# Nyssa J. Silbiger

*California State University, Northridge* *phone: (954)257-0812*
*Department of Biology* *email:* nyssa.silbiger@csun.edu
*18111 Nordhoff St,* *website: nyssasilbiger.com*
*Northridge, CA 91330-8303* *twitter: @NSilbiger*

## EDUCATION

2009 – 2015 Ph.D., Zoology, Specialization in Marine Biology, University of Hawai'i Mānoa, Dissertation: ***Environmental drivers of the coral reef accretion-erosion balance in present and future ocean conditions.***
*Thesis Committee: Drs. Megan Donahue (chair), Robert Toonen, Florence Thomas, Ruth Gates, Stacy Jorgensen*

2007 – 2009 M.S., Marine Science, University of North Carolina at Chapel Hill, Thesis: ***Impacts of sponge produced DIN on Caribbean coral reef seaweed communities***.
*Thesis Committee: Drs. Niels Lindquist, Charles H Peterson, Christopher Martens, John Bruno*

2003 – 2006 B.S., Biological Science, Minor in Chemistry, Certificate in Marine Resource Ecology, Florida State University, Graduated Cum Laude

## POSITIONS HELD

2017 – Present Assistant Professor, California State University, Northridge

2015 - 2017 Postdoctoral Scholar, Department of Ecology and Evolutionary Biology, University of California at Irvine, *Advisor: Dr. Cascade Sorte*

2012 – 2015 NOAA Dr. Nancy Foster Scholar

2011 – 2012 EPSCoR Research Assistant (Dr. Jo-Ann Leong)

2008 – 2009 Research Assistant, UNC-Chapel Hill Marine Sciences Department

2007 Laboratory/field Technician, USGS/NOAA funded project at Florida International (Andre Daniels): Assisted in data collection and fauna/flora identification for a long-term monitoring program on seagrass bed communities in Everglades National Park. Miami, FL

2006 Intern, Clemson University Biological Sciences Department (Dr. Michael Childress): Led and published a project examining the symbiotic relationship between cleaner shrimp and sea anemones. Field assistant for project on octopus behavior and the Alee Effect in spiny lobsters in Long Key, FL

2005 – 2006 Intern, Florida State University Biological Sciences Department (Dr. Don Levitan and Dr. Pablo Munguia): Led and published project examining thermoregulation techniques in fiddler crabs in Wakulla Bay, FL

## PUBLICATIONS (** denotes undergraduate student advisee)*

12) **Silbiger NJ,** Donahue MJ, and Brainard RE (2017) Environmental drivers of coral reef carbonate production and bioerosion: a multi-scale analysis. *Ecology:* doi:10.1002/ecy.1946

11) **Silbiger NJ** and DeCarlo TM (*in press*) Comment on "Bioerosion: the other ocean acidification problem": on field studies and mechanisms. *ICES Journal of Marine*

*Science*

10) Hackerot S, Valdivia A, **Silbiger NJ,** and Bruno, JF (2017) Invasive lionfish had no effect on fish community structure on the Belizean Barrier Reef. *PeerJ,* DOI 10.7717/peerj.3270
9) **Silbiger** NJ, Guadayol Ò, Thomas FIM, Donahue MJ. (2016) A novel µCT analysis reveals different responses of bioerosion and secondary accretion to environmental variability. *PLoS ONE*, 11(4):e0153058. DOI:10.1371/journal.pone.0153058
8) Vicente J, **Silbiger NJ,** Beckley B, Hill RT (2016) Impact of high $pCO_2$ and warmer temperatures on the process of silica biomineralization in the sponge *Mycale grandis*. *ICES Journal of Marine Science*, 73:704-714, DOI: 10.1093/icesjms/fsv235
7) **Silbiger NJ,** and Donahue MJ (2015). Secondary calcification and dissolution respond differently to future ocean conditions. *Biogeosciences*, 12: 567-578
6) Nelson CE, Donahue MJ, Dulaiova H, Goldberg SJ, La Valle FF, Lubarsky K, *Miyano J, Richardson C, **Silbiger NJ**, and Thomas FIM (2015) Fluorescent dissolved organic matter as a multivariate biogeochemical tracer of submarine groundwater discharge in coral reef ecosystems. *Marine Chemistry*, 177: 232-243
5) **Silbiger NJ,** Guadayol Ò, Donahue MJ, Thomas FIM (2014) Reefs shift from net accretion to net reef erosion along a natural environmental gradient. *Marine Ecology Progress Series*, 14: 33-44
4) Guadayol Ò, **Silbiger NJ**, Donahue MJ, Thomas FIM (2014) Patterns in temporal variability of temperature, oxygen and pH along an environmental gradient in a coral reef. *PLoS One* 9(1): e85213
3) Munguia P, Levinton J, **Silbiger NJ** (2013) Latitudinal differences in thermoregulatory color change in *Uca pugilator*. *Journal of Experimental Marine Biology and Ecology*, 440: 8-14
2) **Silbiger NJ** and Munguia P (2008) Carapace color change in *Uca pugliator* in response to temperature. *Journal of Experimental Marine Biology and Ecology* 355: 41-46
1) **Silbiger NJ** and Childress MJ (2008) Interspecific variation in anemone shrimp distribution and host selection in the Florida Keys (USA): implications for marine conservation. *Bulletin of Marine Science* 83: 329-345

***In Review*** *(manuscripts available upon request)*

13) Lubarsky K, **Silbiger NJ,** and Donahue MJ (*in review)* Effects of submarine groundwater discharge on coral accretion and bioerosion on two shallow reef flats. *Limnology and Oceanography*
14) Safaie A, **Silbiger NJ**, McClanahan TR, Pawlak G, Barshis DJ, Hench JL, Rogers JS, Williams GJ, and Davis KA. (*in review*) High frequency temperature variability mitigates coral bleaching. *Nature Communications*
15) **Silbiger NJ** and Sorte CJB (*submitted*) Biophysical feedbacks mediate carbonate chemistry in coastal ecosystems across spatiotemporal gradients. *Scientific Reports*
16) Sorte CJB, Bernatchez G, Pandori LLM, **Silbiger NJ**, Wallingford PD (*in review*) Warming tolerance and predicted distributional shifts differ by species in a diverse intertidal mussel guild. *Functional Ecology*
17) Bracken MES, **Silbiger NJ**, Bernatchez G, Sorte CJB (*submitted*) Primary producers

ameliorate impacts of $CO_2$ addition in a coastal marine ecosystem. *Proceedings of the Royal Society B*

***Pre-prints***

1) **Silbiger** NJ, Guadayol Ò, Thomas FIM, Donahue MJ. (2015) Impacts of multiple environmental stressors on coral reef erosion and secondary accretion. *PeerJ PrePrints* 3:e1451 https://dx.doi.org/10.7287/peerj.preprints.1190v1

***Popular Press Articles***

1) *How to talk to a climate change denier*. For Earth Week at UPROXX.com http://uproxx.com/life/how-to-talk-to-a-climate-change-denier/

## GRANTS

Donahue MJ (PI), Thomas FIM (Co-PI), Dulaoiva H (Co-PI), **Silbiger NJ (co-writer)** (2014-2016) Groundwater-derived nutrient uptake in coastal ecosystems as a driver of shifts in the accretion-erosion balance. The University of Hawai'i SeaGrant Program ($106,000)

Donahue MJ (PI),Thomas FIM (Co-PI), Toonen RJ (Co-PI), **Silbiger NJ (co-writer)** (2012-2014) Bioeroding communities and response to climate change. The University of Hawai'i SeaGrant Program ($69,996)

**Silbiger NJ (PI)** (2012) PADI Foundation Grant ($3,075)

**Silbiger NJ (PI)** (2012) University of Hawai'i at Mānoa Graduate Student Research Grant ($1600)

**Silbiger NJ (PI)** (2010) Sigma Xi Grant-in Aid-of-Research ($1,000)

**Silbiger NJ (PI)** (2008) Lerner Gray-American Museum of Natural History Research Grant ($2,250)

## AWARDS AND FELLOWSHIPS

**Silbiger NJ (PI)** (2014-2015) Dr. Charles and Sandra Guest-Van Riper Endowed Student Travel Award for Graduate Students, ($1,800)

**Silbiger NJ (PI)** (2014-2015) Jessie D Kay Memorial Fellowship, ($10,000)

**Silbiger NJ (PI)** (2012-2015) National Oceanographic and Atmospheric Administration Dr. Nancy Foster Scholarship Program, ($188,000)

**Silbiger NJ (PI)** (2012) Environmental Protection Agency Science to Achieve Results (EPA STAR) Graduate Fellowship ($126,000) *Declined due to NOAA Dr. Nancy Foster*

**Silbiger NJ (PI)** (2012) Travel Support for Third International Symposium on High-$CO_2$World ($700)

**Silbiger NJ (PI)** (2012) Dai Ho Chun Fund for Graduate Fellowships ($2,000)

**Silbiger NJ (PI)** (2010) University of Hawai'i EPSCoR ECOGEM Fellowship ($25,900)

**Silbiger NJ (PI)** (2010) The University of Hawai'i Zoology Department Charles H. and Margaret B. Edmonson Research Fund ($750)

**Silbiger NJ (PI)** (2010) Kellogg Biological Station Grant for Summer Program ($3,000)

## ONGOING RESEARCH COLLABORATIONS

Using Bayesian methods to quantify predator-prey overlap along a latitudinal gradient
*Collaborators: Piper Wallingford and Cascade Sorte*

Bioerosion rates and communities as indicators of change using metabarcoding techniques.

*Collaborators: Megan Donahue, Robert Toonen, and Eric Tong*

Groundwater-derived nutrient uptake in coastal ecosystems as a driver of shifts in the accretion-erosion balance.
*Collaborators: Megan Donahue, Florence Thomas, Henrieta Dulaiova, Craig Nelson, and Katie Lubarsky*

Scaling up from organisms to ecosystem: individual and combined responses of four distinct coral reef communities to nutrient addition
*Collaborators: Craig Nelson, Megan Donahue, Kristina Remple, Hollie Putnam*

## TEACHING

***Instructor***

2017 Coding in R Seminar, UC Irvine (https://njsilbiger.github.io/)
2017 Cli-Fi: The Science of Climate Fiction, UC Irvine

***Teaching Assistant***

2010 Corals and Coral Reefs, UH-Mānoa
2008 Biogeochemical Cycling, UNC-Chapel Hill
2007 Marine Environment, UNC-Chapel Hill
2006 Biology for Non-majors Lab, Florida State University

***Guest Lectures***

2017 Intro to Marine Biology, East Carolina University
2017 California Local Environmental Issues, UC Irvine
2016 BIO SCI E186 (Population and Community Ecology), UC Irvine
2015 BIO SCI E186 (Population and Community Ecology), UC Irvine
2015 BIOL 404 (Advanced Topics in Marine Biology), UH Mānoa
2014 OCN 201 (Science of the Sea), UH West O‘ahu
2014 BIOL 403 (Field Problems in Marine Biology), UH Mānoa
2013 BIO 171 (Biology), Kapi‘olani Community College
2012 Best Kept Secret in Kāne‘ohe Bay: Moku o Lo‘e Continuing Education Course, Windward Community College

## INVITED SEMINARS

2017 California State University, Northridge, Biology Departmental Seminar
2016 University of South Alabama, Marine Sciences Departmental Seminar
2015 University of Hawai‘i at Mānoa, Biology Departmental Seminar
2014 University of Hawai‘i at Mānoa, Oceanography Departmental Seminar
2013 Hawai‘i Institute of Marine Biology, Institute Seminar
2013 *Nerd Nite Honolulu,* Honolulu, Hawai‘i (public talk)
2012 Hawai‘i Institute of Marine Biology, Institute Seminar
2012 Hanauma Bay Education Series, Hawai‘i Kai, Hawai‘i (public talk)

## MENTORING

2017 Ritika Singh (Undergraduate biology major at the University of California, Irvine)
2016 Savannah Todd (Undergraduate chemistry major at the University of California, Irvine)

2015 - 2016 Jessica Sevilla **(**Undergraduate biology major at the University of Hawai‘i at Mānoa, Won best poster award for Natural Sciences at University of Hawai‘i Fall Forum)

2012 – 2016 Justin Miyano (Undergraduate biology major and Marine Options Program Certificate at University of Hawai‘i at Mānoa; Currently technician at Hawai‘i Undersea Research Laboratory)

2013 Anthony Sagapolutele (Undergraduate Research Mentor program, *Environmental Biology in the Pacific* from American Samoa)

2012 – 2013 Jessica Faith (Undergraduate zoology major at University of Hawai‘i at Mānoa)

2012 – 2013 Rebecca Maguire (Undergraduate biology major at University of Hawai‘i at Mānoa)

2011 – 2012 Kaleonani Hurley (Hawai‘i Youth Conservation Corp Intern, Currently an PhD student at UH Mānoa; NSF-GRFP Fellow)

2011 Nick Griffith (Undergraduate biology major at University of Hawai‘i at Mānoa, Currently a curator in the Invertebrate collections at Bishop Museum)

2010 – 2011 Kelsie DiPerna (Undergraduate biology major at University of Hawai‘i at Mānoa Received the UH Undergraduate Research Award-$3000, Won best poster award for Natural Sciences at University of Hawai‘i Fall Forum)

**CONTRIBUTED PAPERS** (***** *denotes poster presentations*)

2017 **Silbiger, NJ** and CJB Sorte, Aquatic Sciences Meeting, ASLO

2016 **Silbiger, NJ** and CJB Sorte, Western Society of Naturalists

2016 **Silbiger, NJ,** MJ Donahue, M Fox, C Lager, C Nelson, H Putnam, K Remple, J Sevilla, and Z Quinlan, 13th International Coral Reef Symposium

2016 ***Silbiger, NJ** and MJ Donahue, Ocean Sciences Meeting

2015 **Silbiger, NJ** and MJ Donahue, Western Society of Naturalists

2015 **Silbiger, NJ** and MJ Donahue, 100th Ecological Society of America

2015 **Silbiger, NJ,** and MJ Donahue, Aquatic Sciences Meeting, ASLO

2015 *Nelson, CE, Donahue, MJ,……,**Silbiger, NJ,** Thomas, FIM, Pacific Islands Climate Science Center Conference

2014 **Silbiger, NJ**, O Guadayol, F Thomas, MJ Donahue, Western Society of Naturalists, *Runner up for Best Student Presentation in Community and Ecosystem Ecology*

2014 **Silbiger, NJ**, O Guadayol, F Thomas, MJ Donahue, Ocean Sciences Meeting

2013 **Silbiger, NJ** Hawai‘i EPSCoR Statewide Conference

2013 **Silbiger, NJ**, O Guadayol, F Thomas, MJ Donahue, 38th Annual Albert L. Tester memorial Symposium, *Best Paper including a $1000 prize*

2013 **Silbiger, NJ**, O Guadayol, F Thomas, MJ Donahue, Benthic Ecology Meeting

2012 **Silbiger, NJ**, MJ Donahue, O Guadayol, F Thomas, 3rd International Conference on a High $CO_2$ World

2012 **Silbiger, NJ**, MJ Donahue, O Guadayol, F Thomas, Hawai‘i EPSCoR Statewide Conference

2012 **Silbiger, NJ**, MJ Donahue, O Guadayol, F Thomas, 12th International Coral Reef Symposium

2012 **Silbiger, NJ**, MJ Donahue, O Guadayol, F Thomas, 5th Annual Hawaiian Islands Symposium, *Runner up for Best Student Presentation*

2009 **Silbiger, NJ**, N Lindquist and CM Martens, Benthic Ecology Meeting

2007 **Silbiger, NJ** and MJ Childress, Benthic Ecology Meeting
2007 *__Silbiger, NJ__ and P Munguia, Benthic Ecology Meeting
2007 *__Silbiger, NJ__ and P Munguia, Western Society of Naturalists
2006 **Silbiger, NJ** and MJ Childress, Western Society of Naturalists

## PROFESSIONAL DEVELOPMENT

2015 ***Bayesian Modeling for Socio-Environmental Data***
Selected to attend workshop hosted by the National Socio-environmental Synthesis Center (SESYNC) on Bayesian data analysis (Drs. Tom Hobbs and Mary Collins)

2015 ***Community Data Analysis Using the Vegan Package in R***
Attended 2-day workshop on using the Vegan package in R

2014 ***C-MORE Mentoring Workshop***
Attended a professional development workshop on how to be a successful mentor to young scientists

2014 ***Capitol Hill Oceans Week (CHOW)***
Assisted with the CHOW online broadcast at OceansLive.org.

2014 ***Program Collaboration: Monterey Bay National Marine Sanctuary***
6-week collaboration with MBNMS. Developed long-term monitoring protocol on effect of sea star wasting syndrome on *Watersipora subtorquata* distribution in Monterey Harbor. Assisted with various outreach activities and attended workshops including a citizen science workshop and California MPA initiative meeting.

2013 ***Seminar in Bayesian Statistics***
Semester-long seminar on theory and application of Bayesian statistics (Dr. Megan Donahue).

2013 ***American Statistical Association Applied Mixed Models Workshop***
Two-day workshop on theory and application of linear and generalized linear mixed models (Dr. Linda J. Young)

2012 ***Software Carpentry Boot Camp***
Two-day intensive computing course. Topics included programming in Python and Git Bash, version control, and program testing (Drs Erik Bray and Fernando Perez).

2010 ***Enhancing Linkages between Mathematics and Ecology Summer Program***
Kellogg Biological Research Station, Michigan State University:
Three, week-long intense summer courses focusing on math and ecology. Theoretical Population Ecology (Dr. Robin Snyder), Theoretical Community and Ecosystem Ecology (Dr. Christopher Klausmeier) and Maximum Likelihood Analysis in Ecology (Dr. Don Schoolmaster)

## PROFESSIONAL SERVICE

Reviewer: Graduate Women in Science Fellowships, NOAA Dr. Nancy Foster Scholarship program, Internal review for USGS, University of Hawai‘i Sea Grant, *Coral Reefs*, *Ecosystems*, *Conservation Biology*, *ICES Journal of Marine Science*, *Global Ecology and Biogeography*, *PeerJ*, *African Journal of Marine Science*, *Nature Scientific Reports*

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| 2016 | Session organizer for 13th International Coral Reef Symposium; *Coral Reef Structural Dynamics and Complexity: Accretion versus Bioerosion and Dissolution* |
| 2013-2014 | Organizer for 39th Albert L Tester Memorial Symposium |
| 2012 | SeaHarmony Focus Group |
| 2010-2011 | Zoology Graduate Student Representative (UH Mānoa) |
| 2010-2011 | Graduate Student Representative on Search Advisory Committee for Dean of the College of Natural Sciences (UH Mānoa) |

## OUTREACH ACTIVITES

*K-12 programs on marine biology, climate change, and "life as a scientist" (letters from school principals available upon request)*

Coral Springs Charter School (Coral Spring, FL, 4 classroom visits)
Winthrop Elementary School (Riverview FL, 10 classroom visits)
Winthrop Middle School (Riverview FL, 1 classroom visit)
St. Joseph's Academy (St. Paul MN, 1 classroom visit)
Annalise Elementary School (Laguna Beach, CA, 3 classroom visits)
Thompson Island Outward Bound Education Program (Thompson Island, MA, 1 visit)
Created *Adopt-a-Scientist* pen-pal program for 5th grade students (23 students)

*STEM community events for children and families*

Girls in Ocean Sciences Program (Dana Point, California)
Children's Water Education Festival (Irvine, California)
Bishop Museum Science Alive (Honolulu, HI)
Waikiki Aquarium Family Night (Honolulu, HI)
The Beauty of Mathematics and Science Day (Honolulu, HI)
School of Ocean and Earth Science and Technology Open house (Honolulu, HI)
Ocean Expo (Honolulu, HI)
Capitol Hill Ocean Week (Washington D.C.)
Assisted with PSA on invasive species on southern California (Catalina Island, CA)

## PRESS

2016 *Office of National Marine Sanctuaries* "Your Earth is Blue: The Bio Bus"
http://sanctuaries.noaa.gov/earthisblue/wk105-biology-bus.html

2016 *Office of National Marine Sanctuaries* "The Biology Bus: Q&A with Nancy Foster Alumna Dr. Nyssa Silbiger
http://sanctuaries.noaa.gov/news/sep16/biology-bus-qa-silbiger.html

2016 *Uproxx.com*, "Meet the scientists behind the wheel of 'The Biology Bus'"
http://uproxx.com/life/biology-bus-women/

2016 All Things Marine Radio show (August)
http://www.cosee-ie.net/files/islandearth/All%20Things%20Marine%208-16%2050th.mp3

2016 *Discover Magazine*, "Reef CAT scans reveal another way acidification speeds erosion"
http://blogs.discovermagazine.com/science-sushi/2016/04/30/cat-scans-coral-reef-erosion-climate-change/#.V0h865ErKUk

2016 *Mānoa News*, "New imaging technique reveals vulnerability of coral reefs"

https://manoa.hawaii.edu/news/article.php?aId=7820
2015 *Frontiers in Ecology and the Environment*, "Erosion threatens reef resilience"
2015 *Financial Times,* "Marine biology: acidic oceans mean grief for the coral reef" http://www.ft.com/cms/s/0/be85b2ea-9b79-11e4-950f-00144feabdc0.html
2014 *Star Advertiser,* "Increased ocean acidity breaks down coral reefs, UH study finds"
2014 Sanctuary Shorts Podcast– "Sea Stars and Scholars" http://sanctuaries.noaa.gov/news/jul14/nf-podcast.html
2014 Capitol Hill Oceans Talk @ Capitol Hill Oceans Week, "Youth and Education" Live Broadcast in Washington D.C. http://oceanslive.org/oceanslive/video-gallery/item/212-youth-and-education
2012 *Honolulu Advertiser*, "Thriving Isles"
2012 Radio interview on *Hawai'i's Tomorrow Talk Radio* (August)
2012 Radio interview on *Hawai'i's Tomorrow Talk Radio* (May)

## SCIENTIFIC SPONSORSHIPS

2016 GoWesty (donated a camper van for a two-month research expedition assessing intertidal communities along a latitudinal gradient; $30,000)
2013 GoPro (donated two GoPro cameras to monitor parrotfish bioerosion; $500)
2012 BlendTech (donated two high power blenders to blend coral rubble for metabarcoding project; $700)

## MEMBERSHIPS IN PROFESSIONAL SOCIETIES

American Academy of University Women, Graduate Women in Science, American Academy of Underwater Sciences, International Society for Reef Studies, Western Society of Naturalists, Benthic Ecology Meeting Society, Association for the Sciences of Limnology and Oceanography, Sigma Xi

## SKILLS AND CERTIFICATIONS

Proficient in MATLAB, Bash for Git, R, LaTeX
Basic understanding of Python, Unix, and Mathematica

**SCUBA** YMCA Open Water, NAUI Advanced, Nitrox, Dry Suit, and Rescue, AAUS Scientific diver. >780 logged scientific dive