

Sean Bignami

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EDUCATION

- 2013 Rosenstiel School of Marine and Atmospheric Science (RSMAS), University of Miami
PhD- Marine Biology and Fisheries
Dissertation- Effects of ocean acidification on the early life history of two pelagic tropical fish species, cobia (*Rachycentron canadum*) and mahi-mahi (*Coryphaena hippurus*)
Advisors (co)- Su Sponaugle & Robert Cowen
- 2006 University of California, Santa Barbara (UCSB)
B.S.- Aquatic Biology, Minor- Athletic Coaching

EMPLOYMENT & POSITION HISTORY

- 2018-Pres. Associate Professor- Biology Department, School of Arts & Natural Sciences, Concordia University Irvine, CA
Biology Department Chair (2017-2021)
Marine Lab Director (2015-Pres.)
- 2014-2018 Assistant Professor- Biology Department, School of Arts & Natural Sciences, Concordia University Irvine, CA
- Fall 2013 Adjunct Professor- Chemistry Department, Schmid College of Science and Technology, Chapman Univ., CA
- 2012-2013 Graduate Research Assistant- National Resource Damage Assessment, University of Miami, FL
- 2010-2012 NSF GK-12 Fellow- Carol City and Brownsville Middle Schools, Miami-Dade USD & Univ. of Miami, FL
- 2009-2010 Graduate Teaching Assistant and Lab Instructor- Department of Biological Sciences, University of Miami, FL
- 2008-2013 Graduate Research Assistant- Rosenstiel School of Marine and Atmospheric Science, Univ. of Miami, FL
- Fall 2007 Adjunct Instructor- Biology Department, Santa Barbara City College, CA
- 2006-2008 Senior Lab Technician- Biology Department, Santa Barbara City College, CA

PUBLICATIONS

- Bignami S, Sponaugle S, Hauff M, Cowen RK. (2016) Combined effects of elevated- $p\text{CO}_2$, temperature, and starvation stress on larvae of a large tropical marine fish. *ICES J Mar Sci* doi: 10.1093/icesjms/fsw216
- Bignami S, Sponaugle S, Cowen RK. (2014) Impact of ocean acidification on larvae of a high-value pelagic fisheries species, mahi-mahi (*Coryphaena hippurus*). *Aquat Biol* 21:249-260. doi: 10.3354/ab00598
- Bignami S, Sponaugle S, Cowen RK (2013) Response to ocean acidification in larvae of a large tropical marine fish, *Rachycentron canadum*. *Glob Change Biol* 19:996-1006. doi:10.1111/gcb.12133
- Bignami S, Enochs I, Manzello D, Sponaugle S, Cowen RK. (2013) Ocean acidification alters the otoliths of a pan-tropical fish species with implications for sensory function. *Proc Natl Acad Sci USA*. 110(18):7366-7370. doi:10.1073/pnas.1301365110
- Bignami S. (2010) Review of "Gasping Fish and Panting Squids: Oxygen, Temperature and the Growth of Water-Breathing Animals". *Bull Mar Sci*. 86(4):891-892

PRESENTATIONS

First Author- International, National, & Regional Meetings

- Bignami S, N. Caruso. Novel application of RFID mark-recapture enables monitoring of Pismo clam (*Tivela stultorum*) movement. Oral Presentation, Western Society of Naturalists Conference, Online. (2020)
- Bignami S, Kolander, N, Caruso, N. Kelp (*Macrocystis pyrifera*) preservation technique impacts the growth of juvenile red abalone (*Haliotis rufescens*). Oral Presentation, Western Society of Naturalists Conference, Ensenada, Mexico (2019)
- Bignami S, Sponaugle S, Cowen RK. Impact of ocean acidification on larvae of a high-value pelagic fisheries species, mahi-mahi (*Coryphaena hippurus*). Oral Presentation, American Fisheries Society Conference, Portland, OR, USA (2015)
- Bignami S, Enochs I, Manzello D, Sponaugle S, Cowen RK. Ocean acidification alters the otoliths of a pan-tropical fish species with implications for sensory function. Oral Presentation, 37th Annual Larval Fish Conference, Miami, FL, USA (2013)
- Bignami S, Enochs I, Manzello D, Sponaugle S, Cowen RK. Increased otolith size and density in the larvae of a tropical marine fish; new insights into the effect of ocean acidification using micro-computed tomography. Poster presentation, Third International Symposium on the Ocean in a High- CO_2 World, Monterey, CA, USA (2012)

- Bignami S, Sponaugle S, Cowen RK. Partial resistance to ocean acidification in larvae of a subtropical fish. Oral presentation, International Coral Reef Symposium, Cairns, QLD, Australia. (2012)
- Bignami S, Sponaugle S, Cowen RK. Resistance to ocean acidification in larvae of a subtropical fish. Poster presentation, Ocean Sciences Meeting, Salt Lake City, UT, USA (2012)
- Bignami S. Science made sensible: Technology tools for science education. Oral presentation, NSF GK-12 National Conference, Washington DC, USA (2010)
- Bignami S, Enochs I, Manzello D, Sponaugle S, Cowen RK. Ocean acidification alters the otoliths of a pan-tropical fish species with implications for sensory function. Oral Presentation, Coastal and Estuarine Research Federation Symposium, San Diego, CA, USA (2013)
- Bignami S, Sponaugle S, Cowen RK. Impact of ocean acidification on larvae of a high-value pelagic fisheries species, mahi-mahi (*Coryphaena hippurus*). Oral Presentation, Western Society of Naturalists Symposium, Oxnard, CA, USA (2013)

Select Co-authored presentations

- Neu, S., Paradis, J., and **Bignami, S.** Characterization of behavioral patterns in pismo clams (*Tivela stultorum*) via position sensing with a magnetic field. Student Oral Presentation, Western Society of Naturalists, Online. (2020)
- Hicks, P., and **Bignami, S.** Induced spawning of the Pismo clam (*Tivela stultorum*). Student Poster Presentation, Western Society of Naturalists Conference, Ensenada, Mexico (2019)
- Gravem, S.A. and the **SSWS Task Force**. Challenges of understanding and managing disease outbreaks in the sea. Invited Presentation at the Wildlife Health Forum, USGS Headquarters, Reston, VA, Nov 13-16th 2018
- Kolander, N., **Bignami, S.** Insight into the status of Pismo clams (*Tivela stultorum*) in Orange County, CA, following a four-decade gap in data collection. Student Oral Presentation, Beta Beta Beta National Research Conference, Monterey, CA (2018) ***Winner- Best Student Oral Presentation “Brooks Award” Recipient**
- Kolander, N., **Bignami, S.** Insight into the status of Pismo clams (*Tivela stultorum*) in Orange County, CA, following a four-decade gap in data collection. Student Poster Presentation, Beta Beta Beta Pacific District Undergraduate Research Conference, Pleasanton, CA (2017) ***Winner- Best Student Poster “Johnson Award” Recipient**
- Kolander, N., **Bignami, S.** Insight into the status of Pismo clams (*Tivela stultorum*) in Orange County, CA, following a four-decade gap in data collection. Student Poster Presentation, Western Society of Naturalists Symposium, Pasadena, CA (2017)

Invited Seminars

- Aquarium of the Pacific “Night Dive” Seminar, Long Beach, CA (2017)
- Biology Department Research Seminar Series, Santa Barbara City College, CA (2015)
- Cui Bono Convocation, Concordia University Irvine, CA (2015)
- Marine Biology Department Seminar Series, Long Beach State University, CA (2014)
- Biology Department Seminar Series, Concordia University Irvine, CA (2014)
- McHenry & German Labs, UC Irvine Center for Comparative and Evolutionary Physiology, Irvine, CA (2013)
- Public Dissertation Defense, RSMAS, University of Miami, FL (2013)
- Division of Marine Biology & Fisheries Seminar, RSMAS, University of Miami, FL (2011)
- Division of Marine Biology & Fisheries Seminar, RSMAS, University of Miami, FL (2010)
- Division of Marine Biology & Fisheries Seminar, RSMAS, University of Miami, FL (2009)
- NCORE Forum, RSMAS, University of Miami, FL, USA (2009)

Other Professional Conferences/Workshops Attended

- Intercampus Symposium on Gene Editing. Azusa Pacific University, CA. (2018)
- Council of Independent Colleges Department and Division Chair Workshop. Pittsburg, PA. (2018)
- Beta Beta Beta Pacific District Undergraduate Research Conference. **Hosting Chapter**. Irvine, CA. (2018)
- Multi-Agency rocky Intertidal Network (MARINe) Conference. San Pedro, CA. (2018)
- Beta Beta Beta Pacific District Undergraduate Research Conference. Pleasanton, CA. (2017)
- Western Society of Naturalists Symposium. Pasadena, CA. (2017)
- Sea Star Wasting Disease Strategic Action Plan Workshop. Pasadena, CA. (2017)
- Western Society of Naturalists Symposium. Monterey, CA. (2016)

RESEARCH, COLLABORATIONS, & SYNERGISTIC ACTIVITIES

Pismo clam population assessment and movement patterns- Primary Investigator. Ongoing. Project goal is to assess population status and seasonal variability in Pismo clam populations in southern California and develop tracking methods to determine clam movement patterns in the wild.

Sea star wasting disease monitoring- Collaboration with PI Sarah Gravem, Oregon State University. Ongoing. I contribute intertidal monitoring data from two study sites that I established in Orange County towards the study of intertidal community response to sea star wasting disease. Permanent transects were established for annual photo-transects and sea star surveys, as well as monitoring of mussel recruitment. This work involves additional collaboration with Cascade Sorte's Lab (UC Irvine), where we operate at their current research site at Crystal Cove.

Pismo clam population assessment & ecology- Collaboration with PI Ben Ruttenberg, CA Poly San Luis Obispo. 2017-2019. Collecting Pismo clam intertidal beach survey population and clam demographic data from Orange and San Diego Counties to contribute to a population assessment across the natural range of Pismo clams.

Sea Star Wasting Disease Task Force - Contributor to the "Surveillance and Ecology" and "Management Conservation, and Recovery" working groups during the development and writing of the Strategic Action Plan for Sea Star Wasting Disease Research and Management (2017-2018). Publications produced by this task force include:

1. Sea Star Wasting Syndrome Task Force (2018) Research and Management Priorities to Address Sea Star Wasting Syndrome: A Collaborative Strategic Action Plan. Issue 1: Research Priorities.
<http://www.piscoweb.org/strategic-action-plan>
2. Gravem, S.A. and the SSWS Task Force. Challenges of understanding and managing disease outbreaks in the sea. Invited Presentation at the Wildlife Health Forum, USGS Headquarters, Reston, VA, Nov 13-16th 2018
3. Gravem, S.A. and the SSWS Task Force. Challenges of understanding and managing disease outbreaks in the sea. Poster presentation at Eastern Pacific Oceans Conference. Sept 13, 2018
4. Gravem, S.A. and the SSWS Task Force. Community involvement in "A Collaborative Strategic Action Plan" for research and management of sea star wasting disease. Invited panelist for Interagency Arctic Research Policy Committee: Coastal Resilience Collaboration Team Meeting September 2018
5. Gravem, S.A. and the SSWS Task Force. Challenges of understanding and managing disease outbreaks in the sea. Invited lecture at Hatfield Marine Science Center. August 2018

Seagrass and oyster bed restoration, Newport Back Bay- Synergistic activities with Orange County Coast Keeper (Katie Nichols). Ongoing. I assisted with oyster restoration efforts by bringing groups of students to help with preparatory work, and have assisted as an AAUS SCUBA diver with seagrass restoration and monitoring efforts.

Ocean acidification effects on sablefish otoliths- Collaboration with PI Todd Anderson, CA State University San Diego. Juvenile sablefish were raised under experimental conditions of elevated CO₂. My contribution included otolith dissection and size analysis.

TEACHING & ADVISING

Courses Taught

Animal Biology Lab. SBCC
Biostatistics. CUI
Ecology. CUI
Environmental Chemistry. CU
Evolutionary Zoology. CUI
General Biology I. CUI
General Biology II. CUI
General Chemistry Lab. CU
Integrated Biology. CUI

Introduction to Marine Science (TA). UM
Invertebrate Zoology (TA). UM
Marine Biology. CUI
Ocean Science. CUI
Physical Oceanography. CUI
Principles of Biology. CUI
Research in Biology. CUI
Research Methods. CUI
Senior Thesis. CUI

Graduate Student Advising

Alexander Tasoff- M.S., Marine Biology Department, Long Beach State University- External member, 2014-2017.

Undergraduate Research Advising

In addition to advising numerous biology student senior thesis research projects each year, I have advised many students on their own research for entry into the CUI Academic Showcase research competition and other symposia. Notable examples:

Ruthanna Belden, CUI Academic Showcase, 2021 (1st place project)

Savannah Neu and Jori Paradis, CUI Academic Showcase, 2020 (1st place project)

Parker Hicks, International conference poster presentation, 2019

Savannah Neu, CUI Academic Showcase, 2018 (**3rd Place Freshman/Sophomore Project**)

Stephanie Sidor, Senior Thesis, CUI Acad. Show., BBB Regional* & National Symposia, 2018 (***Best Poster Award**)

Noah Kolander, International symposia presentation & CUI Academic Showcase, 2017, 2018, 2019 (**2nd place project**)

Thinh Kieu & Brittany Edwards, CUI Academic Showcase, 2015 (**Best Poster Award**)

Beta Beta Beta National Biology Honor Society Advisor

I serve as the faculty advisor for the Chi Delta Epsilon chapter of BBB at CUI. I work with my student officers and members to promote undergraduate research activity, broadening of academic experiences for CUI biology students, and dissemination of scientific knowledge. Notable activities include:

BBB Pacific District Regional Conference Hosting Chapter, 2018. Organized and Hosted more than 90 attendees and over 50 undergraduate oral and poster research presentations.

BBB Undergraduate Research Awards- Awarded at regional and national BBB research conferences.

Derek Deming- 1st place Johnson Award (regional conference, cell/molecular topics, 2018)

Noah Kolander- 1st place Johnson Award for best poster presentation (regional conference, organismal/ecological topics, 2017), 1st place Brooks Award for best oral presentation (national conference, org./ecol. topics, 2018). **advisor*

Lauren Rodarte- 2nd place Johnson Award (regional conference, 2017)

Stephanie Sidor- 1st place Johnson Award (regional conference, organismal/ecological topics, 2018), 2nd Place Johnson Award (national conference, organismal/ecological topics, 2018) **advisor*

BBB Undergraduate Research Grants- Awarded by the BBB National Office and totaling over \$4,000.

Derek Deming- Characterizing the degradation pathway of Triclosan in *Sphingomonas yanoikuyae*, 2017

Brittany Edwards- Analysis of fadL mutant *E. Coli* to determine viability of bacteriophage receptor removal for deterrence of Stx transformation, 2017

Noah Kolander & Chandler Hanson- Insight into the status of Pismo clams (*Tivela stultorum*) in Orange County, CA, following a four-decade gap in data collection, 2017 **advisor*

Emily Petruszak- Sensory and Motor Neuron Cell Cultures of *Aplysia vaccaria*, 2017

Stephanie Sidor- Effects of Cu & Zn on the swimming behavior & hunting abilities of *Aurelia aurita*, 2017 **advisor*

Savannah Neu- Behavioral effects of handling Pismo clams (*Tivela stultorum*), 2018 **advisor*

Caden Carver- Effects of Orange County air pollution on aryl hydrocarbon receptor in the integumentary system, 2018

Eve Groharing- Effects of hydrocarbon-degrading marine microbe *Alcanivorax borkumensis* and the surfactant mix Lecithin and Tween 80 on the degradation of oil, 2018

Rachel Stokes- Effects of mutated SNCA gene in *S. cerevisiae*, 2019

Hannah Hopkins- A study on the factors affecting cross country performance, 2019

Undergraduate Student Mentoring, Supervision, and Research Assistants

Mentoring and Supervision: I have directly supervised and mentored the following students while working as teaching assistants or Marine Lab volunteers.

Teaching Assistants:

Alyssa Braun, 2017-2018

Noah Kolander 2017-2019

Laura Mietzner, 2017-2018

Michelle Pettet, 2017-2017

Irene Castillo - 2016-2017

Thomas Moreno- 2015-2016

Valerie Werner- 2014-2015

Marine Lab Volunteers:

Nicole Gutierrez- 2020- *pres.* (Marine Lab Manager)

Parker Hicks- 2018-2020 (Marine Lab Manager)

Noah Kolander- 2015-2019 (Marine Lab Manager)

In addition to these managers, I have mentored dozens of other volunteers in the CUI Marine Lab.

Research Assistants: The following students have worked as research assistants on my research and collaborative projects (described above).

Savannah Neu, 2017-2020, Pismo Clam Tagging & Tracking

Noah Kolander, 2016-2019, Pismo Clam Population Assessment

Alyssa Alkema- 2016-2017, Fish Otolith/Ocean Acidification

EDUCATION OUTREACH

CUI Marine Lab and Educational Outreach Program- Founder & Director (2014-pres.). The CUI Marine Lab has provided free educational outreach events to over 25,000 people in schools and at public events since 2014. These events consist of mobile touch tank lessons, guided field trips, and other marine science-related outreach lessons.

National Oceanic and Atmospheric Administration, CA- Ocean acidification educational outreach kits (2013)

CBS 4 Weather Day Educational Outreach, Miami, FL- Billfish life history, research, and conservation efforts (2013)

National Ocean Sciences Bowl Question Development, Washington D.C.- Author of marine biology questions (2012-2013)

NOAA Effective Practices for Communicating Ocean Acidification Workshop, Monterey, CA- Participant (2012)

South African Science Educators Delegation, Miami, FL- Workshop leader (2012)

Environmental Immersion Day, RSMAS, Miami, FL- Hands-on educational activity on ocean acidification (2012)

Project Rise, Miami-Dade County Public Schools, Miami, FL- Web technology facilitator & instructor (2012)

RSMAS Teaching Assistant Training Workshop, Miami, FL- Workshop instructor (2011)

Science Made Sensible Summer Training Institute, Miami FL- Presenter and workshop facilitator (2011)

Teach and Meet Educators Conference, Nashville, TN- Presenter (2011)

Research Experience and Education Facility, UCSB- Marine Science Educator and Lead Aquarist (2004-2006)

LEADERSHIP & SERVICE ACTIVITIES

Beta Beta Beta Biological Honor Society- Faculty advisor and member (2016-pres)

CUI Summer research Institute- Coordinator (2016-2020)

Writing Across the Curricula Committee- Natural sciences representative (2017-2019)

CUI Capital Budget Committee- Faculty representative (2016-2020)

Biology Department Seminar Series- Faculty coordinator (2014-2020)

Biology Club, Concordia University- Faculty advisor (2014-2016)

Strategic Planning Committee, School of Arts and Sciences, CUI- Biology Department representative (2014)

Effective Practices for Communicating Ocean Acidification- “Case Studies” working group leader (2013)

37th Annual Larval Fish Conference- Steering Committee member and Session Chair (2013)

RSMAS Family Leave Policy Committee- Graduate student representative (2012)

Division of Marine Biology and Fisheries Academic Committee, RSMAS- Graduate student representative (2010-2012)

RSMAS Small Boats Committee- Founder and graduate student representative (2009-2010)

Nicaragua Medical Missions- Volunteer physicians assistant in Managua, Nicaragua (2009, 2010)

Overtown Youth Center, Miami- Volunteer tutor to inner city youth (2009-2010)

Green Committee, RSMAS- Graduate student representative (2009-2011)

PROFESSIONAL SOCIETIES & CERTIFICATIONS

Professional Society Membership- American Fisheries Society (AFS), AFS Early Life History Section, American Association for the Advancement of Science (AAAS), Association of Zoos and Aquariums (AZA), Western Society of Naturalists (WSN)

Peer reviewer for: *Aquatic Biology, Biogeosciences, Biology Letters, CA Seagrass, Fisheries Oceanography, Global Change Biology, ICES Journal of Marine Science, Integrative Zoology, Journal of Experimental Marine Biology and Ecology, Marine and Freshwater Research, Marine Biology, Marine Ecology Progress Series, Oecologia, Proceedings of the Royal Society B*

AAUS marine science research SCUBA diver

California Reef Check certified surveyor

PADI Advanced SCUBA certification

NAUI Nitrox SCUBA certification

CPR certification

PSI certification

HONORS AND AWARDS

Faculty of the Year- Student voted, Concordia University Irvine (2015)

Sally L. Richardson Best Student Presentation-37th Annual Larval Fish Conference (2013)

Best poster presentation first runner up- 3rd Int. Symposium on the Ocean in a High-CO₂ World (2012)

AAAS/Science Program for Excellence in Science- Student awardee (2012)

Alpha Epsilon Lambda Graduate Honors Society- Student inductee (2011)

National Science Foundation- GRFP Honorable Mention (2009)

Student of the Year- Athletic Coaching Minor, Department of Exercise and Sports Science, UCSB (2006)

Bradley P. Nuremberg Award for Excellence in Diving- AAUS Research Diver Certification Class, UCSB (2004)

Dean's Honor/Graduated High Honors- College of Letters and Sciences, UCSB (2002-2006)

GRANTS, SCHOLARSHIPS, & SPONSORSHIPS

Marine Depot Sponsorship of CUI Marine Lab- Materials & supplies (2018-pres.)

California Coastal Commission “Whale Tail” Grant- \$11,000 (2017-2019)

Orange County Conservation Fund Grant- \$7,000 (2016)

Concordia University Irvine Alumni Association- \$500, \$1000 (2014, 2015)

International Women’s Fishing Association- \$800 research scholarship (2012)

FL Sea Grant/Guy Harvey Ocean Foundation- \$5,000 research grant (2012)

Manasquan River Marlin and Tuna Club, Burlew Scholarship - \$4,000 Research scholarship (2009)

International Light Tackle Tournament Association- \$2,500 research grant (2009)

Yamaha Contender Miami Billfish Tournament- \$800 in research scholarships (2009, 2010)

SELECTED PRESS COVERAGE

CUI Magazine, Spring 2016. Online, Print. “CUI’s Shark Tank”

Die Presse (German daily paper), April 4, 2013. Online, Print. “Acidifying oceans make fish ears better” (translated)

Innovations report April 19, 2013. Online. “Ocean acidification as a hearing aid for fish?”

Fish Information Services, April 23, 2013. Online. “Ocean acidification could help fish hear better”

National Oceanic and Atmospheric Administration, April 30, 2013. Online. “CAT scanned fish”