

## E. Broderick

### Emily M Broderick

Biology/Marine Science Instructor  
Marine Biologist MSc

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#### EDUCATION

- 2008 – 2012 Florida International University, Miami, FL. Biology PhD Student
- 2006 – 2008 American University, Washington, DC. Biology MSc.  
Thesis Title “*Environmental effects on mucus microbial – coral – pathogen interactions*”
- 2002 – 2005 University of the Virgin Islands, Marine Biology, B.S., Cum Laude.

#### Teaching experience

- 2018 – present Full time Tenure Tract Biology and Marine Science Instructor. Teaching General Biology and Marine Science lectures and labs for non-majors and majors. Including Intro to Biological Sciences and Biology and Marine Science parts one and two from molecular and cellular to organismal, evolutionary, and ecosystems biology. Develop place-based course curricula, maintain currency, and prepare lecture and laboratory activities with online enhanced / hybrid design, practical exams, term papers, and field excursions. Kauai Community College, Kauai, HI.
- 2016 – 2018 Full time Tenure Tract Biology Instructor. Teaching General Biology for non-majors and majors. Including Natural History of Plants and Animals an introductory ecology and environmental science course and major’s level courses of Cellular and Molecular Biology and Principles of Evolutionary, Organismal, and Ecological Biology. Lassen Community College, Susanville, CA.
- 2013 – 2016 Full time (temporary) and Adjunct Biology Instructor. Taught an overload (24 contact hrs) Spring 2015. Taught General Biology, Human Biology, and Environmental Science courses. Developed course curriculum with online enhanced / hybrid design and prepared lectures and lab activities, including weekly quizzes, exams, term papers, lab practicals, and field trips for environmental science, pre-Nursing health professionals and non-majors and majors in biology. Yavapai Community College, Prescott, AZ.
- Spring 2016 Italian for Beginners instructor. Taught introductory Italian phraseology as well as parts of speech for the traveler and the most basic beginner for community education. Including role-play and field excursions to restaurants and vineyards. Yavapai Community College, Prescott, AZ.
- 2008 – 2012 Biology Laboratory Instructor. Taught Marine Biology, Microbiology, Mammalian Cellular Biology, and General Biology Lab courses for pre-med, marine bio and biology students. Developed curriculum, ran field excursions, and practical lab activities. Ordered materials, taught dissections, microbiological and cell assays with formal lab reports, presentations, and lectures. Florida International University. Miami.
- 2006 – 2008 Biology Laboratory Instructor. Taught General Biology Lab courses. Prepared lab activities and lectures, with formal lab reports and presentations. Instructed on topics from basic nomenclature and molecular sequencing to conservation ecology. American University. Washington, DC.
- Spring 2005 Oceanography Lab Assistant. Assisted with Oceanography labs at the University of the Virgin Islands. US. Virgin Islands.
- 2004 – 2005 Educational Assistant. Led student groups on coastal habitat and mangrove ecosystem tours on St. Thomas, V.I.
- 2003 – 2005 On Board Biologist. Responsible for regular snorkel tours of coral reef for tourists. Great St. James Marine park reserve, V.I.

- 2003 – 2005 Teaching Assistant. Science Enrichment Academy for middle and high school students, University of the Virgin Islands.
- 2001 – 2005 Environmental Educator. Organized and presented educational talks for local students on the importance of mangrove, seagrass, and coral reef habitats. St. John & St. Thomas, V.I.

### Relevant Experience

Extensive Wet and Dry lab experience

Manipulative experiments on algal and coral dynamics, coral disease, seagrass, and fish studies using varying ex-situ mesocosms and in-situ experimental designs including grazer exclusions and transect methods.

SCUBA: AAUS research and rescue diver, NAUI and PADI advanced certifications.

Motor Boat Operator Crew Chief Certification. US Coast Guard.

Underwater videography and photography.

Experience with data logger programming, GPS/GIS and CTD software and equipment.

Field, lab, and community outreach research for coral reef assessment and management for a Coral Reef Management Course (NOAA). Six-week graduate course at University of Guam. Guam, Marianas Islands

Organized and lead student groups for field studies on flora and fauna in California, Arizona, Caribbean, and Pacific with focus on local species, forest, algal, coral, and estuarial ecology including identification of environmental parameters, species abundance, and community dynamics. Focus on human/natural world interactions and impacts.

Species identification of Pacific, Atlantic, and Caribbean, terrestrial, coastal and marine species with additional knowledge of Sierra Nevada, the high desert, and Mediterranean species.

Dissections of vertebrates and invertebrates.

DNA isolation and extraction.

Molecular experiments including, mass spectrometry, PCR, gene amplification, sequencing, denaturing gel electrophoresis (DGGE).

Microbial culture, dependent and independent methodologies.

Mammalian cell culture and experimentation.

ELISA analysis

Elemental nutrient tissue analysis of algal (calcareous and non) and seagrass.

Science Education Partnership and Assessment Lab / Community College Biology Faculty Enhancement through Scientific Teaching (SEPAL/CCB Fest) at San Francisco State University July 31-Aug 2<sup>nd</sup>, 2017. An intensive summer institute focused on developing active teaching methods in the biological sciences with strategies on diversity inclusion and student engagement.

The Instructional Design and Innovation conference in San Jose California for the academic senate for California community colleges March 17 – 18, 2017. Engaged in instructional training workshops on diversity inclusion and classroom flipping.

Open Education Resources (OER) workshop at Lassen College and spent time researching and putting together an OER feasibility plan for my biology courses.

Currently sit on the Institutional Effectiveness Committee. Participated on Human Resource, Flex-Sub committees and familiar with community college systems including Internal Program Reviews and Student Learning Outcome reporting. Lassen Community College District

The Ecology Club faculty advisor, Biology department co-scheduler, and regularly collaborate with colleagues, staff, and administrators in and out of Lassen Community College District.

Media Chair for the Lassen College Faculty Association.

#### Languages

Native English speaker, Fluent in Spanish, and Italian; with some Portuguese and French.

#### Computer

Windows, Microsoft Office, Canvas, Blackboard, Sigma Plot, Arc View, Mat Lab, Populous, SPSS.

#### Publications

L.L. Richardson, A.W. Miller, **E. Broderick**, L. Kaczmarzsky, M. Gantar, D. Stanić and R. Sekar. Sulfide, microcystin, and the etiology of black band disease. *Diseases of Aquatic Organisms* 87, 79-90. 2009.

**E. Broderick**, K. Bushaw-Newton, J. Santangelo, K. Kim. Role of the coral surface microbiota in disease: an *in situ* test using the *Gorgonia-Aspergillus* pathosystem. *Proceedings of the 11th International Coral Reef Symposium* 8, 242-246. 2008.

#### Presentations

What is that Pink Crust? Making the Identification of Crustose Coralline Algae More Tractable. The 35th AMLC Scientific Meeting at Centro de Investigación en Ciencias del Mar y Limnología, Universidad de Costa Rica May, 2011, Costa Rica and at the Southeastern Phycological Colloquy, October, 2011, Florida International University. Miami, FL (poster).

Effects of the cyanotoxin microcystin on bacteria from the microbial mat of black band disease and non-infected corals. Association of Marine Laboratories of the Caribbean Conference. Dominica, West Indies, May 2009 (poster).

Role of surface microbiota in disease: an *in situ test* using the *Gorgonia-Aspergillus* pathosystem 11<sup>th</sup> International Coral Reef Symposium. Ft. Lauderdale, FL. July 2008 (poster).

Environmental effects on mucus microbial – coral – pathogen interactions 18<sup>th</sup> annual Robyn Rafferty Mathias Student Research Conference. Washington, DC. April 2008 (oral).

Assessment of new methods of productivity in the seagrass *Thalassia testudinum* in Sarasota Bay, Fl. Fall research symposium, St. Thomas, V.I. September 2004 and Spring research symposium, St Croix, V.I. March 2005 (poster).

Gauging growth in submerged aquatic vegetation. Summer Research Symposium, Mote Marine Lab, Sarasota, FL. August 2004 (oral).

Monitoring and Assessment of Coral Reefs in Brewer's Bay St. Thomas, V.I., Comparison with MPA's in Guam, Micronesia. HBCU-UP Undergraduate Science and Engineering Conference, Greensbough, NC. February 27-29, 2004. And at Fall and Spring research symposia, St. Thomas, VI. September 2003, St Croix, V.I. March 2004 and the 10th Annual Universidad Metropolitana Undergraduate Conference, Puerto Rico. October 14, 2003 (poster).

Algae and Invertebrates of Brewer's Bay St. Thomas, USVI. 3rd Annual Undergraduate Science and Engineering Conference, Tuskegee, AL. November 22-24, 2002 (poster).

Algae and Invertebrates of Brewer's Bay, St. Thomas, USVI. Emerging Caribbean Scientists oral presentations at summer and fall Research symposiums St. Thomas, V.I. July 2002, September 2002 (oral).

**Awards, academic achievements & grants**

- May 2015 Letter of Recognition from the Yavapai College President for excellence in teaching Biological Sciences.
- May 2011 Ivan Goodbody Student Achievement Award for the best research poster at the 35th AMLC Scientific Meeting in Costa Rica.
- 2008 – 2012 Teaching assistantship. Florida International University.
- Summer 2010 Research assistantship. Florida seagrass ecosystem monitoring.
- 2006 – 2008 Graduate tuition remission, stipend and teaching assistantship. American University.
- 2007 – 2008 Mellon Graduate Research Grant. American University.
- Spring 2007 Sigma XI Graduate Research Grant. Sigma XI
- 2006 – 2007 Helmlinge Graduate Research Grant. American University.
- 2002 – 2005 Emerging Caribbean Scientists Research Student (NSF).
- Summer 2004 Seagrass research in the Coastal Ecology Department at Mote Marine Lab in Florida, Research Experience for Undergraduate (REU, NSF).
- 2002 – 2004 Undergraduate research assistantship (NSF, NIH). University of the Virgin Islands.
- 2004 – 2005 Thurgood Marshall and Economic Development Commission Undergraduate Scholarships. Covered full time tuition for academic year.
- 2003 – 2004 Lorendon Boynes Undergraduate Scholarship. Covered full time tuition.
- 2003 – 2004 University of the Virgin Islands Excellence in Academic Achievement Awards.

**Community outreach**

Work with Kauai Ocean Discovery Center, Malama Na' Apapa, Malama Huleia, and Kauai Forest Bird Recovery Project

Sustainability and Marine Science Table and World Oceans Day

STEM recruitment day at Lassen High School, Susanville, CA

Marine science and environmental issues presentations at the Boys and Girls Club in Prescott Valley, AZ.

Macroalgae in Deering Bay. Community outreach about the ecological role of algae, and engaging them in collection and identification of algal diversity. Deering Bay seafood festival.

Biobliz. National Geographic Society and Biscayne National Park. Algae group scientist..

Biology Graduate Student Organization. Treasurer. FIU, Miami, FL.

International Coastal Clean Up, Miami; 2010, 2009, 2008, St. Thomas, VI; 2001, 2002, & 2003.

Ocean Bowl. Chesapeake Bay Competition. Washington, DC.

Biology and math tutor. Washington, DC. 2006-2008. English as a second language tutor for native Spanish speakers. Madison, WI.

Featured articles in *UVI Magazine* (May 2003) and *St. John Sun Times* (Oct. 2005) about status of V.I. coral reef health and educational talks.

Volunteered at Julius E Sprauve Elementary School, Cruz Bay, St. John, USVI (2000-2001).

**Professional affiliations and memberships**

Community College Association (CCA), California Teachers Association (CTA), and National Education Association (NEA).

The American Association for the Advancement of the Sciences

International Society for Reef Studies

Phycological Society of America

The Association of Marine Laboratories of the Caribbean

Organization for Conservation Biology.