

Katrina Sky Munsterman

PhD Candidate

Department of Ecology and Evolutionary Biology

University of Michigan, Ann Arbor

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Education

Doctor of Philosophy, Candidate, Department of Ecology and Evolutionary Biology (EEB) 2019-*present*
University of Michigan (UM)

Dissertation: How behavior affects fisheries production in tropical coastal ecosystems

Advisor: Dr. Jacob Allgeier

Committee: Dr. John Vandermeer (UM EEB), Dr. Brian Weeks (UM SEAS),

Dr. Katie Fiorella (Cornell), Dr. Matthew Campbell (NOAA Fisheries)

Master of Arts, Department of Ecology, Evolution and Marine Biology (EEMB) 2017-2019

University of California, Santa Barbara (UCSB)

Dissertation: Understanding the role of herbivorous fishes in top-down and bottom-up processes on coral reefs

Advisor: Dr. Deron Burkepile

Committee: Dr. Jacob Allgeier (UM EEB), Dr. Jennifer Caselle (UCSB EEMB),

Dr. Erika Eliason (UCSB EEMB)

Bachelor of Science, Department of Ecology, Evolution and Marine Biology, UCSB 2009-2013

Dean's Honors, College of Letters & Sciences, Distinction in Major

Honors Thesis: The functional role of herbivorous fishes in Mo'orea, French Polynesia

Advisor: Dr. Russell Schmitt & Dr. Sally Holbrook

Fellowships & Awards

Science for the People Award, EEB UM (\$1250) 2024

Justice Equity Diversity and Inclusion Fellowship for PODS Program, EEB UM (\$500) 2023

NOAA Fisheries-Sea Grant Population and Ecosystem Dynamics Fellowship (\$162,500) 2022-2025

Lewis and Clark Fund for Exploration and Field Research (\$5000) 2022

Ichthyology Graduate Student Award, EEB UM (\$11,000 total) 2021-2024

Dr. Nancy William Walls Award for Field Research, UM (\$1655) 2020

Graduate Research Fellowship Program Honorable Mention, National Science Foundation 2019

Departmental Fellowship, EEMB, UCSB 2017-2019

Segal AmeriCorps Education Award (\$1700) 2013

Audrey Lynn Copeland Memorial Award for Excellence, UCSB (\$500) 2013

Research Experience for Undergraduates, National Science Foundation 2011

Grants

Joan B. Keller Conference Travel Grant, Rackham Graduate School UM (\$900) 2023

Justice Equity Diversity and Inclusion Small Grant, EEB UM (\$250) 2023

Ocean Tracking Network Conference Travel Grant (\$740) 2022

Graduate Research Grant, EEB UM (\$750 total) 2021-2024

Graduate Travel Grant, Rackham Graduate School UM (\$2400) 2020, 2024

Graduate Student Association Travel Grant, EEMB UCSB (\$200) 2019

Faculty Research Assistance Grant, UCSB (\$4200) 2017-2019

Graduate Travel Grant, EEMB, UCSB (\$500) 2018

Worster Undergraduate Research Grant, UCSB (\$3000) 2012

Teaching Experience

Pre-college Ocean Discovery and Science Program (PODS) Instructor – Online Course (UM) 2024

PODS Lead Instructor – Online and Field Course (UM) 2023

PODS Program Field Course Leader (UM) 2022

Graduate Student Instructor, Biology 281 General Ecology (UM)	Winter 2020
Graduate Student Instructor, Biology 171 Intro to Ecology and Evolution (UM)	Fall 2019
Teaching Assistant, EEMB 138 Behavioral Ecology (UCSB)	Winter 2019

Research Experience

Scientific Research Project Builder in Dominican Republic, Allgeier Lab, UM	2024
Graduate Student Curator Assistant, Ichthyology, Museum of Zoology, UM	2021
Scientific Research Assistant in Haiti, Allgeier Lab, UM	2018
Graduate Research Assistant, Burkepile Community Ecology Lab, UCSB	2017-2019
Scientific Research Assistant in Palmyra Atoll, Caselle Lab, UM	2017
Assistant Specialist, Burkepile Community Ecology Lab, UCSB	2015-2017
Junior Specialist, Mo'orea Coral Reef Long Term Ecological Research Lab, UCSB	2015-2016
Herbarium Curator Assistant, Cal Academy & UC Berkeley	2015
Plant Collector & Diver, Dept of Integrative Biology, UC Berkeley	2014-2015
Restoration Ecologist Intern, Golden Gate Park, National Parks Conservancy	2014
Backcountry Botanist Intern, U.S. Forest Service & AmeriCorps	2013
Scientific Diving Assistant, Marine Science Institute, UCSB	2011-2013
Scientific Research Assistant, Mo'orea Coral Reef LTER, UCSB	2010-2013

Publications

- Munsterman, KS**, MHK Hesselbarth, JE Allgeier. Smaller and bolder fish enhance ecosystem-scale primary production around artificial reefs in seagrass beds. Accepted *Ecological Applications*.
- Van Wert, JC, L Ezzat, **KS Munsterman**, K Landfield, NMD Schittekatte, V Parravicini, JM Brandl, DE Burkepile, EJ Eliason. Fish feces reveal diverse nutrient sources for coral reefs. *Ecology*, e4119.
- Schittekatte, NMD, SJ Brandl, JM Casey, AJ Graham, DR Barneche, DE Burkepile, JE Allgeier, JE Aria-Gonzalez, GJ Edgar, CEL Ferreira, SR Floeter, AM Friedlander, AL Green, M Kulbicki, Y Letourneur, OJ Luis, A Mercière, F Morat, **KS Munsterman**, EL Rezende, FA Rodríguez-Zaragoza, RD Stuart-Smith, L Vigliola, S Villéger, V Parravicini. 2022. Drivers and vulnerability of global coral reef fish functions. *Nature Ecology and Evolution* 1-8.
- Brines, E, MA Andskog, **KS Munsterman**, CA Layman, JE Allgeier. 2022. Anthropogenic nutrients mitigate importance of fish-mediated nutrient supply for seagrass beds in Haiti. *Marine Biology* 169 (3), 1-10.
- Allgeier, JE, BC Weeks, **KS Munsterman**, N Wale, S Wenger, V Parravicini, NMD Schittekatte, S Villéger, DE Burkepile. 2022. Phylogenetic conservatism drives nutrient dynamics of coral reef fishes. *Nature Communications* (12), 5432.
- Ezzat, L, S Merolle, CS Clements, **KS Munsterman**, KM Landfield, CR Duran Stensrud, ER Schmeltzer, DE Burkepile, RV Thurber. 2021. Thermal stress interacts with surgeonfish feces to increase coral susceptibility to dysbiosis and reduce tissue regeneration. *Frontiers in Microbiology* (12), 608.
- Munsterman KS**, JE Allgeier, JR Peters, DE Burkepile. 2021. A view from both ends: shifts in herbivore assemblages impacts top-down and bottom-up processes on coral reefs. *Ecosystems*, 1-14.
- Schittekatte, NMD, DR Barneche, S Villéger, DE Burkepile, JE Allgeier, SJ Brandel, JM Casey, A Mercière, **KS Munsterman**, F Morat, V Parravicini. 2020. Nutrient limitation, bioenergetics and stoichiometry: A new model to predict elemental fluxes mediated by fishes. *Functional Ecology* 34 (9), 1857-1869.
- Donovan, MK, TC Adam, AA Shantz, KE Speare, **KS Munsterman**, MM Rice, RJ Schmitt, SJ Holbrook, DE Burkepile. Nitrogen pollution alters coral bleaching across the seascape. *Proceedings of the National Academy of Sciences* 117 (10), 5351-5357.
- Ezzat, L, T Lamy, RL Maher, **KS Munsterman**, KM Landfield, ER Schmeltzer, CS Clements, RV Thurber, DE Burkepile. 2020. Parrotfish predation drives distinct microbial communities in reef-building corals. *Animal Microbiome*, 2, 5.
- Ezzat, L, T Lamy, **KS Munsterman**, K Landfield, DE Burkepile, RV Thurber. 2019. Herbivorous fish feces destabilize coral microbiome. *Marine Ecology Progress Series*, 81-97.
- Burkepile, DE, AA Shantz, TA Adam, **KS Munsterman**, KE Speare, MC Ladd, MM Rice, SE McIlroy, AJ Brooks, RJ Schmitt, SJ Holbrook. 2019. Nitrogen source drives differential impacts of nutrients on coral bleaching prevalence, duration, and mortality. *Ecosystems*, 1-14.
- Burkepile, DE, TC Adam, M Roycroft, MC Ladd, **KS Munsterman**, BI Ruttenberg. 2019. Size-specific patterns in corallivory and spongivory among Caribbean parrotfishes. *Coral Reefs* 38 (3), 1-7.
- Rassweiler, A, M Lauer, SE Lester, SJ Holbrook, RJ Schmitt, R Madi Moussa, **KS Munsterman**, HS Lenihan,

AJ Brooks, J Wencélius, J Claudet. 2020. Perceptions and responses of Pacific Island fishers to changing coral reefs. *Ambio* 49 (1), 130-143

Manuscripts in advanced stages

- Esch, ML, **KS Munsterman**, BF Shayka, JE Allgeier. Biodiversity predicts ecosystem processes within trophic levels but not across trophic levels on patch reef ecosystems.
- Landfield, KM, JR Peters, **KS Munsterman**, AC Stier, JE Allgeier, DE Burkepile. Coral characteristics and the presence of micro-predatory fishes influence ammonium contributions from associated small-bodied fishes and invertebrates.
- Munsterman, KS**, KJ Fiorella, D Mitchell, JE Allgeier. Successive disturbances reveal internal strengths and external barriers to resilience within small-scale fishing communities in The Bahamas. To be submitted to *Ecology and Society* September 2024
- Munsterman, KS**, MD Campbell, JE Allgeier. A new approach to an old enigma: Do artificial reefs enhance fish production? To be submitted December 2024.

Technical Literature

- Munsterman, KS**. Determination of nutrient hotspots on coral reefs using a common macroalga. Precellys Homogenizer Application Note. 2017. <https://www.bertin-instruments.com>.

Contributed Presentations

* student mentee

- Munsterman, KS**, MD Campbell, JE Allgeier. A new approach to an old enigma: Do artificial reefs enhance fish production? *Best Student Paper Award, Fish Habitat Section*. American Fisheries Society, Honolulu Hawaii, September 2024.
- Esch, M, **KS Munsterman**, BM Shayka, JE Allgeier. Biodiversity predicts ecosystem processes within trophic levels but not across trophic levels. American Fisheries Society, Honolulu Hawaii, September 2024.
- Munsterman, KS**, MD Campbell, JE Allgeier. Beyond attractions: Building evidence for enhanced fish production on artificial reefs. NMFS-Sea Grant Population Dynamics Symposium, Honolulu Hawaii, September 2024.
- Munsterman, KS**. Small-scale fisheries through a social-ecological lens. Guest Lecture, EEB 349 Coastal Ecology and Conservation, University of Michigan, September 2024.
- Munsterman, KS**, MHK Hesselbarth, JE Allgeier. Optimal foraging theory from the bottom-up? Implications for primary production in a seagrass ecosystem. Ecological Society of America, Portland, OR, August 2023.
- Munsterman, KS**. Reef fish functional diversity and small-scale fisheries. Guest Lecture, Biology 108 Animal Diversity, University of Michigan, November 2022.
- Munsterman, KS** and Mitchell, D*. Field Research in The Bahamas. Whale Camp, Bahamas Marine Mammal Research Organization, July 2022.
- Munsterman, KS**. Experiences in Field Research. Small Island Sustainability Capstone Class, University of The Bahamas, January 2021.
- Munsterman, KS**. Understanding drivers of fish production and post-disturbance recovery of fishing communities in a tropical coastal ecosystem, PhD Candidacy Evaluation Seminar, University of Michigan, October 2020.
- Donovan, MK, TC Adam, AA Shantz, KE Speare, **KS Munsterman**, MM Rice, RJ Schmitt, SJ Holbrook, DE Burkepile. Nitrogen pollution alters coral bleaching across the seascape. Ocean Sciences Meeting, San Diego, CA, February 2020.
- Landfield, KL*, **KS Munsterman**, JE Allgeier, DE Burkepile. Community composition and nutrient contributions of coral exosymbionts in Mo'orea, French Polynesia. Ocean Sciences Meeting, San Diego, CA, February 2020.
- Munsterman, KS**. Understanding the role of herbivorous fishes in top-down and bottom-up processes on coral reefs. Master's Degree Exit Seminar, UCSB, June 2019.
- Munsterman, KS**. An Introduction to Fish Pee and Me. Graduate Student Symposium, UCSB, Feb 2018.
- Munsterman, KS** & DE Burkepile. Ecosystem processes and the herbivore guild. Mo'orea Coral Reef LTER All Investigator's Meeting, UCSB, November 2017.
- Burkepile, DE, AA Shantz, JE Allgeier, V Parravicini, S Villéger, **KS Munsterman**, RJ Schmitt, SJ Holbrook. Fish-derived nutrients and their roles in Indo-Pacific coral reef systems. Indo-Pacific Fish Conference, Papeete, French Polynesia, October 2017.
- Munsterman, KS**, JE Allgeier, DE Burkepile. Fish also pee in Mo'orea and it probably matters. Mo'orea

Coral Reef LTER All Investigator's Meeting, UCSB, October 2016.

Munsterman, KS, SL Davis, SJ Holbrook, RJ Schmitt. Exploring the functional role of a common herbivore in Mo'orea. Mo'orea Coral Reef LTER All Investigator's Meeting, UCSB, November 2015.

Posters

Munsterman, KS, MD Campbell, JE Allgeier. Evaluating fish production on artificial reefs using mark-recapture and telemetry data. *First Place Poster Presentation*. NMFS-Sea Grant Population Dynamics Symposium, NOAA Silver Spring, MD, August 2023.

Munsterman, KS and JE Allgeier. Preparing for category 6: How fishers in tropical coastal ecosystem respond to large storm events. Michigan University-Wide Sustainability & Environment Conference, UM, February 2020.

Munsterman, KS, DE Burkepile, JE Allgeier. Size-mediated role of herbivores in ecosystem processes on coral reefs. Best Student Poster, *Honorable Mention*. Western Society of Naturalists, Tacoma WA, November 2018.

Munsterman, KS, SL Davis, SJ Holbrook, RJ Schmitt. The functional role of a common herbivore in Mo'orea, French Polynesia. Western Society of Naturalists, Monterey CA, November 2016.

Munsterman, KS, SL Davis, SJ Holbrook, RJ Schmitt. The functional role of a common herbivore in Mo'orea, French Polynesia. International Coral Reef Symposium (ICRS), Honolulu HI, June 2016.

Munsterman, KS, SL Davis, SJ Holbrook, RJ Schmitt. The functional role herbivorous fishes in Mo'orea, French Polynesia. Undergraduate Research Colloquium, UCSB, May 2013.

Workshops

Hesselbarth, MHK and **KS Munsterman**. *Organizer*. Advanced R Workshop. EEB Graduate Students, University of Michigan, October 2022.

Sadowsky, N, E Bastien, **KS Munsterman**, and S Shaffer-Morrison. *Panelist*. Preparing for Preliminary Exams. EEB Graduate Students, University of Michigan, October 2022.

Joque, J, J Meyers, **KS Munsterman**. *Organizer*. Creating Quality Images. EEB Grad, Faculty, and Staff, University of Michigan, April 2022.

Jacob, A, **KS Munsterman**, A Dirks. *Organizer*. Return to U-M: Pause, Reflect, Redefine and Recover. EEB Graduate Students, University of Michigan, October 2021.

Journal Reviews

Australia Journal of Zoology (1), *Coral Reefs* (1), *Diversity* (1), *Ecology and Evolution* (1), *Ecological Engineering* (1), *Estuarine Coastal and Shelf Science* (1), *Limnology and Oceanography* (1), *Marine and Freshwater Behavior and Physiology* (1), *Marine Environmental Research* (2), *Oikos* (1), *People and Nature* (1), *PLOS One* (1), *Scientific Reports* (1), *Sustainability* (1)

Fellowship Reviews

NOAA Fisheries-Sea Grant Population and Ecosystem Dynamics Fellowship

2024

Professional Societies

American Fisheries Society – North Central and Western Divisions (2023-*present*), Ecological Society of America (2023- *present*); International Society for Coral Reef Studies (2016-*present*); NSF Long Term Ecological Research Network (2011-*present*); Society of Comparative and Integrative Biology (2017); Western Society of Naturalists (2013-2017)

Mentoring Experience

PODS Program assistant instructors (2 students)	2022-2023
University of The Bahamas research assistant (1 student)	2022
EEB Graduate Dept. Sibling Program (6 graduate students)	2020-2022
Women In Science and Engineering Mentorship (1 student)	2017-2018
Nutrient chemistry analyses (12 students), Video analyses (8 students)	2016-2019
Scientific diving interns (3 students)	2016-2018

Outreach & Public Education

NMFS-Sea Grant Symposium Organizer, NOAA	2024
EEB Community Organizer, UM	2021-2023
Science Communication Fellowship, UM Natural History Museum	2021
EEB Lunch Seminar Co-Coordinator, UM	2020-2021
Twitter Account Co-Manager, International Coral Reef Society Student Chapter	2020-2023
Twitter Account Manager, Coastal Ecology and Conservation Lab	2019-2023
Invited Panelist, NSF Ocean Change Biology REU, UCSB	2019
Invited Panelist, Scuba Club, UCSB	2019
Graduate Symposium Organizers, EEMB UCSB	2019
Invited Panelist, Nature Track Film Festival, Los Olivos, CA	2018
Mo'orea Coral Reef LTER Tent, Santa Barbara Earth Day Festival, Santa Barbara, CA	2011-2019
Invited Speaker, Washington Elementary Extended Learning, UCSB	2013,2016
Exhibit Coordinator, Dept of Integrative Biology, Cal Day UC Berkeley	2015

Popular Press

NOAA Sea Grant. <i>Fish for Tomorrow: Bahamian Fisheries in a Changing Climate</i>	2024
UM EEB. <i>Katrina Munsterman, EEB PhD student, receives JEDI award</i>	2023
Michigan Sea Grant. <i>Michigan doctoral student selected for prestigious national fisheries fellowship</i>	2022
Blog Post. Regular Contributor to EEblog, UM EEB. <i>The future is science communication</i>	2021-2023
Scientist Spotlight. UM Museum of Natural History. <i>Fish pee to farm the sea</i>	2021
Blog Post. ReefBites, ICRS Student Blog. <i>Changing impacts of herbivorous fishes through time</i>	2021
Interview. The Bottom-Line Newspaper, UCSB. <i>Scientific Diving Program at UCSB</i>	2018
Research Poster. Kirsten Carlson's SciComm Blog. <i>This Tahitian fish eats more than turf</i>	2016
Interview. Career Services Blog, UCSB. <i>Internship Scuba Diving in Mo'orea</i>	2012

Certifications

NAUI Enriched Air Nitrox Diver (2018); Scientific Motorboat Operator (2015); SCUBA Visual Cylinder Inspector (2015); NAUI Divemaster (2011); Scientific Diver, American Association of Underwater Scientists (2011)