

Francis McQuarrie Jr.

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EDUCATION

2019-2025 Ph.D. in Engineering, College of Engineering, University of Georgia
2011-2016 B.S. in Biological Oceanography, Department of Marine and Coastal Science, Rutgers University

PROFESSIONAL EXPERIENCE

2025-present Postdoctoral Fellow, Department of Marine and Coastal Science, Rutgers University
2023-2025 Underwater Glider Pilot Supervisor, Skidaway Institute of Oceanography, University of Georgia
2022-2025 Underwater Glider Field Team Lead, Skidaway Institute of Oceanography, University of Georgia
2019-2020 Curriculum Development & Instructor, Duke TIPS Program, University of Georgia
2019-2022 Underwater Glider Pilot & Technician, Skidaway Institute of Oceanography, University of Georgia
2018-2019 Environmental Science Instructor, Christodora, New York City, New York
2017-2018 Antarctic Oceanographer, Palmer Station LTER, Rutgers University
2016-2017 Marine Science Instructor, Catalina Island Marine Institute, California
2013-2014 Antarctic Oceanographer, Palmer Station LTER, Rutgers University
2014-2016 IT Residential Networking Specialist, Office of Information Technology, Rutgers University
2013-2014 IT Computer Consultant, Office of Information Technology, Rutgers University

PUBLICATIONS

Peer-reviewed Publications

McQuarrie, F., Jr., Woodson, C. B., & Edwards, C. R. (2025). Modeling Transmission Detectability on a Coastal Reef with Significant Interference. Under Review in Animal Biotelemetry Sep. 2025, Github: Complex Env. Acoustic Modeling
McQuarrie, F., Jr., Woodson, C. B., & Edwards, C. R. (2025). A Reef's High-Frequency Soundscape and the Effect on Telemetry Efforts: A Biotic and Abiotic Balance. Journal of Marine Science and Engineering, 13(3), 517. <https://doi.org/10.3390/jmse13030517>

Conference Proceedings (denotes peer-review)*

McQuarrie, F., Jr., & Woodson, C. B. & Edwards, C. R. (2023). Analyzing Tidal, Diurnal, Synoptic, and Seasonal Drivers of Acoustic Telemetry Efficiency on a Coastal Reef. MTS Oceans Conference Proceedings, 1-8. 10.23919/OCEANS52994.2023.10337065.
*McQuarrie, F., Jr., Woodson, C.B.; Edwards, C. (2021). Modeling Acoustic Telemetry Detection Ranges in a Shallow Coastal Environment. 15th ACM International Conference on Underwater Networks and Systems. <https://doi.org/10.1145/3491315.3491331>.
Kondrakunta, S., Gogineni, V.R., Cox, M.T., Coleman, D., Tan, X., Lin, T., Hou, M., Zhang, F., McQuarrie, F. and Edwards, C.R. (2021). The Rational Selection of Goal Operations and the Integration of Search Strategies with Goal-Driven Autonomy. Proceedings of the Ninth Annual Conference on Advances in Cognitive Systems. <https://doi.org/10.48550/arXiv.2201.08883>

PRESENTATIONS

Invited Speaker

McQuarrie, F. (2025) "Variable Telemetry Efficiency and Ranges in Noisy Coastal Environments", Georgia Department of Natural Resources Seminar
McQuarrie, F. (2023) "Informing Fisheries and Conservation Efforts Using Active Acoustic Telemetry" Fort Johnson Marine Science Seminar

Conferences & Symposiums

McQuarrie, F. (2025) "A Reef's High-Frequency Soundscape and the Effect on Telemetry Efforts: a Biotic and Abiotic Balance", Florida Acoustic Telemetry (FACT) Network Annual Meeting

McQuarrie, F. (2024) “Wind’s Effect on Telemetry Efforts: a Biotic and Abiotic Balance”, Gray’s Reef National Marine Sanctuary Research Symposium

McQuarrie, F., Woodson, C., Edwards, C. (2024) “Quantifying the Predictable Effect of Physical Processes on a Coastal Reef’s Acoustic Environment”, Ocean Sciences Meeting

McQuarrie, F. (2023) “Physical Processes Changing Effective Detection Range”, Gray’s Reef National Marine Sanctuary Research Symposium

McQuarrie, F., Woodson, C., Edwards, C. (2023) “Analyzing Tidal, Diurnal, Synoptic, and Seasonal Drivers of Acoustic Telemetry Efficiency on a Coastal Reef”, Marine Technology Society Annual Conference

McQuarrie, F., Woodson, C., Edwards, C. (2022) “Modeling Detection Ranges using Environmental Context”, Florida Acoustic Telemetry (FACT) Network Annual Meeting

McQuarrie, F. (2021) “Acoustic Coverage Without the Guitar: Using AUVs to Quantify Marine Protected Area Effectiveness”, Georgia Chapter of the American Fisheries Society

McQuarrie, F. (2020) “Modeling High-Frequency Transmissions in Shallow Ocean Environments” University of Georgia Marine Science Department Student Symposium

McQuarrie, F., Yen, J. (2015) “Modeling Copepod Escape Mechanisms Using High-Speed Image Capture” Georgia Tech REU Student Presentation

Webinars

McQuarrie, F. (2025) “Modeling the High-Frequency Soundscape Using Glider Data”, Underwater Glider User Group (UG2) Early Career Research Panel

McQuarrie, F. (2022) “Acoustic Telemetry File Processing”, Southeast Coastal Ocean Observing Regional Association

AWARDS & HONORS

2025 Florida Acoustic Telemetry Network (FACT) Conference – Student Presentation Award

2022 Florida Acoustic Telemetry Network (FACT) Conference – Student Presentation Award

2022 Teledyne Marine Photo Contest – Grand Prize Winner

2021 Georgia Chapter of the American Fisheries Society Meeting – Outstanding Presentation Award

2020 University of Georgia Marine Science Student Symposium – Best Student Presentation Award

2016 Delta Upsilon Annual Meeting – 2nd place, Distinguished Undergraduate

2016 Rutgers Office of Informational Technologies – Consultant of the Semester

2015 Georgia Tech Research Experience for Undergraduates - Recipient

2015 Rutgers Office of Informational Technologies – Employee of the Month (Mar.)

2015 Rutgers Office of Informational Technologies – Customer Service Appreciation Award

2014 Rutgers Office of Informational Technologies – Customer Service Appreciation Award

2013 Rutgers Office of Informational Technologies – Employee of the Month (Sept.)

CERTIFICATIONS

2025 University of Georgia – Coastal & Oceanographic Engineering Certificate

2021-2024 American Academy of Underwater Sciences (AAUS) – Scientific Scuba Diver

2017 National Association of Underwater Instructors (NAUI) – Master Scuba Diver

2016 National Association of Underwater Instructors (NAUI) – Rescue Scuba Diver

2016 National Association of Underwater Instructors (NAUI) – Advanced Scuba Diver

2015 Professional Association of Underwater Divers (PADI) – Open Water Scuba Diver

TEACHING AND MENTORING EXPERIENCE

2023-2025 Undergraduate Research Mentor – Aidan Gray, Anna Wu, Brady Olson

2023, 2024 Senior Capstone Design Project – Senior Mentor, top prize winners at UGA Entrepreneurship Program’s Venture \$10,000 prize

2021, 2022 “Hydrology Lab” – Teaching Assistant, Lab Supervisor & Developer

2021, 2022 “Physical Oceanography” – Teaching Assistant

2019 “Fluid Mechanics” – Teaching Assistant

COMMUNITY OUTREACH

2021, 2024, 2025 Marine Advanced Technology (MATE) R.O.V. Regional Competition – Engineering Judge

2024 Skidaway Marine Science Day – Public Engagement Presenter

2023 Boy Scouts Advancarama – Marine Science Instructor, Oceanography Merit Badge
2023 Athens Science Café – Invited Speaker, “I Pilot and I Model: Oceanography as a Career”
2022 Dacula Library Science Outreach – Marine Scientist on Oceanography and Reefs
2022 Regeneron International Science and Engineering Fair – Grand Award Judge, Environment & Life Sciences

STUDENT LEADERSHIP

2023 UGA Marine Science Student Symposium – Lead Organizer
2022-2023 UGA Graduate Student Association – Departmental Representative
2021-2023 UGA Marine Science Graduate Student Association – President
2020-2021 UGA Marine Science Graduate Student Association – Vice President
2015-2016 Rutgers Delta Upsilon – Undergraduate Advisory Board Northeast Representative
2013-2016 Rutgers Judo Team – Vice President
2013-2016 Rutgers Alpha Zeta Honors Fraternity – Member
2012-2013 Rutgers Delta Upsilon – Vice President

MEDIA

2014 HBO Vice’s “Our Rising Oceans” episode