Present
Connor Flinn, Carleton College	2022-2023
Anwesha Mukherji, Carleton College	2022-2023
Daven Rock, Carleton College	2022-2023
Eloïse Cowan, Carleton College	2022
Bella Giglio, University of California, Santa Barbara	2020
Nilanjana Das, VIMS	2019
Brenda Pereda Rodriguez, VIMS	2019
Bethany Brodbeck, VIMS	2019
Julie Brücker, VIMS	2019
Connor Van Vooren, VIMS	2019
Danielle Olive, NOAA EPP Program	2018
Danielle Lavoie, NOAA Hollings Program	2017

OUTREACH AND EDUCATION PUBLICATIONS

3. Schwieterman, G. 2020. Water, water everywhere! Any to drink? Conservation Physiology in Action. 8(1) coaa071, <https://doi.org/10.1093/conphys/coaa071>
2. Schwieterman, G. 2019. Is Droning on Becoming Unbearable? Conservation Physiology in Action. 7(1) cozo34, <https://doi.org/10.1093/conphys/cozo34>
1. Schwieterman, G. Can't Catch My Breath! A Study of Metabolism in Fish Subjects: Environmental Science, Marine/Ocean Science, Life Science/Biology Grades: 6-8. Virginia Scientists & Educators Alliance (VA SEA), Virginia Institute of Marine Science, College of William & Mary. Virginia Institute of Marine Science, April 21, 2017.

INVITED LECTURES

17. Fish vs. Stress: The Schwieterman Lab Origins Story, Invited Seminar, SMS, University of Maine, Orono, ME March 2024

16. What Makes a Winner? Using Physiology to Predict the Winners and Losers of Climate Change, Invited Seminar, University of New England, Biddeford, ME March 2024
15. Puzzling Out Multi-Stressor Responses in Coastal Fishes, Invited Seminar, University of Connecticut, Groton, CT March 2023
14. Dueling Stressors: Mimicking the natural environment in lab-based studies, Invited Seminar, SBE, University of Maine, Orono, ME February 2023
13. Shark Stress and Fish Phys, Invited Seminar, University of Maine, Orono, ME, May 2022
12. Fish Physiology: The Whys and Hows, Invited Seminar, University of North Florida, Jacksonville, FL, January 2022
11. Fish Physiology: The Whys and Hows, Invited Seminar, Carleton College, Northfield, MN, April 2021
10. Careers After Graduate School, Invited Panelist, Professional Development Lecture Series, VIMS, Gloucester Point, VA, April 2021
9. Shark Physiology at VIMS, Invited Lecture, Research Experience for Undergraduates at VIMS, Wachapreague, VA, May 2019
8. The End of the Line: An Inside Scoop, Invited Lecture, A Scientist Walks Into a Bar, Alewerks Brewery, Williamsburg, VA, Apr 2018
7. Red Blood Cell Swelling in Elasmobranch Fishes? Fisheries Science Departmental Seminar, Virginia Institute of Marine Science, College of William & Mary, Gloucester Point, VA, February 2019
6. Capture Stress and the Elasmobranch Heart, Invited Lecture, James Cooke University, Townsville, Australia, Dec 2018
5. The Impact of Simulated Capture Stress on Elasmobranch Cardiac Function, Fisheries Science Departmental Seminar, Virginia Institute of Marine Science, College of William & Mary, Gloucester Point, VA, April 2018
4. Something's Fishy about Coastal Climate Change, Invited Lecture, MSCI 398 Ocean Acidification, College of William & Mary, Williamsburg, VA, Oct 2017
3. Sharktopus vs. Sharknado, Invited Lecture, College of William & Mary Graduate Student Journal Club, College of William & Mary, Williamsburg, VA, September 2017
2. Skating By: A Coastal Elasmobranch and Climate Change. Fisheries Science Departmental Seminar, Virginia Institute of Marine Science, College of William & Mary, Gloucester Point, VA, April 2017

1. Skating By: A Coastal Elasmobranch and Climate Change, Invited Lecture, Public Seminar Series, VIMS Eastern Shore Laboratory, Wachapreague, VA, Jun 2016

LEADERSHIP AND SERVICE

To the Field

Session Organizer, Society for Experimental Biology Annual Conference	2024
Session Organizer, International Congress for the Biology of Fishes Annual Conference	2024
NSF Panel Reviewer	2023
Nominations Committee, American Elasmobranch Society	2020-2022
Virginia At-Large Representative, AFS Tidewater Chapter	2017-2020
Scientist, Gills Club	2016-Present
Education and Outreach Specialist, Shark Savers, Hong Kong	2013

Peer Reviewer for:

Current Research in Physiology, The Journal of Thermal Biology, Physiological and Biochemical Zoology, Journal of Experimental Biology

To the University

Graduate Board, University of Maine	2023-Present
Elected Student Representative, VIMS Academic Council	2017-2020
Elected Secretary, VIMS Graduate Student Association	2016-2017
Presenter, Marine Life Day, VIMS Eastern Shore Laboratory	2016-2018
Scientist, Virginia Scientists and Educators Alliance (VA SEA)	2015-2017
Member, VIMS Green Team	2015-2018
Student Representative, VIMS Research Seminar Series	2015-2016

To the Department

Search Committee Member, SMS Lobster Biology Position	2023-2024
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DIVERSITY, EQUITY, AND INCLUSION WORK

Positions

Committee Member, School of Marine Sciences, University of Maine Diversity, Equity, Inclusion, and Community Committee	2023-Present
Appointed Postdoc Representative, University of California, Santa Barbara Diversity, Equity, and Inclusion Committee	2021
Appointed Student Representative, VIMS Diversity and Inclusion Committee	2017-2020
VIMS Representative, William & Mary LGBTQ+ Task Force	2018

Trainings

Racial Equity in Teaching Summer Retreat, UMaine	2023
Antiracism Institute at the University of Maine	2023
Antiracism at Carleton College Participatory Workshop	2022

Safer Science: Protecting at-risk Researchers when Conducting Fieldwork	2021
The Syllabus as an Equity Practice, California Education Learning Lab	2021
Decolonizing the Classroom, California Education Learning Lab	2020
Navigating Professional and Personal Boundaries, Virginia Center for Inclusive Communities	2019
4 th Annual Diversity and Inclusion Symposium, William & Mary	2019
What is Cultural Diversity?, Virginia Center for Inclusive Communities	2019
3 rd Annual Diversity and Inclusion Symposium: Race in Higher Ed, William & Mary	2018
Welcoming International Diversity, Virginia Center for Inclusive Communities	2018
2 nd Annual Diversity and Inclusion Symposium: Implicit Bias, William & Mary	2017
Let's Talk About Race, Virginia Center for Inclusive Communities	2017

PROFESSIONAL MEMBERSHIPS

Canadian Society of Zoology	2021-Present
Society for Experimental Biology	2017-Present
Society for Integrative and Comparative Biology	2017-Present
American Fisheries Society	2016-Present
American Elasmobranch Society	2014-Present
