

Curriculum Vitae
John A. Madsen, Associate Professor and Chairperson
Department of Earth Sciences, College of Earth, Ocean and Environment,
University of Delaware, jmadsen@udel.edu, 302-831-1608

Education:

Ph.D., Oceanography, University of Rhode Island, Graduate School of Oceanography, 1988
B.S. with distinction, Geology, Iowa State University, 1981

Experience:

Chairperson, Department of Earth Sciences, 2022-present
Interim Chairperson, Department of Earth Sciences, 2019-2022
Associate Professor of Geology (with tenure), University of Delaware, 1994-Present
Associate Director for Education Programs, Center for Research in Wind (CRew),
University of Delaware 2013-Present
Adjunct Scientist, Woods Hole Oceanographic Institution, 1999-2001
Summer Guest Investigator, Woods Hole Oceanographic Institution, 1996 –1998
Senior Lecturer (Temporary), Department of Geology, University of Papua New Guinea, 1992
Assistant Professor of Geology, University of Delaware, 1988–1994

Teaching Interests:

Have taught introductory-level courses in geology, earth science and environmental science; upper-level undergraduate courses in structural geology and plate tectonics and a senior seminar (intensive writing course) in petroleum geology and energy; graduate and upper-level undergraduate courses in environmental and applied geology, geophysics, geological aspects of offshore wind, and science education.

Courses Taught (Within Past 5 Years)

GEOL107 – General Geology – introductory-level physical geology course (enrollment ~300)
GEOL305 – Structural Geology & Plate Tectonics – upper-level undergraduate course primarily for geology majors (enrollment ~15)
GEOL401 – Senior Seminar – upper-level undergraduate course for geology majors, intensive writing course, course topic: energy, petroleum geology, including unconventional oil & gas (fracking) (enrollment ~15)
GEOL421/621 – Environmental & Applied Geology – graduate and upper-level undergraduate course primarily intended for geology majors, course topics include climate change and global sea-level rise, water resources and contamination, mineral resources (enrollment ~20)
GEOL453/653 – Elementary Geophysics I - graduate and upper-level undergraduate course primarily intended for geology majors, course topics include gravity, geodesy (including GPS), magnetics, high-resolution acoustic methods (e.g., side-scan sonar, chirp sub-bottom profiling) (enrollment ~15)
GEOL663 – Geological Aspects of Offshore Wind - graduate and upper-level undergraduate course primarily intended for graduate students studying wind power and geology majors, course topics include geological evolution of continental margins, geotechnical properties of continental marine sediments, structural properties of offshore foundations (enrollment ~15)
ARSC390/HONR292 – Honors Colloquium – intensive writing course for freshmen students in the honors program, course topics included geological and societal implications of blood diamonds, mineral resources of Afghanistan, and unconventional oil & gas (fracking) (enrollment ~20)

UNIV101 First-Year Experience – seminar course for first semester freshmen, course topics include introduction to university-life and discussion focused around a common reading book (enrollment ~25)

K-12 Earth Science Curriculum Support

Co-Designer of 9th Grade Earth Systems Curriculum Unit for Delaware Department of Education's Science Coalition. Have offered training of unit to 9th Grade Teachers in the State of Delaware that have implemented the curriculum.

Consultant Instructor in Earth History for Delaware Middle School (6th Grade) Science Teachers for Delaware Department of Education's Science Coalition

Graduate Student Advisement

Currently academic advisor for 3 MS graduate students (Ophelia Christoph, Catherine Hughes, Elizabeth Rodenbach)

Total number of graduate students advised and post-doctoral scholars sponsored: 25

Research Interests:

Areas of Focus: High-Resolution Geophysical Acoustic Applications to Fisheries; Geological Aspects of Offshore Wind Projects;

Funded Research (Within Past 5 Years)

Principal Investigator – Refining Side-Scan Sonar as a Tool to Support the Management of Invasive Carp; Funding Agency United States Geological Survey, 10/1/21- 9/30/23

Co-Principal Investigator with Ed Hale University of Delaware and Dewayne Fox, Delaware State University – Using a multifaceted approach to conserve and recover the Delaware Watershed's most imperiled aquatic organism: the Atlantic Sturgeon; Funding Agency National Fish and Wildlife Foundation, 1/1/21-12/31/22

Co-Principal Investigator with Patrick Sullivan Cornell University, Dewayne Fox, Delaware State University and David Kazyak, United States Geological Survey – Developing a Novel Methodology to Estimate Shortnose Sturgeon Abundance Utilizing Acoustic Telemetry and Side-Scan Sonar Imagery, Funding Agency: Hudson River Foundation, 6/1/19 – 5/31/23

Principal Investigator with Dewayne Fox, Delaware State University – Port of Albany-Rensselaer Sturgeon Monitoring Project, 3/1/21-4/30/21

Co-Principal Investigator with Dewayne Fox, Delaware State University - Examination of Post-deepening Modifications in Delaware River Bottom Sediments in Areas of Core Sturgeon Occupancy; Funding Agency: National Fish and Wildlife Foundation, 2/1/20-7/31/21

Co-Principal Investigator with Dewayne Fox, Delaware State University and Stephanie Smedbol, VEMCO, Inc. - Field Trials on Application of Integrated Methodology of Acoustic Telemetry and High-Resolution Side-Scan Sonar for Sturgeon Studies in the Rioni River, Georgia, Funding Agency (for travel expenses): World Wildlife Fund, Caucasus Region, 3/1/18–8/31/18

Principal Investigator with Dewayne Fox, Delaware State University – Conservation and Recovery of Atlantic Sturgeons in the Delaware River Estuary; Funding Agency Delaware Sea Grant, 2/1/18-1/31/20

Co-Principal Investigator with Dewayne Fox, Delaware State University – Characterization of Atlantic Sturgeon Spawning and Early Life History Requirements in the Hudson River Hyde Park Reach; Funding Agency: Hudson River Foundation, 5/1/17 – 4/30/19

Co-Principal Investigator with Dewayne Fox, Delaware State University - Hydroacoustic assessment of anchor scarring in Atlantic Sturgeon staging/spawning areas of the Hudson River; Funding Agency: National Oceanic & Atmospheric Administration, National Marine Fisheries Service, Department of Commerce (GARFO) , 4/1/17-3/31/18

Co-Principal Investigator with Bonnie Ram, Center for Carbon-free Power Integration, University of Delaware - Delaware EPSCoR: Meeting Delaware's 21st Century Water and Energy Challenges through Research, Education, and Innovation; Theme 4: Innovations in Renewable Energy; Funding Agency: National Science Foundation, 2/1/13-1/31/17.

Selected Publications and Abstracts of Presentations (Within Past 5 Years)

- Kazyak D. C., A. M. Flowers, N. J. Hostetter, J. A. Madsen, M. W. Breece, A. Higgs, L. M. Brown, J. A. Royle, D. A. Fox. 2020. Integrating side-scan sonar and acoustic telemetry to estimate the annual spawning run size of Atlantic sturgeon in the Hudson River. *Canadian Journal of Fisheries and Aquatic Sciences*. 0:1-11.
- Fox, D.A., Sweka, J., Madsen, J., Hale, E., Higgs, A., Breece, M., DiJohnson, A., 2019, Sturgeon Soup; Balancing the Needs for Sturgeon Conservation and Industrial Users in the New York Bight 2019 Joint AFS-TWS Meeting in Reno, NV, Sunday, September 29, 2019-Thursday, October 3, 2019
- Fox, D.A. and Madsen, J.A., 2017, Potential Impacts of Commercial Shipping Anchoring on Atlantic Sturgeon Critical Habitats, 8th International Symposium on Sturgeons, September 10-16, Vienna, Austria
- Firestone, J.F., Burt, M., Madsen, J.A., Veron, D.E., and Bowers, R., 2017, Tall Towers, Long Blades and Manifest Destiny: The Migration of Land-based Wind from the Great Plains to the Thirteen Colonies, *Applied Energy*, 206C, 487-497, DOI: 10.1016/j.apenergy.2017.08.178
- Madsen, J.A., Fox, D.A., and Higgs, A.L., 2017, Hudson River Bottom Disturbances Due to Commercial Vessel Anchoring: Implications for Submerged Electric-Power Transmission Cables, *Hudson River Environmental Society*, 2017 Hudson River Symposium, May 3, New Paltz, NY
- Kazyak, D.C., Fox, D.A., Madsen, J.A., Comer, A.M., Breece, M.W., Higgs, A.L., and Brown, L.M., 2017, Integrating side-scan sonar and acoustic telemetry to estimate the annual spawning run size of Atlantic Sturgeon in the Hudson River, *American Fisheries Society 147th Annual Meeting*, August 20-24, Tampa, FL
- Madsen, J., Ram, B., Firestone, J., and Veron, D., 2017, Preparing University Students for Professional Careers in the Wind Industry: An Innovative Convergence Model for Education, *North American Wind Energy Academy (NAWEA)*, NAWEA 2017 Symposium, September 26-29, Ames, IA
- Higgs, A., Kenney, G., Ladd, J., Fox, D., and Madsen, J., 2017, Identification of Atlantic Sturgeon spawning habitat in the Hudson River, *New York Chapter American Fisheries Society Meeting*, February 1-3, Buffalo, NY.

Service Activities (Within Past 5 Years):

University of Delaware:

- Member, University Faculty Senate Rules Committee
- Member and Chairperson, University Faculty Senate Faculty Welfare and Privileges Committee
- Member, Environmental Sciences and Studies Advisory Committee
- Member, Department Promotion and Tenure Committee
- Member, College of Earth, Ocean and Environment Promotion and Tenure Committee
- Associate Director of Education, Center for Research in Wind (CRew)

Current or Recent Professional Activities or Assignments:

- Reviewer for manuscripts submitted to *Ocean and Coastal Management* journal
- Reviewer of *Plate Tectonics* Textbook for Cambridge University Press
- Reviewer of *Physical Geology Today* Textbook for Oxford University Press