

# Heili Lowman

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## EDUCATION

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**Doctor of Philosophy (Ph.D.)**, Ecology, Evolution, and Marine Biology September 2015 — June 2020  
University of California Santa Barbara, Santa Barbara, CA

**Bachelor of Arts (B.A.)**, Double Major in Chemistry and French & Francophone Studies August 2008 — May 2012  
Vassar College, Poughkeepsie, NY

## PROFESSIONAL EXPERIENCE

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**Visiting Scholar**, *Duke University* June 2022 — Present  
**Postdoctoral Scholar**, *University of Nevada Reno* March 2021 — Present  
**Scientist**, *Southern California Coastal Water Research Project* June 2020 — February 2021  
**Graduate Research and Teaching Assistant**, *University of California Santa Barbara* September 2015 — June 2020  
**Research Assistant**, *University of Iowa* September 2013 — August 2015  
**Senior Associate**, *Berkeley Research Group* November 2012 — February 2014  
**Communications Coordinator**, *National Marine Sanctuary Foundation* August — November 2012

## PUBLICATIONS

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### Peer-reviewed manuscripts

*In Press or Published*

- **Lowman, H.E.**, R. Shriver, R.O. Hall, Jr., J. Harvey, P. Savoy, C. Yackulic, J. Blaszczak. 2024. Macroscale controls determine the recovery of river ecosystem productivity following flood disturbances. *Proceedings of the National Academy of Sciences*, 121, e2307065121.
- **Lowman, H.E.**, M.E. Hirsch, M.A. Brzezinski, J.M. Melack. 2023. Sandy marine sediments surrounding giant kelp forests provide recycled nutrients. *Journal of Coastal Research*, 39, 442-454.
- Halpern, B., C. Boettiger, M.C. Dietze, [and 113 others, including **H.E. Lowman**]. 2023. Priorities for synthesis in ecology and environmental science. *Ecosphere*, 14, e4342.
- **Lowman, H.E.**, M. Moingt, A.R. Zimmerman, J. Dugan, J.M. Melack. 2022. Distribution of terrestrial organic material in intertidal and nearshore marine sediment due to debris flow emergency response. *Science of the Total Environment*, 843, 1568886.
- Thornton Hampton, L., **H. E. Lowman**, S. Coffin, [and 18 others]. 2022. A living tool for the continued exploration of microplastic toxicity. *Microplastics and Nanoplastics*, 2, 13.
- Stein, E.D., J.S. Brown, A. Canney, M. Mirkhanian, **H. Lowman**, K. O'Connor, R. Clark. 2022. Prioritizing stream protection, restoration and management actions using landscape modeling and spatial analysis. *Water*, 14, 1375.
- **Lowman, H.E.**, K.A. Emery, J.E. Dugan, R.J. Miller. 2021. Nutritional quality of giant kelp declines due to warming ocean temperatures. *Oikos*, 2022, e08619.
- **Lowman, H.E.**, M. Moingt, M. Lucotte, J.M. Melack, H.M. Page. 2021. Terrestrial organic matter inputs to nearshore marine sediment under prolonged drought followed by significant rainfall as indicated by lignin. *Estuaries and Coasts*, 44, 2159-2172.
- **Lowman, H.E.**, K.A. Emery, L. Kubler-Dudgeon+, J.E. Dugan, J.M. Melack. 2019. Contribution of macroalgal wrack consumers to dissolved inorganic nitrogen concentrations in intertidal pore waters of sandy beaches. *Estuarine, Coastal and Shelf Science*, 219, 363-371.
- Schroer, A.L., **H.E. Lowman**, C.L. Just. 2015. Educating the aware, informed, and action-oriented sustainable citizen. *Sustainability*, 7, 1985-1999.
- Aldeborgh, H., K. George, M. Howe, **H. Lowman**, H. Moustakas, N. Strunsky, J.M. Tanski. 2014. Analysis of small molecule X-ray crystal structures: Chemical crystallography with undergraduate students in a teaching laboratory. *Journal of Chemical Crystallography*, 44, 70-81.

*In Revision, In Review, or Submitted (pdfs available upon request)*

- Marzolf, N.S., M.J. Vlah, **H.E. Lowman**, W.M. Slaughter, E.S. Bernhardt. Are annual river productivity regimes changing through time?. In Revision for *Limnology & Oceanography Letters*.
- **Lowman, H.E.**, T. Harms, J. Blaszczak, A. Cale, X. Dong, S. Earl, J. Grabow, N. Grimm, J. Melack, A.M. Reinhold, B. Summers, A. Webster. Persistent and lagged effects of fire on stream solutes linked to intermittent precipitation in arid lands. In Review at *Biogeochemistry Letters*.

**Reports, theses, and other publications**

- Gushulak, C., P. Bodmer, C. Rosa de Carvalho, R. Gladstone-Gallagher, Y.P. Lee, **H. Lowman**, N. Oguguah, K. Meinikmann, Y. Rii, B. Rodríguez-Cardona, M. Bizic. 2023. The silent mental health and well-being crisis of early career researchers in aquatic sciences. *Limnology and Oceanography Bulletin*, 32(1), 16-17.
- Stein, E.D., J.S. Brown, A. Canney, M. Mirkhanian, **H. Lowman**, K. O'Connor, R. Clark. 2022. Prioritizing stream protection, restoration and management actions using landscape modeling and spatial analysis. *Southern California Coastal Water Research Project Technical Report*, 1246.
- Mazor, R.D., B. Topping, T.-L. Nadeau, K.M. Fritz, J. Kelso, R. Harrington, W. Beck, K. McCune, **H. Lowman**, A. Allen, R. Leidy, J.T. Robb, G.C.L. David. 2021. User manual for a beta streamflow duration assessment method for the arid West of the United States. V 1.0, Document No. EPA-800-5-21001.
- **Lowman, H.** 2020. Nutrient and organic matter cycling in the nearshore ocean and marine sediment of the Santa Barbara Channel. *University of California Santa Barbara*, ProQuest ID: Lowman.ucsb\_0035D\_14735.

**Published Data and R Packages**

- **H. Lowman**, R. Shriver, R.O. Hall, Jr., J. Harvey, P. Savoy, C. Yackulic, J. Blaszcak. 2024. Data and Code for Lowman et al. 2024, Macroscale controls determine the recovery of river ecosystem productivity following flood disturbances ver 1. *Zenodo*.
- Santa Barbara Coastal LTER, **H. Lowman**, M. Hirsch, M. Brzezinski, J. Melack. 2022. SBC LTER: Reef: Dissolved nitrogen fluxes from kelp forest sediment ver 1. *Environmental Data Initiative*.
- Santa Barbara Coastal LTER, **H. Lowman**, M Moingt, A. Zimmerman, J. Dugan, J. Melack. 2022. SBC LTER: Beach: Distribution of terrestrial organic material in intertidal and nearshore marine sediment due to debris flow response efforts ver 1. *Environmental Data Initiative*.
- Santa Barbara Coastal LTER, **H. Lowman**, J. Melack, M. Brzezinski. 2021. SBC LTER: Ocean: Diel nearshore water profiles (CTD and chemistry) during stratified conditions ver 1. *Environmental Data Initiative*.
- **Lowman, H.**, K. Emery, L. Kubler-Dudgeon+, J. Dugan, J. Melack. 2020. SBC LTER: Beach: Data to support “Contribution of macroalgal wrack consumers to dissolved inorganic nitrogen concentrations in intertidal pore waters of sandy beaches” ver 1. *Environmental Data Initiative*.
- Bui, A., **H. Lowman**, A. Guerra. 2019. *calecopal*: a California-inspired package of color palettes.
- Santa Barbara Coastal LTER, Page, H., **H. Lowman**, J. Melack, J. Smith, D. Reed. 2018. SBC LTER: Ocean: Particulate organic matter content and composition of stream, estuarine, and marine sediments ver 2. *Environmental Data Initiative*.

**RESEARCH GRANTS**


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<b>Scientific Peers Advancing Research Collaborations Award (2023)</b>	\$19,720
National Center for Ecological Analysis and Synthesis “Quantifying interactive effects of precipitation and fire regimes on catchment biogeochemistry of arid lands”	
<b>Lake Tahoe License Plate Program Grant (2022)</b>	\$81,827
Nevada Department of State Lands “Making the smart watershed-to-lake connection: using high-frequency sensors and process-based aquatic ecosystem models to predict nearshore greening in Lake Tahoe”	
<b>Worster Summer Research Award (2018)</b>	\$5,400
University of California Santa Barbara “Investigating zooplankton as a source of nitrogen for kelp forests during low nutrient periods”	
<b>Associated Students Coastal Fund Grant (2018)</b>	\$8,840
University of California Santa Barbara “Composition of debris deposited on Goleta Beach and persistence in marine ecosystems”	
<b>Ecology, Evolution, and Marine Biology Departmental Block Grant (2018)</b>	\$1,000
University of California Santa Barbara “Lignin phenols as biomarkers of terrestrial organic matter in the Santa Barbara Channel”	

**SELECTED FELLOWSHIPS and AWARDS**


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Precision Measurement Engineering (PME) New Researcher Award	2022
University of California President’s Dissertation Year Fellowship	2019
Santa Barbara Coastal Long-Term Ecological Research Graduate Fellowship	2016
Department of Ecology, Evolution, and Marine Biology Fellowship, University of California Santa Barbara	2015

Environmental Research Institute Scholarship, Vassar College 2012  
 National Science Foundation Research Experiences for Undergraduates Award, Texas A&M University Galveston 2010

## CONFERENCE ACTIVITIES

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### Organizing Committees

- Early Career Representative. 2024. *Ocean Sciences Meeting*, New Orleans, LA.

### Organized Sessions

- “Amplifying voices in: Climate change impacts on aquatic systems.” 2024. *Association for the Sciences of Limnology and Oceanography Summer Meeting*, Madison, WI.
- “Ecological models as tools for integrating aquatic sciences.” 2022. *Joint Aquatic Sciences Meeting*, Grand Rapids, MI.
- “Marine sediments: Fluxes, fauna, and forecasting.” 2020. *Ocean Sciences Meeting*, San Diego, CA.

### Contributed Presentations (\*denotes first-author)

- “Quantifying ecological memory of ocean warming using long-term macroalgal time-series data.” 2024. *Ocean Sciences Meeting*, New Orleans, LA.\*
- “Understanding wildfire impacts on stream biogeochemistry across aridland precipitation regimes.” 2023. *American Geophysical Union Fall Meeting*, San Francisco, CA.
- “Precipitation variability mediates the effects of wildland fire on the biogeochemistry of an intermittent aridland stream.” 2023. *American Geophysical Union Fall Meeting*, San Francisco, CA.
- “Are annual river productivity regimes changing through time?” 2023. *Ecological Society of America Annual Meeting*, Portland, OR.
- “Littorally turning green: Quantifying variability in nearshore benthic metabolism in an oligotrophic mountain lake.” 2023. *Aquatic Sciences Meeting*, Palma de Mallorca, Spain.\*
- “Predicting river resilience to disturbance in streams and rivers across the U.S.” 2022. *Data Science and Open Science for Aquatic Research*, Virtual summit.\*
- “Predicting river ecosystem dynamics using population models to inform freshwater management.” 2022. *Joint Aquatic Sciences Meeting*, Grand Rapids, MI.
- “ToMEX: Toxicity of microplastics explorer.” 2022. *Society of Environmental Toxicology and Chemistry Southern California Chapter Annual Meeting*, Ventura, CA.
- “Wildfire impacts to aridland stream chemistry across a hydroclimatic gradient.” 2021. *American Geophysical Union Fall Meeting*, New Orleans, LA.
- “Marine sediments surrounding giant kelp forests supply recycled nutrients to the overlying water column.” 2021. *Coastal and Estuarine Research Federation Biennial Conference*, Virtual summit.\*
- “Distribution of terrestrial organic material in nearshore marine ecosystems due to debris flow emergency response.” 2019. *Coastal and Estuarine Research Federation Biennial Conference*, Mobile, AL.\*
- “Lignin phenols as biomarkers of terrestrial organic matter in the Santa Barbara Channel.” 2018. *Association for the Sciences of Limnology and Oceanography Summer Meeting*, Victoria, Canada.\*

## INVITED SEMINARS

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University Program in Ecology, Duke University	December 2023
National Center for Ecological Analysis and Synthesis	May 2023
Department of Ecology, Evolution, and Conservation Biology, University of Nevada Reno	March 2023
Department of Natural Resources and Environmental Science, University of Nevada Reno	October 2022
Department of Biology, Southern California Coastal Water Research Project	January 2020
Biogeosciences Seminar Series, University of California Santa Barbara	November 2017

## TEACHING EXPERIENCE

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### Academic Teaching Experience

*University of Nevada Reno*

**Guest Lecturer**, NRES 701c: Science Writing Spring 2023  
 Department of Natural Resources and Environmental Science 12 students

**Guest Lecturer**, BIOL 314: Ecology and Population Biology Spring 2022  
 Department of Biology 30 students

*University of California Santa Barbara*

**Teaching Assistant**, ESM 202: Environmental Biogeochemistry Winter 2017, 2018, 2019

Bren School of Environmental Science and Management	88, 83, 74 students
<b>Lead Teaching Assistant</b> , EEMB 148: Stream Ecology Department of Ecology, Evolution, and Marine Biology	Spring 2017, 2018 141, 125 students
<b>Teaching Assistant</b> , EEMB 142B: Environmental Processes in Oceans and Lakes Department of Ecology, Evolution, and Marine Biology	Winter 2016 86 students

### Bilingual Teaching Experience

<b>Group Leader</b> , French Language and Culture The Experiment in International Living, World Learning	Summer 2012 10 students
<b>Counselor</b> , Suured Tüdrukud Seedrioru Estonian Summer Camp	Summer 2008 10 campers

### WORKSHOPS LED

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Quantifying interactive effects of fire and precipitation regimes on catchment biogeochemistry of aridlands National Center for Ecological Analysis and Synthesis	May 2023
Temporal trends in nutritional content of primary production Long-Term Ecological Research All Scientists' Meeting	September 2022
Building your own RShiny application Modelscapes Consortium Annual Meeting	May 2022
Introduction to RShiny University of Wyoming Confronting Models with Data Working Group	March 2022
Introduction to R for ecologists (website link) University of California Santa Barbara	April 2021
<i>Tidy Tuesday</i> R Workshop Series (website link) Southern California Coastal Water Research Project	August 2020 — February 2021
Visualizing and mapping bioassessment data in R (website link) California Aquatic Bioassessment Workgroup/CA Chapter of the Society for Freshwater Science	October 2020
Introduction to R workshop Santa Barbara Coastal Long-Term Ecological Research Summer REU Program	July 2017

### MENTORING

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#### Undergraduate Research Projects Advised and Awards

Rija Masroor, College of William and Mary <i>"DOM explorer: A tool for visualizing dissolved organic matter in streams across North America"</i> National Science Foundation Research Experiences for Undergraduates Award	2022
Kat Le, University of California Santa Barbara <i>"Investigating pelagic zooplankton as a source of nutrients for giant kelp forests"</i> Worster Summer Research Award	2017 — 2019
Elena Staguhn, University of Maryland <i>"The impact of Thomas Fire debris on nutrient cycling in nearshore marine sediments"</i> National Science Foundation Research Experiences for Undergraduates Award	2018
Lila Kubler-Dudgeon, University of California Santa Barbara <i>"Contribution of talitrid amphipods and their kelp wrack consumption to sandy beach nitrogen cycling"</i>	2018
Chloe Smith, Oregon Institute of Technology	2017

“Effects of low pH on microbially mediated nitrogen transformations in marine sediments”

National Science Foundation Research Experiences for Undergraduates Award

Association for the Sciences of Limnology and Oceanography’s Multicultural Program Award

### Undergraduate, Graduate, and Professional Mentees

Kelly Loria, University of Nevada Reno	2021 — present
Annie Holt, Southern California Coastal Water Research Project	2021 — 2022
Angelina Zuelow, California State University Fullerton	2021
Jhenevieve Cabasal, California State University Long Beach	2020 — 2021
Megan Mirkhanian, University of California Irvine	2020
Tyler Daniel, University of California Santa Barbara	2019 — 2020
Angela Delossantos, University of California Santa Barbara	2017 — 2019
Belle Jiyarom, University of California Santa Barbara	2018
Sophie O’Hare, University of California Santa Barbara	2018
Kristine Robinson, University of California Santa Barbara	2017 — 2018
Timothy Ngo, University of California Santa Barbara	2017
Paige Rasmussen, University of California Santa Barbara	2017

### OUTREACH, EDUCATION, and DIVERSITY-RELATED ACTIVITIES

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<b>Mentor</b> , Association for the Sciences of Limnology and Oceanography’s (ASLO) Multicultural Program	2023, 2024
<b>Facilitator</b> , ASLO’s Amplifying Voices Seminar Series	2023
<b>Mentor</b> , Joint Aquatic Sciences Meeting	2022
<b>Mentor</b> , National Science Foundation Research Experiences for Undergraduates	2017, 2018, 2022
<b>Mentor &amp; Student Presentation Judge</b> , Coastal and Estuarine Research Federation Biennial Conference	2021
<b>Facilitator</b> , Global Water Center Data Therapy Workshop Series, University of Nevada Reno	2021
<b>Facilitator</b> , Cover Letter and CV Workshop, Southern California Coastal Water Research Project	2020
<b>Panelist</b> , Career Panel for Ecology Undergraduates, University of California Santa Barbara (UCSB)	2017, 2018, 2020
<b>Volunteer</b> , Coastal and Estuarine Research Federation Biennial Conference	2019
<b>Facilitator</b> , Ocean Change Biology Undergraduate Research Skills Workshop, UCSB	2019
<b>Panelist</b> , Graduate Students for Diversity in Science, UCSB	2019
<b>Judge</b> , Santa Barbara County Science Fair	2019
<b>Student Presentation Judge</b> , Ecology, Evolution, & Marine Biology Graduate Symposium, UCSB	2019
<b>Facilitator</b> , Ocean Change Biology Career Panel, UCSB	2018, 2019
<b>Mentor</b> , Long-Term Ecological Research All Scientists’ Meeting	2018
<b>Mentor</b> , Women in Science and Engineering, UCSB	2017 — 2018
<b>Volunteer</b> , Santa Barbara World Oceans Day	2017
<b>Facilitator</b> , Graduate School Application Workshop, UCSB	2017
<b>Facilitator</b> , Career Panel for Ecology Undergraduates, University of California Santa Barbara (UCSB)	2016
<b>Volunteer</b> , Texas Marine Mammal Stranding Network	2010
<b>Volunteer</b> , Auburn Heights Preserve	2009

### PROFESSIONAL SERVICE

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#### Association for the Sciences of Limnology and Oceanography

Member and Networking Sub-Committee Lead, Early Career Committee 2022 — present

#### Peer-review activities

Manuscript reviewer: *Biogeochemistry*, *Estuaries & Coasts*, *European Journal of Phycology*, *Hydrobiologia*, *Journal of Marine Science*, *Journal of Marine Systems*, *PLoS ONE*

Proposal reviewer: *Maryland Sea Grant*

#### Professional memberships and associations

Association for the Sciences of Limnology and Oceanography (ASLO)

Collaborative for Research in Aridland Stream Systems (CRASS)

Santa Barbara Coastal Long-Term Ecological Research (SBC LTER)

Society for Open, Reliable, and Transparent Ecology and Evolutionary Biology (SORTEE)

University of Nevada Global Water Center (UNR GWC)

**DEPARTMENTAL and INSTITUTIONAL SERVICE**

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<b>Southern California Coastal Water Research Project (SCCWRP)</b> Member, Professional Development Training Team	2020 — 2021
<b>University of California Santa Barbara</b> Graduate Student Representative, Freshwater Ecology Faculty Hiring Committee	2019 — 2020
Coordinator, Biogeosciences Seminar Series	2018 — 2020
Coordinator, Professional Development Seminar Series: Academic Positions	2018
Coordinator, Statistical Methods and Data Visualization in Ecology Working Group	2017 — 2018
Coordinator, Foundational Literature in Ecology Reading Group	2016
<b>Vassar College</b> Captain, Synchronized Ice Skating Team	2011 — 2012
Tour Guide, Office of Admissions	2010 — 2012
Captain/Treasurer, Ski Team	2009 — 2012

**MEDIA**

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“Managing mudslide debris after fires.” <b>Eos</b> (story link)	2022
“After the debris flow.” <b>The Current</b> (story link)	2022
“Giant kelp is getting less nutritious.” <b>Hakai Magazine</b> (story link)	2022
“Giant kelp is losing nitrogen in warming waters.” <b>Santa Barbara Independent</b> (story link)	2021
“Climate change makes kelp less nutritious.” <b>Long-Term Ecological Research Network</b> (story link)	2021
“Kelp’s nutrition under rising temperatures and the importance of long-term data.” <b>The Bottom Line</b> (story link)	2021
“UCSB researchers find long-term rising sea temperature decreases the nutritional value of giant kelp.” <b>KCBX</b> (story link)	2021
“Warmer Water, Less Nutrition.” <b>The Current</b> (story link)	2021
“Tidy coding on Tidy Tuesday.” <b>SCCWRP Director’s Report</b> (story link)	2020
Featured Scientist, <b>Long-Term Ecological Research Network</b> (story link)	2019
“Clearing the Shoreline.” <b>KEYT News</b>	2018

**ADDITIONAL SKILLS and EXPERTISE**

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**Software and Computing Skills/Certificates**

R/RMarkdown/RShiny, STAN, Git/GitHub, SLURM, Zotero, High performance computing clusters	<i>proficient</i>
Python, JMP, Mendeley	<i>working knowledge</i>
MATLAB, SQL	<i>novice</i>
<i>The Carpentries</i> Certified Instructor	

**Languages**

English	<i>fluent</i>
Estonian, French	<i>conversational</i>
Italian	<i>novice</i>