

Matthew Stephen Woodstock, Ph.D.

Current as of 9/29/2023

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EDUCATION

2022

Ph.D. Biological Sciences, Florida International University (FIU; *GPA*: 3.92)

- *Dissertation:* “Ecological Modeling in the Oceanic Zone: A Gulf of Mexico Case Study”
- *Awards:* 2021 FIU Biosymposium Best Oral Presentation 2nd Place, 2019 Limnology and Oceanography Research Exchange (LOREX) Scholar

2018

M.S. Marine Biology, Nova Southeastern University (NSU; *GPA*: 3.78)

- *Thesis:* “Trophic Ecology and Parasitism of a Mesopelagic Fish Assemblage in the Gulf of Mexico”
- *Awards:* 2018 Halmos College Student of the Year

2015

B.S. Ecology, Evolution, and Behavioral Biology, Beloit College (BC; *GPA*: 3.13)

- *Thesis:* “Competing Hypotheses in the Sexual Segregation of the Atlantic Sharpnose Shark”
- *Awards:* Dean’s List 2014–2015, 2015 Academic All-Conference Baseball Team

RELEVANT PROFESSIONAL EXPERIENCE

2023–Present **Postdoctoral Scholar**, Woods Hole Oceanographic Institution, PI: Dr. Gregory Britten

- *Main Responsibilities:* Develop a food-web modeling framework using the Julia programming language to simulate individual-based animal decisions, spatial-temporal variability in open-ocean food webs, and species-specific traits

2022–2023

Postdoctoral Research Fellow, Morgan State University Patuxent Environmental and Aquatic Research Lab (PEARL), PI: Dr. Thomas Ihde

- *Main Responsibilities:* Coordinated the development of two ecosystem-based models (Ecopath with Ecosim) in Chesapeake Bay tributaries to estimate the effect that oyster reef restoration and submerged aquatic vegetation (SAV) population changes, conducted interviews with local commercial fisheries, and aggregated results to predict how habitat changes may influence the commercial fishing industry’s regional economic impact.
- Presented main findings at scientific and fisheries management meetings
- Produced 1 technical report and 2 first-author manuscripts currently in preparation
- Collaborated on 2 additional manuscripts currently in preparation
- Led the development of an additional project focused on applying empirical dynamic modeling to ecosystem modeling outputs (manuscript in preparation)
- Wrote 2 grants

2018–2022

Graduate Assistant, Fisheries and Ecosystem Assessment Lab, FIU, PI: Dr. Yuying Zhang

- *Main Responsibilities:* Developed ecosystem-based models with management and restoration goals, taught three different undergraduate courses and developed new curricula, published peer-reviewed articles in scientific journals

2017–2018

STEM Educator, Museum of Discovery and Science, Fort Lauderdale, FL

- *Main Responsibilities:* Developed and taught interactive science, technology, engineering, and mathematics lessons to students (age 5–14) to underprivileged schools

2017

Teaching Assistant, Graduate Ichthyology course, NSU

- *Main Responsibilities:* Assisted in teaching a graduate-level ichthyology course taught by Dr. Tracey Sutton, curated the NSU fish collection

2016–2018

Sea Turtle Specialist, Broward County Sea Turtle Conservation Program

- *Main Responsibilities:* Monitored endangered sea turtle nests in Broward County, Florida through daily nesting surveys and public outreach events (e.g., hatchling releases, community events)

- 2015–2018 **Graduate Assistant**, Oceanic Ecology Lab, NSU, PI: Dr. Tracey Sutton
 • *Main Responsibilities:* Completed a trophic ecology project on mesopelagic fishes, communicated research through conference talks and publication, participated in community outreach events
- 2015 **Nature Educator**, Barbara C. Harris Summer Camp, Greenfield, NH
 • *Main Responsibilities:* Taught outdoor nature lessons to youth (ages 8–12) in the New Hampshire forests, led campers through weekly activities
- 2014 **Chief Scientist**, Coastal Marine Education and Research Academy, Clearwater, FL
 • *Main Responsibilities:* Aided in a population dynamics study for sharks and stingrays on the Clearwater, Florida coast

PEER-REVIEWED PUBLICATIONS

9. **Woodstock, M.S.**, J.J Kiszka, M.R. Ramírez-León, T.T. Sutton, K. Fennel, B. Wang, Y. Zhang. (2023). Cetacean-mediated nitrogen transport in the oceanic Gulf of Mexico. *Limnology and Oceanography*. doi:10.1002/lno.12433
8. Richards, T., T.T. Sutton, **M.S. Woodstock**, H. Judkins, D. Wells. (2023). Body size, depth of occurrence, and local oceanography shape trophic structure in a diverse deep-pelagic micronekton assemblage. *Progress in Oceanography*.
7. **Woodstock, M.S.**, Y. Zhang. (2022). Towards ecosystem modeling in the deep sea: A review of past efforts and primer for the future. *Deep-Sea Research Part I: Oceanographic Research Papers*. 188:103851. doi: [10.1016/j.dsr.2022.103851](https://doi.org/10.1016/j.dsr.2022.103851)
6. **Woodstock, M.S.**, T.T. Sutton, Y. Zhang. (2022). A trait-based carbon export model for mesopelagic fishes in the Gulf of Mexico with consideration of asynchronous vertical migration, flux boundaries, and feeding guilds. *Limnology and Oceanography*. 67:1443–1455. doi: [10.1002/lno.12093](https://doi.org/10.1002/lno.12093)
5. Kiszka, J.J., **M.S. Woodstock**, M. Heithaus. (2022). Functional roles and ecological importance of small cetaceans in aquatic ecosystems. *Frontiers in Marine Science*. doi: [10.3389/fmars.2022.803173](https://doi.org/10.3389/fmars.2022.803173)
4. **Woodstock, M.S.**, T.T. Sutton, T. Frank, Y. Zhang. (2021). An early warning sign: trophic structure changes in the oceanic Gulf of Mexico from 2011–2018. *Ecological Modelling*. 445:109509. doi: [10.1016/j.ecolmodel.2021.109509](https://doi.org/10.1016/j.ecolmodel.2021.109509)
3. **Woodstock, M.S.**, C.A. Blanar, T.T. Sutton. (2020). Diet and parasites of a mesopelagic fish assemblage in the Gulf of Mexico. *Marine Biology*. 167:184. doi: [10.1007/s00227-020-03796-6](https://doi.org/10.1007/s00227-020-03796-6)
2. Beck, H.N., A. Cohen, T. McKenzie, R. Weisend, K.W. Wikins, **M.S. Woodstock**. (2019). Broadening Horizons: Graduate Students Participating in International Collaborations Through the Limnology and Oceanography Research Exchange (LOREX) Program. *Limnology and Oceanography Bulletin*. 28: 85–89. doi: [10.1002/lob.10339](https://doi.org/10.1002/lob.10339)
1. **Woodstock, M.S.**, C. Golightly, D. Fenolio, J.A. Moore. (2019). *Larsonia pterophylla* (Cnidaria, Pandidae) parasitic on two Anguilliformes: *Paraconger* sp. (Congridae) and *Callenchelyini* sp. (Ophichthidae) in the Gulf of Mexico. *Gulf and Caribbean Research*. 30:SC7–10. doi: [10.18785/gcr.3001.05](https://doi.org/10.18785/gcr.3001.05)

MANUSCRIPTS IN THE PIPELINE (FIRST AUTHOR ONLY)

4. **Woodstock, M.S.**, A.T. Bevans, M. Sulyman, J.J. Kiszka, Y. Zhang, T.F. Ihde. (in prep.). Empirical dynamic modeling as an application of ecosystem modeling output.
3. **Woodstock, M.S.**, A.T. Bevans, M. Sulyman, S. Knoche, T.F. Ihde. (in prep.). The economic impacts of living habitat change in the Virginia Middle Peninsula, Chesapeake Bay.
2. **Woodstock, M.S.**, T.T. Sutton, T. Frank, K. Fennel, B. Wang, F. Hernandez, Y. Zhang. (in prep.). Mesopelagic micronekton mortality regimes and ecosystem functioning in the oceanic Gulf of Mexico following the 2010 *Deepwater Horizon* oil spill.

1. **Woodstock, M.S.**, J.J. Kiszka, P.G.H. Evans, J.J. Waggitt, Y. Zhang. (in prep.). Debunking misconceptions: rising marine mammal abundances have little impact on fisheries in the southern North Sea.

ORAL PRESENTATIONS (“*” DENOTES ADVISED AND CO-ADVISED STUDENTS)

20. **M.S. Woodstock**, A.T. Bevans*, M. Sulyman*, Y. Zhang, J.J. Kiszka, T. Ihde. (2023). Predicting causality in ecosystem models using empirical dynamic modeling. American Fisheries Society National Meeting. Grand Rapids, MI
19. A.T. Bevans*, M. Sulyman*, **M.S. Woodstock**, S. Knoche, T. Ihde. (2023). Modeling habitat change effects in the York River ecosystem, Chesapeake Bay. American Fisheries Society National Meeting. Grand Rapids, MI.
18. **M.S. Woodstock**, A.T. Bevans*, M. Sulyman*, S. Knoche, T. Ihde. (2023). The ecosystem-scale impacts of living habitat change in Virginia’s Middle Peninsula. American Fisheries Society National Meeting. Grand Rapids, MI.
17. Bevans, A.T.*., M. Sulyman*, **M.S. Woodstock**, S. Knoche, T. Ihde. (2023). Improving our understanding of habitat changes in the Chesapeake Bay with a York River ecosystem model. Morgan State University Spring Into Research Graduate Symposium. Baltimore, MD.
16. Bevans, A.T.*., M. Sulyman*, **M.S. Woodstock**, S. Knoche, T. Ihde. (2022). Estimating the Commercial Fishing Effects of Habitat Restoration in Virginia’s Middle Peninsula. Chesapeake Oyster Alliance Meeting.
15. Sutton, T., Z. Milligan, K. Boswell, H. Bracken-Grissom, A. Cook, T. Frank, D. Hahn, M. Johnston, H. Judkins, J. Moore, J. Moore, J. Quinlan, P. Peres, I. Romero, M. Vecchione, M. Shivji, A. Bernard, M. D’Elia, **M. Woodstock**, Y. Zhang, K. Benson, M. Karnauskas, F. Parker. (2022). The state of the pelagic Gulf of Mexico: the continuing mission of the DEEPEND research consortium. The Gulf of Mexico Conference.
14. **Woodstock, M.S.**, T.T. Sutton, Y. Zhang. (2022). A trait-based carbon export model for mesopelagic fishes in the Gulf of Mexico with consideration of asynchronous vertical migration, flux boundaries, and feeding guilds. ASLO Ocean Sciences Meeting. Online Presentation.
13. **Woodstock, M.S.** (2021). SciComm beyond LOREX: How an international research program inspired future science communication efforts. ASLO Aquatic Sciences Meeting. Online Presentation.
12. **Woodstock, M.S.**, T.T. Sutton, T. Frank, Y. Zhang. (2021). Assessing trophic structure dynamics in ecosystem models using the offshore Gulf of Mexico as an example. ASLO Aquatic Sciences Meeting. Online Presentation.
11. **Woodstock, M.S.**, J.J. Kiszka, P.G.H. Evans, J.J. Waggitt, Y. Zhang. (2021). Debunking Misconceptions: Marine mammals and seabirds have limited impacts on fisheries catches in the North Sea. Florida International University Biosymposium. Online Presentation.
10. **Woodstock, M.S.**, T.T. Sutton, T. Frank, Y. Zhang. (2020). Assessing trophic structure dynamics in ecosystem models using the offshore Gulf of Mexico as an example. American Fisheries Society Annual Meeting. Online Presentation.
9. **Woodstock, M.S.**, T.T. Sutton, T. Frank, Y. Zhang. (2020). An early warning sign: trophic structure changes in the oceanic Gulf of Mexico from 2011–2018. Deep Sea Biology Society Meeting. Online Presentation.
8. Chua, E., E. Knotts, K. Wilkins, **M.S. Woodstock**, A.R. Marín. (2020). Limnology and Oceanography Research Exchange (LOREX). European Geosciences Union Meeting. Online Presentation.
7. **Woodstock, M.S.** (2020). Take a hike: creating a positive work-life balance through excursions. Ocean Sciences Meeting. San Diego, CA.
6. **Woodstock, M.S.**, B. Wang, K. Fennel, T.T. Sutton, Y. Zhang. (2020). Ecological importance of mesopelagic fishes in the oceanic Gulf of Mexico. Florida International University Biosymposium. North Miami, FL.
5. Quiquempois, V., **M.S. Woodstock**, Y. Zhang, M. Heithaus, J. Kiszka. (2019). The top-down effects of cetaceans in the Gulf of Mexico: Who are the key players? World Marine Mammal Conference. Barcelona, Spain.

4. **Woodstock, M.S.** (2019). Food web model of the oceanic Gulf of Mexico. Florida International University Biosymposium. North Miami, FL.
3. **Woodstock, M.S.**, C.A. Blanar, T.T. Sutton. (2018). Trophic ecology and parasitism of a mesopelagic fish assemblage. Nova Southeastern University Biosymposium. Dania Beach, FL.
2. **Woodstock, M.S.**, C.A. Blanar, T.T. Sutton. (2017). An examination of the parasites and trophic ecology of mesopelagic fishes. American Fisheries Society Annual Meeting. Tampa, FL.
1. **Woodstock, M.S.**, C.A. Blanar, T.T. Sutton (2017). An examination of the parasites and trophic ecology of mesopelagic fishes. American Society of Ichthyologists and Herpetologists Annual Meeting. Austin, TX.

INVITED TALKS AND GUEST LECTURES

- 2023 **Chesapeake Bay Fisheries Goal Implementation Team Bi-annual Meeting**, Annapolis, MD
Title: The economic impacts of living habitat changes in the Virginia Middle Peninsula.
- Biodiversity, Ecology, and Biological Carbon Pump in the Twilight Zone**. Woods Hole, MA
Title: Food-web modeling in the mesopelagic zone: Lessons learned in the Gulf of Mexico
- Morgan State University Summer Internship Program**. Saint Leonard, MD.
Title: Ecological modeling: discovering the world through computers.
- 2022 **Nova Southeastern University Undergraduate Marine Ecosystems Course**, Dania Beach, FL
Title: Parasites in the deep ocean
- 2020 **University of South Carolina Undergraduate Oceanography Course**, Remote.
Title: Life aboard an oceanographic research vessel

POSTER PRESENTATIONS (“*” DENOTES ADVISED AND CO-ADVISED STUDENTS)

16. Hoyt, E.E.*, **M.S. Woodstock**, P. Piavis, D. Sanderson-Kilchenstein, T. Ihde. (2023). An exploration of natural mortality and maximum age for Chesapeake Bay fishes. American Fisheries Society National Meeting. Grand Rapids, MI.
15. Bevans, A.T.*., M. Sulyman*, **M.S. Woodstock**, S. Knoche, T. Ihde. (2023). Improving Our Understanding of Habitat Changes in the Chesapeake Bay with a York River Ecosystem Model. York River Science Symposium. Gloucester, VA.
14. Sulyman, M.*., A.T. Bevans*, **M.S. Woodstock**, S. Knoche, T. Ihde. (2023). Virginia’s Middle Peninsula Habitat Focus Area: The Economic Impacts of Resource Restoration and Habitat Change. Morgan State University Spring Into Research Graduate Symposium. Baltimore, MD.
13. Hoyt, E.E.*., **M.S. Woodstock**, T.F. Ihde. (2023). An exploration of age and growth estimates for fishes in the Chesapeake Bay. American Fisheries Society Tidewater Chapter Meeting. Solomon’s Island, MD.
12. Bevans, A.T.*., M. Sulyman*, **M.S. Woodstock**, S. Knoche, T.F. Ihde. Improving our understanding of habitat changes in the Chesapeake Bay with a York River ecosystem model. American Fisheries Society Tidewater Chapter Meeting. Solomon’s Island, MD.
11. Hoyt, E.E.*., **M.S. Woodstock**, T.F. Ihde. (2022). A case for tributary-specific age/growth estimates for fishes in the Chesapeake Bay. Southern Maryland Marine Science Symposium. St. Mary’s, MD.
10. A.T. Bevans*, Sulyman, M.*., **M.S. Woodstock**, S. Knoche, T.F. Ihde. (2022). Virginia’s Middle Peninsula Habitat Focus Area: the Economic Impacts of Resource Restoration and Habitat Change. Southern Maryland Marine Science Symposium. St. Mary’s, MD.
9. Hoyt, E.E.*., **M.S. Woodstock**, T.F. Ihde. (2022). A case for tributary-specific age/growth estimates for fishes in the Chesapeake Bay. Chesapeake Watershed Forum. Shepherdstown, WV.
8. Sulyman, M.*., A.T. Bevans*, **M.S. Woodstock**, S. Knoche, T.F. Ihde. (2022). Virginia’s Middle Peninsula Habitat Focus Area: the Economic Impacts of Resource Restoration and Habitat Change. Chesapeake Watershed Forum. Shepherdstown, WV.
7. **Woodstock, M.S.**, J.J. Kizka, P.G.H. Evans, J.J. Waggett, Y. Zhang. (2022). Debunking misconceptions: rising marine mammal abundances have little impact on fisheries in the

- southern North Sea. 24th Biennial Conference on the Biology of Marine Mammals. Palm Beach, FL.
6. Sutton, T.T., A.B. Cook, K.M. Boswell, H.D. Bracken-Grissom, R. Eytan, D. Fenolio, T. Frank, D. Hahn, M.W. Johnston, H. Judkins, R.J. Milligan, J. Moore, J. Quinlan, T. Richards, I.C. Romero, M. Shivji, A. Bernard, M. Vecchione, **M.S. Woodstock**, Y. Zhang. (2022). Sustained observation of the deep-pelagic Gulf of Mexico: the DEEPEND|RESTORE program. ASLO Ocean Sciences Meeting. Online Presentation.
 5. **Woodstock, M.S.**, T.T. Sutton, T. Frank, Y. Zhang. (2021). Ecosystem modeling in the oceanic zone: A Gulf of Mexico case study. 16th Deep Sea Biology Symposium. Brest, France.
 4. **Woodstock, M.S.**, B. Wang, K. Fennel, T.T. Sutton, Y. Zhang (2020). A comparison of two ecosystem models of the oceanic Gulf of Mexico. Ocean Sciences Meeting. San Diego, CA.
 3. **Woodstock, M.S.**, C.A. Blanar, T.T. Sutton. (2018). On parasitism in mesopelagic fishes as a function of trophic ecology and vertical distribution. Deep Sea Biological Society Meeting. Monterey Bay, CA.
 2. **Woodstock, M.S.**, T.T. Sutton, C.A. Blanar. (2018). Trophic ecology and parasitism of a deep-pelagic fish assemblage. American Society of Parasitologists Annual Meeting. Cancun, Mexico.
 1. **Woodstock, M.S.**, C.A. Blanar, T.T. Sutton. (2017). Variations in the parasite fauna and gut contents of vertically migrating and non-migrating mesopelagic fishes of the northern Gulf of Mexico. Gulf of Mexico Oil Spill and Ecosystem Science Conference. New Orleans, LA

FUNDING AWARDED (CUMULATIVE: \$159,850)

- 2023 Woods Hole Oceanographic Institution Postdoctoral Scholarship (\$125,000)
- 2022 FIU Provost Employer Supported Tuition Fellowship (\$3,000)
- 2021 FIU Coastlines and Oceans Division Travel Award (\$500)
FIU Biosymposium 2nd Best Oral Presentation (\$50)
- 2020 AFS Florida Chapter Student Subunit Travel Award (\$100)
- 2019 FIU College of Arts and Sciences Travel Award (\$300)
FIU Professional Development Grant (\$300)
- 2017 NSU Professional Development Grant (\$600)
- 2016 NSU Oceanographic Center Fishing Tournament Scholarship (\$30,000)

PROPOSED FUNDING NOT AWARDED (CUMULATIVE: \$844,997)

- 2023 *NOFO:* NOAA-Saltonstall Kennedy Grant
Title: Identifying Stakeholder-Preferred, Jurisdiction-Specific Harvest Strategies for Invasive Blue Catfish in Chesapeake Bay Tributaries
Role: Co-Principal Investigator/Postdoctoral Researcher
Amount: \$299,997
Status: Not Awarded

NOFO: NSF Ocean Sciences Postdoctoral Fellowship
Title: Investigating the Impacts of Climate Change on Three Ecologically Distinct Ecosystems
Role: Principal Investigator/Postdoctoral Researcher
Amount: \$225,000
Status: Withdrawn for another opportunity
- 2021 *NOFO:* NOAA-Seagrant Population and Ecosystem Dynamics Fellowship
Title: Ecosystem modeling in the oceanic Gulf of Mexico
Role: Principal Investigator/Graduate Student
Amount: \$160,000
Status: Not Awarded
- 2020 *NOFO:* NOAA-Seagrant Population and Ecosystem Dynamics Fellowship

Title: Population dynamic modeling in the oceanic Gulf of Mexico with an ecosystem model

Role: Principal Investigator/Graduate Student

Amount: \$160,000

Status: Not Awarded

TEACHING EXPERIENCE

2022 General Biology II Lab: Ecology, Systematics, and Evolution – Florida International University

- *Role:* Main Lab Instructor

- *Major Responsibilities:* Taught introductory information about 1) ecosystems, 2) the classification and diversity of bacteria, archaea, and eukaryotes, and 3) field sampling designs. Taught lessons in R statistical analysis software. Led an on-water field sampling excursion. Mentored student-led field experiments with data analysis and presentation components.

2020 Human Biology Lab – Florida International University

- *Role:* Main Lab Instructor

- *Major Responsibilities:* Taught online (at home) lab exercises focused on the different systems in the human body.

2018 General Biology I Lab: General Biological Processes – Florida International University

- *Role:* Teaching Assistant / Main Lab Instructor

- *Major Responsibilities:* Taught introductory information about 1) biochemical processes, 2) mitosis/meiosis, and 3) population genetics, among others.

2017 Graduate Ichthyology – Nova Southeastern University

- *Role:* Teaching Assistant

- *Major Responsibilities:* Set up for lab exercises and took a record of the current NSU fish collection.

LEADERSHIP EXPERIENCE AND COMMUNITY SERVICE (* = ONGOING, [#] = MULTIPLE YEARS OF SERVICE)

2023 JETZON Biological Carbon Pump Working Group Member*

JETZON Early Career Researcher Working Group Member*

American Fisheries Society National Meeting Session Organizer

2021 Deep-Ocean Stewardship Initiative (DOSI) Open-Access Task Force

FIU Graduate Student Mentor

FIU Biosymposium Organizing Committee

American Fisheries Society (AFS) Hutton Scholarship Application Committee [3]*

2020 DOSI Fisheries Working Group Member*

FIU Biology Graduate Student Committee Officer

American Fisheries Society Florida Student Subunit Chapter Officer

BC Alumni Mentoring Network

2019 FIU Marine Science Seminar Series Organizing Committee

2016 NSU Graduate Student Mentor [2]

2012 Alpha Zeta Chapter of Sigma Chi [4]

BC Varsity Baseball Team [4]

DISSERTATION AND THESIS COMMITTEE APPOINTMENTS

Muhammad Sulyman (Present)

Role: PhD Committee Member

Thesis Title: The Ecological and Regional Economic Impacts of Oyster Restoration and Eelgrass Die-off in the Piankatank River, Virginia

SERVICE AS A REVIEWER (# REVIEWS)

Ecological Modelling (2); Journal of Plankton Research (1); Journal of Fish Biology (1); Ocean Sustainability (1); Estuaries and Coasts (1); Journal of Zoology (1)

SEAGOING EXPERIENCE (CUMULATIVE DAYS AT SEA: 37)

2021 DEEPEND-RESTORE; PI: Tracey Sutton

- *Main Responsibilities:* Monitored acoustic equipment, led gear deployments

2019 Ichthyology Workshop; PI: Joel Trexler

- *Main Responsibilities:* Led gear deployments, identified mesopelagic fishes and crustaceans

2017 DEEPEND; PI: Tracey Sutton

- *Main Responsibilities:* Processed and organized samples for various projects (DNA, biochemistry, parasites, stable isotopes)

PROFESSIONAL SOCIETIES (PAST AND PRESENT)

Association for the Sciences of Limnology and Oceanography (ASLO), American Fisheries Society (AFS), American Institute for Fisheries and Research Biologists (AIFRB), American Society of Ichthyologists and Herpetologists (ASIH), Deep Sea Biological Society (DSBS), Society for Marine Mammalogy (SMM)