

L.M. ALLEN-JACOBSON

Marine Science Center

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LifeInAColony.com

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L.Allen-Jacobson@northeastern.edu

EDUCATION

Doctor of Philosophy

University of Florida

2018

Biology

Life in a colony: growth, morphology, and metabolic scaling

Master of Science

California State University

2011

Biology

Coral energetics: the response to resource limitation

Bachelor of Science

Northeastern University

2008

in Biochemistry and Biology with a concentration in Marine Science

APPOINTMENTS

2019-2021 Postdoctoral Research Associate

Marine and Environmental Sciences,
Northeastern University, Boston, MA

3D modeling to understand coral growth; classifying zooplankton using Machine Learning; the effect of microplastics on plankton

2019 Temporary Researcher

Agricultural Research Services, USDA, Gainesville, Florida
Fire ant ecology: the effects of colony size on ant communication

2018-2019 Adjunct Professor

Biology, University of Florida, Gainesville, Florida

Marine Biology (ZOO 4403C)

Fundamentals of Marine Science (GLY 3083C)

ADDITIONAL TRAINING

2020-2021 LEADERS Program

Northeastern University, Boston, MA

LEADERS (Leadership Education Advancing Discovery through Embedded Research) is an experiential program that teaches leadership and project management.

2020 Story Circles: ABT Framework Course

By Randy Olson, a scientist turned filmmaker

This 20-week course taught me the principles of effective communication. Each session, the group critically evaluated research pitches given by group members. This repetitive training built a foundation of narrative intuition.

2011-2015 Quantitative Spatial Ecology, Evolution and Environment (QSE3) IGERT, National Science Foundation

University of Florida, Gainesville, Florida

This program included students and faculty from diverse departments, including Biology, Mathematics, Statistics, Geography, and Fisheries. Trainees had mentors from at least two departments, participated in a weekly seminar, and took coursework across disciplines.

2008-2009 Three Seas Program

Northeastern University, Boston, MA

This immersive program, focused on marine ecology and biology, included field-based coursework in Nahant, MA; Mo'orea, French Polynesia; and Catalina Island, CA.

PUBLICATIONS

1. Jacobson, L.M., Edmunds, P.J., Muller, E.B., and R.M. Nisbet. 2016. The implications of reduced metabolic rate in a resource-limited coral. *J Exp. Biol.* 219: 870-877. DOI: 10.1242/jeb.136044
2. Edmunds, P.J., Adjeroud, M., Baskett, M., Baum, J., Baums, I., Budd, A., Carpenter, R.C., Fabina, N., Fan, T.-Y., Franklin, E., Gross, K., Han, S., Jacobson, L.M., McClanahan, T., O'Leary, J., van Oppen, M.J.H., Pochon, X., Putnam, H.M., Smith, T.B., Stat, M., Sweatman, H., van Woesik, R., and R.D. Gates. 2014. Persistence and change in community composition of reef corals through present, past, and future climates. *PLoS ONE* 9(10): e107525. DOI: 10.1371/journal.pone.0107525
3. Jacobson, L.M. and P.J. Edmunds. 2010. Long-term changes in the concentration of zooplankton and particulate matter over a fringing reef in St. John, US Virgin Islands. *Bulletin of Marine Sciences* 86: 763 – 772.

MANUSCRIPTS IN PREPARATION

4. **Allen-Jacobson, L.M.** Modular coral growth: relationship to calcification and implications for morphology. Target journal: *Coral Reefs*.
5. **Allen-Jacobson, L.M.**, Brown, A., Gil, M., Farrell, M., Fuchs, C., Hamman, E., Zill, J., and C.W. Osenberg. Implications of vermetid density on coral growth, corallivory, and herbivory. Target journal: *Coral Reefs*.
6. **Allen-Jacobson, L.M.** Metabolic scaling: changes in allometry during transitions in individuality. Target journal: *Functional Ecology*.

PRESENTATIONS

1. Allen-Jacobson, L.M. Metabolic scaling: changes in allometry during transitions in individuality.
2018: Gordon Research Seminar: Unifying Ecology Across Scales, Biddeford, ME (Accepted Talk)
2018: Gordon Research Conference: Unifying Ecology Across Scales, Biddeford, ME (Contributed Poster)
2. **Jacobson, L.M.** 2016. Metabolic scaling in colonies: the influence of integration.
2016: 13th International Coral Reef Symposium, Honolulu, HI (Accepted Talk)
2016: Annual Meeting of the Ecological Society of America, Fort Lauderdale, FL (Contributed Talk)
3. **Jacobson, L.M.**, C. Fuchs, J. Zill, M. Farrell, M. Gil, A. Brown, E. Hamman, and C. Osenberg. The decoupling of tissue and skeletal production of corals in response to vermetid gastropods.
2014: Benthic Ecology Meeting, Jacksonville, FL (Contributed Talk)
4. **Jacobson, L.M.** The physiological coupling of tissue growth and skeletal production in corals.
2013: Benthic Ecology Meeting, Savannah, GA (Contributed Talk)
5. **Jacobson, L.M.**, E. Muller, R. Nisbet, and P.J. Edmunds. Scleractinian corals are capable of metabolic depression.
2012: Benthic Ecology Meeting, Norfolk, VA (Contributed Talk)
2010: Annual meeting of the Western Society of Naturalists, San Diego, CA (Contributed Talk)

6. **Jacobson, L.M.** and P.J. Edmunds. Long-term changes in biological water quality of seawater on a shallow Caribbean reef.

2009: Annual Meeting of the Western Society of Naturalists, Monterey Bay, CA (Contributed Talk)

2008: Annual Meeting of the Western Society of Naturalists, Vancouver, BC (Contributed Poster)

7. **Jacobson, L.M.** and G. Begley. Qualitative and quantitative measures planktonic bacteria in groundwater.

2007: Eastern New England Biological Conference, Boston, MA (Contributed Poster)

INVITED TALK/GUEST LECTURE

2020 **Introduction to Environmental Science and Policy (PPUA 6101)**

Northeastern University, Boston, MA

I guest Lectured for Joan Fitzgerald. The lecture outlined the microplastic problem, planned research, and summarized data from a preliminary meta-analysis. Finally, the students worked through a series of thought experiments, which challenged them to think about how the meta-analysis results could influence policy.

TEACHING ASSISTANTSHIPS

2015-2017 **Ecology**

Biology, University of Florida
ZOO 4043C

2016 **Marine Biology**

Biology, University of Florida
ZOO 4403C

2014 **Integrative principles**

Biology, University of Florida
ZOO 6055/8698

2014 **Marine Ecology**

Biology, University of Florida
ZOO 4926

2011-2012 **Introductory Biology Online**

Biology, University of Florida
BSC 2007

2009-2010 **Introductory Biology**

California State University, Northridge

OUTREACH

- 2020-** **Quantifying Size: Marine Life in the Mesh**
St. Mary's High School, Lynn, MA
For this program, we worked with W. Goldenheim's Marine Science class. During this activity, students learn about corals and how they grow. The students imagine they are reef scientists, and we discuss possible challenges to quantifying coral size, including logistical constraints while diving and a coral's irregular shape. Next, the students work in pairs to image and build 3D models of coral skeletons and other marine objects. They do this using the camera on their phone and an app called Trnio. Trnio costs a small fee, but they donated it to the students. You can see models built by students on SketchFab.com by searching #MarineMeshes. Students quantify size using the 3D model and a tool built by SketchFab Labs and compare this result to measurements using a traditional method: calipers. Students discuss which method is more accurate or more precise. They also discuss which method is best suited to different applications and which method is their preference.
- 2020-** **Frontiers for Young Minds paired with St. Mary's High**
St. Mary's High School, Lynn, MA
Same activity as below. I have created a website to organize this effort. You can find more information here: <https://sway.office.com/AO75F3cuPrce2rBY?ref=Link>
- 2015-2016** **Frontiers for Young Minds paired with Conniston Middle School**
Conniston Middle School, West Palm Beach, Florida
Frontiers for Yong Minds assigned a paper that I reviewed with a group of students from Stephanie Killingsworth's class from Conniston Middle School. I guided the students through the paper, summarized their comments in a review, and taught them about scientific peer review.
- 2015** **Physics Bus**
Gainesville, Florida
I interacted with the public by teaching introductory physics, but mostly by helping them engage in science
- 2011-2013** **Atitia Center**
Mo'orea, French Polynesia
I taught students (K-12) mini-lessons on marine ecology and about my research
- 2009-2010** **Viewpoint High School**
Calabasas, California
I gave seminars on my research
- 2009-2011** **Virgin Island Environmental Resource Station**
St. John, USVI
I taught students (K-12) mini-lessons on marine ecology

AWARDS

- 2016-2017 Nominated for Teaching Award by faculty mentors (Joan Herrera and J. Lichstein)**
Biology, University of Florida
Marine Biology and Ecology
- 2016 Nominated for Teaching Award by faculty mentor (Jeremy Lichstein)**
Graduate School, University of Florida
Ecology
- 2016 Nominated for Service Award by student assistant (Morgan Farrell)**
Biology, University of Florida
Undergraduate mentorship
- 2012 Travel Award (\$100)**
College of Liberal Arts and Sciences, University of Florida

GRANTS

- 2015 Research Grant (\$2,000)**
Quantitative Spatial Ecology, Evolution and Environment (QSE3) IGERT, National Science Foundation
From polyp traits to colony morphology (jointly awarded to Tavis Abrahamsen, Ph.D. in Statistics)
- 2013 Michael May Interdisciplinary Grant (\$1,000)**
Biology, University of Florida
Resolving the origins and implications of coral morphospecies (jointly awarded to Richie Hodel, Ph.D. in Biology)
- 2011 Maturo Funds (\$15,000)**
Biology, University of Florida
Funds were awarded with my acceptance into the department and have been used to facilitate graduate research
- 2010 Graduate Research Thesis Support (\$1,000)**
California State University, Northridge
- 2007 Research Grant (\$1,000)**
Provost, Northeastern University

FELLOWSHIPS & RESEARCH

- 2018 Dissertation Fellowship (accepted)**
College of Liberal Arts and Sciences, University of Florida
- 2018 Dissertation Fellowship (awarded)**
Graduate School, University of Florida
- 2015 Research Assistantship**
Quantitative Spatial Ecology, Evolution and Environment (QSE3) IGERT, National Science Foundation
Correlated evolution of two traits associated with transitions in individuality: coloniality and symbiosis in cnidarians
- 2012-2014 Trainee Fellowship**
Quantitative Spatial Ecology, Evolution and Environment (QSE3) IGERT, National

Science Foundation

Cultivation by fishing: a theoretical explanation for the apparent resilience of the Gulf of Mexico's shrimp fishery

2010-2011 Graduate Student Participant

National Center for Ecological Analysis and Synthesis

Tropical coral reefs of the future: modeling ecological outcomes from the analysis of current and historical trends

2010-2011 Graduate Equity Fellowship

California State University, Northridge

2008-2011 Research Assistantship in Polyp Laboratory

California State University, Northridge

2008 Research Experience for Undergraduates

St. John, USVI

National Science Foundation, Supplement to LTREB (DEB 0343570)

SERVICE

2020 Diversity, Equity, and Inclusion Committee

Northeastern University, Boston, MA

Read and discussed Ibram X. Kendi's How to Be an Anti-Racist

2015-2017 Strategic Planning Committee

Biology, University of Florida

Biology Graduate Student Association

2016-2017 Curriculum Committee

Biology, University of Florida

Biology Graduate Student Association

2013-2014 Graduate Committee

Biology, University of Florida

Biology Graduate Student Association

2012-2013 Colloquium Committee

Biology, University of Florida

Biology Graduate Student Association

2012-2013 Welcoming Committee

Biology, University of Florida

Biology Graduate Student Association

SOCIETIES

2018- Sigma Xi

The scientific research honor society (Full member)

2016-2019 International Society for Reef Studies

2016-2018 Ecological Society of America

2012-2014 Benthic Ecology Meeting Society

2008-2012 Western Society of Naturalists

MENTEES

All mentees were undergraduate students unless otherwise noted.

- 2020- Chloe Rifa**
 Northeastern University
Chloe started working remotely; she contributes to a meta-analysis that will determine if metabolic rate predicts which species invade new habitats.
- 2020- Kate Moore**
 Northeastern University
Kate started working remotely; she analyzes images of corals to determine if we can predict where corals form new polyps.
- 2020- Kira Becker**
 Northeastern University
Kira started working remotely; she is working on a meta-analysis to determine if metabolic rate predicts which species invade new habitats.
- 2020- Hannah Nitta**
 Northeastern University
Hannah started working remotely; she is working on a meta-analysis to determine if metabolic rate predicts which species invade new habitats.
- 2020 Max Reisner**
 Stanford University
Max started working remotely; he initiated efforts to classify plankton using computer vision. He is now working for Tesla.
- 2019- Joseph Pascucci**
 Northeastern University
Joseph has helped maintain and augment the coral mesocosm. Since research is now remote, Joseph has initiated efforts to segment 3D models of corals.
- 2019-2020 Cynthia Fowler**
 Northeastern University
Cynthia helped maintain a coral mesocosm and analyze photos of corals.
- 2019-2020 Nicole Suzuki**
 Northeastern University
Nicole helped maintain a coral mesocosm and visualize monitoring data.
- 2018 Austin Smith**
 Biology, University of Florida
Austin is quantifying the coral skeletal structures using nano-Computed Tomography (C.T.). I supported his training for the nano-CT and reconstruction software. After, Austin started working in the Florida Museum of Natural History.
- 2016-2017 Christina Mallica**
 Biology, University of Florida
Christina added to my database of species traits used to predict variation in group metabolism. After, Christina started a graduate program at Nova Southeastern University.
- 2016-2017 Jonna Boyda**
 Biology, University of Florida
Jonna added to my cnidarian traits database, specifically, whether each species forms colonies or associates with Symbiodinium spp.

- 2013-2016 Morgan Farrell**
Biology, University of Florida
I trained Morgan to do fieldwork in the South Pacific and analyze time-lapse photographs of corals. Under my mentorship, Morgan received support from the University Scholars Program. After, she started a Ph.D. program at the University of Florida.
- 2014 Jana Huebner**
Biology, University of Florida
I advised Jana on an independent project as part of Marine Ecology. Jana was a Ph.D. student who has since graduated from the University of Florida.
- 2014 Emily Olson**
Biology, University of Florida
I advised Emily on an independent project as part of Marine Ecology. Emily was a Master's student who has since graduated from the University of Florida.
- 2014 Nicholas Carchi**
Biology, University of Florida
I trained Nicholas to analyze coral tissue samples, specifically: the density of Symbiodinium spp. and nematocysts.
- 2012-213 Corinne Fuchs**
Biology, University of Florida
I trained Corinne to do fieldwork. Corinne also analyzed videos to quantify net retraction by a vermetid gastropod, and she will be a co-author on a manuscript. Under my mentorship, Corinne received support from the University Scholars program. After, Corinne started graduate school at the University of California, Santa Barbara.
- 2013 Julie Zill**
Biology, University of Florida
After earning her Bachelors, Julie assisted with my fieldwork. After, Julie started a Ph.D. program at the University of Hawaii.
- 2013 Brad Udell**
Biology, University of Florida
Brad helped build a database of coral traits. After, Brad started a Ph.D. program at the University of Florida.
- 2012-2013 Angela Mulligan**
Biology, University of Florida
I trained Angela to do fieldwork in the South Pacific. Under my mentorship, Angela received support from the University Scholars Program. Afterward, Angela worked for the Florida Fish and Wildlife Conservation Commission.