

Jemma M. Fadum, PhD

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EDUCATION

PhD, Ecology- Colorado State University, Fort Collins, CO, USA (2022)

Warner College of Natural Resources Outstanding Dissertation Award

Colorado State University's Nominee to the ProQuest Distinguished Dissertation Award

Graduate Teaching Certificate- Colorado State University, Fort Collins, CO, USA (2021)

BS, Ecosystem Science and Sustainability- Colorado State University, Fort Collins, CO, USA (2016)

PROFESSIONAL EXPERIENCE AND AWARDED FELLOWSHIPS

2026- present	Assistant Professor of Ecosystem Ecology, Odum School of Ecology, University of Georgia, Athens, CA
2024- present	Associate Editor, <i>Limnology and Oceanography Bulletin</i>
2023- 2026	Simons Postdoctoral Fellow in Marine Microbial Ecology, Carnegie Institution for Science, Pasadena, CA
2024-2025	Program Manager, MESA Mentoring Program at Foothill College, Los Altos Hills, CA
2022-2023	Emergent Ecosystem Response to Change- Biology Integration Institute (EMERGE-BII) Fellow
Spring 2022	Limnology and Oceanography Research Exchange (LOREX) Fellow, The Inter-University Institute for Marine Sciences, Eilat, Israel
2019-2020	School of Global Environmental Sustainability (SoGES) Sustainability Leadership Fellow, Fort Collins, CO

PEER REVIEWED PUBLICATIONS

<i>In prep</i>	Fadum, JM, EJ Zakem, JM Beman, "Predictable genomic architecture of anaerobic nitrogen loss and retention in natural marine ecosystems" <i>in prep</i>
<i>In review</i>	Fadum, JM, D Galindo, EA Tenorio, EK Hall, "Citizen scientists as valuable hydrologic monitoring partners in Río Helado, Honduras". <i>in review</i>
2025	Fadum, JM , X Sun, and EJ Zakem. 2025. "Redox-constrained microbial ecology dictates nitrogen loss versus retention". <i>ISME Communications</i> . ycaf219, https://doi.org/10.1093/ismeco/ycaf219
2025	Fadum, JM , MRV Ross, EA Tenorio, CA Barby, and EK Hall. 2025. "Nutrient loading from a sustainably certified aquaculture operation dwarfs annual nutrient inputs from a large multi-use watershed, Lake Yojoa, Honduras". <i>Earth's Future</i> 13(3), e2024EF004807, https://doi.org/10.1029/2024EF004807
2025	Fadum, JM , B Steele, MRV Ross, and EK Hall. 2025. "Coordinated <i>in situ</i> lake sampling concurrent with satellite acquisition days provides a mechanism for addressing data scarcity: A case study from Lake Yojoa, Honduras". <i>Acta Limnologica Brasiliensia</i> 37, e2, http://doi.org/10.1590/S2179-975X6924
2024	Fadum, JM , EK Hall, E Litchman, and EJ Zakem. 2024. "Aquaculture as a global perturbation experiment". <i>Limnology & Oceanography Letters</i> 9(4), 317-323, https://doi.org/10.1002/lol2.10384
2024	Fadum, JM , MA Borton, RA Daly, KC Wrighton, and EK Hall. 2024. "Nitrogen metabolisms of warm, anoxic waters revealed using genome resolved metatranscriptomics". <i>mSystems</i> 9(2), e01059-23, https://doi.org/10.1128/msystems.01059-23
2023	Fadum, JM and EK Hall. 2023. "Nitrogen is unlikely to consistently limit primary productivity in most tropical lakes". <i>Ecosphere</i> 14(3), e4451, https://doi.org/10.1002/ecs2.4451
2023	Fadum, JM , MN Waters, and EK Hall. 2023. "Trophic state resilience to hurricane disturbance of Lake Yojoa, Honduras". <i>Scientific Reports</i> 13(1), e5681, https://doi.org/10.1038/s41598-023-32712-3

- 2022 **Fadum, JM** and EK Hall. 2022. "The interaction of physical structure and nutrient loading drives ecosystem change in a large tropical lake over 40 years". *Science of The Total Environment*, 830, e154454, <https://doi.org/10.1016/j.scitotenv.2022.154454>

CODE, DATA PRODUCTS, AND NON-PEER REVIEWED PUBLICATIONS

- 2025 **Fadum, JM**. 2025. "More Than Just a Pretty Picture: Lessons Learned From Working With a Science Communicator to Create the L&O Bulletin's May Cover Art". *Limnology and Oceanography: Bulletin* 34(3), Early View, <https://doi.org/10.1002/lob.10712>
- 2024 **Fadum, JM**, MRV Ross. 2024. Nutrient loading from a sustainably certified aquaculture operation dwarfs annual nutrient inputs from a large multi-use watershed, Lake Yojoa, Honduras [Code]. Zenodo. [10.5281/zenodo.14079875](https://doi.org/10.5281/zenodo.14079875)
- 2024 **Fadum, JM**, MRV Ross, EA Tenorio, CA Barby, and EK Hall. 2024. Nutrient loading from a sustainably certified aquaculture operation dwarfs annual nutrient inputs from a large multi-use watershed, Lake Yojoa, Honduras [Dataset]. Zenodo. [10.5281/zenodo.14036990](https://doi.org/10.5281/zenodo.14036990)
- 2024 Cagel, S, **JM Fadum**, L Jansen, S Burnet, and M Pace. 2024. "Evaluating mentorship in the aquatic sciences in the context of a global pandemic (COVID-19)". *Limnology and Oceanography: Bulletin* 33(3), 97-100, [http://doi.org/10.1002/lob.10635](https://doi.org/10.1002/lob.10635)
- 2023 Steele, B, **JM Fadum**, EK Hall, K Willi, and MRV Ross. 2023. Processing pipeline for estimating Secchi depth at Lake Yojoa, Honduras from remote sensing products (Version v1) [Code]. Zenodo. <https://doi.org/10.5281/zenodo.8139922>
- 2023 **Fadum, JM**, MA Borton, RA Daly, KC Wrighton, and EK Hall. 2023. Dominant nitrogen metabolisms of a tropical monomictic lake identified using genome resolved metatranscriptomics [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.8035120>

PEER REVIEW AND HANDLING EDITOR EXPERIENCE

Peer Reviewer: *Limnology and Oceanography*, *Limnology and Oceanography Letters*, *Inland Waters*, *Hydrobiologia*, *Environmental Management*, *Acta Limnologica Brasiliensia*, *Aquaculture*, *Environmental Microbiology Reports*, *Limnologica*, *Global Environmental Change Advances*, *Environmental Monitoring and Assessment*

Handling and Associate Editor: *Limnology and Oceanography Bulletin*

PRESENTATIONS AND INVITED SEMINARS

- 2026 **Fadum, JM**. How to collaborate with artists to increase the reach of your science. Association for the Sciences of Limnology and Oceanography/ Society for International Limnology (ASLO-SIL) Meeting, Montreal, Canada. May 2026. Poster.
- 2026 **Fadum, JM**, F Gutierrez, EJ Zakem, and JM Beman. Nitrogen dynamics of "miniature oceans": Microbially mediated biogeochemistry in Palau's marine lakes. Association for the Sciences of Limnology and Oceanography/ Society for International Limnology (ASLO-SIL) Meeting, Montreal, Canada. May 2026. Oral.
- 2026 **Fadum, JM**, F Gutierrez, EJ Zakem, and JM Beman. Nitrogen dynamics of "miniature oceans": Depth-discrete metagenomics in Palau's marine lakes reveals links between biogeochemical processes and microbial community assemblage in a natural model system. Ocean Sciences Meeting, Glasgow, Scotland. February 2026. Oral.
- 2025 **Fadum, JM**, X Sun, and EJ Zakem. Redox-constrained microbial ecology dictates nitrogen loss versus retention. 7th Workshop on Trait-based Approaches to Ocean Life, Pacific Grove, CA, USA. July 2025. Poster.

- 2025 **Fadum, JM**, and EJ Zakem. Paper Brief: Coordinated in situ lake sampling concurrent with satellite acquisition days provides a mechanism for addressing data scarcity: A case study from Lake Yojoa, Honduras. Carnegie Science Lunch Seminar Series, Stanford, CA, USA. February 2025. Seminar.
- 2025 **Fadum, JM**, and EJ Zakem. Modeling NO_x reduction competition to identify thresholds of inorganic nitrogen retention and loss in aquatic ecosystems. Xiamen Symposium on Marine Environmental Sciences. January 2025. Oral.
- 2024 **Fadum, JM**, EK Hall, E Litchman, and EJ Zakem. Leveraging the aquaculture industry to form a global network of perturbation experiments for foundational ecological research. Ecological Society of America (ESA) Annual Meeting. August 2024. Oral.
- 2024 **Fadum, JM**, and EJ Zakem. Resource competition theory explains tradeoff between dissimilatory nitrate reduction to ammonium and denitrification. Association for the Sciences of Limnology and Oceanography (ASLO) Summer Meeting. June 2024. Oral.
- 2024 **Fadum, JM**. Piecing together the biogeochemical impacts of aquaculture through multidisciplinary ecology: from modeling to multiomics. Ocean Science Seminar Series, University of California Santa Cruz. May 2024. Seminar.
- 2024 **Fadum, JM**. Using Resource Competition Theory to Explore the Impact of Organic Matter on competing nitrate reduction pathways. The Advanced Seminars in Microbiology, Stanford University. February 2024. Seminar.
- 2024 **Fadum, JM**, EJ Zakem. Using Resource Competition Theory to Explore the Impact of Organic Matter on the Tradeoff Between Dissimilatory Nitrate Reduction to Ammonium and Denitrification. Ocean Sciences Meeting, New Orleans, Louisiana. February 2024. Poster.
- 2024 **Fadum, JM**, T McKenzie, JG Milan, and P Rogers. Cross-cohort connections and collaborations in the LOREX program. Ocean Sciences Meeting, New Orleans, Louisiana. February 2024. Poster.
- 2023 **Fadum, JM**. Interdisciplinary case studies as tools for hypothesis generation. Carnegie Science Lunch Seminar Series, Stanford, CA, USA. June 2023. Seminar.
- 2023 **Fadum, JM**, MA Borton, RA Daly, KC Wrighton, and EK Hall. Dominant nitrogen metabolisms of a tropical, monomictic lake identified using genome resolved metatranscriptomics. Association for the Sciences of Limnology and Oceanography (ASLO) Summer Meeting, Palma, Spain. June 2023. Poster.
- 2023 **Fadum, JM**. My kingdom for a *Trichodesmium*: Lessons learned from fieldwork failures. Association for the Sciences of Limnology and Oceanography (ASLO) Summer Meeting, Palma, Spain. June 2023. Poster.
- 2023 McPherson, IK, G Racine, J Paulson, **JM Fadum**, E Tenorio, and EK Hall. Evaluating the impact of two hurricanes on nutrient transport in a tropical watershed. Celebrate Undergraduate Research and Creativity (CURC) Showcase 2023. Poster.
- 2023 Racine, G, J Paulson, **JM Fadum**, E Tenorio, and EK Hall. Changes in reactive nitrogen loading to a tropical lake before and after major precipitation events. Multicultural Undergraduate Research Art and Leadership Symposium. 2023. Poster.
- 2023 **Fadum, JM** and EJ Zakem. Marine aquaculture: mesocosms for studying nutrient enrichment effects on microbially mediated biogeochemical pathways in coastal ecosystems. Simons Foundation Meeting 2023, New York City, NY. March 2023. Poster.
- 2022 Velez, A, **JM Fadum**, and EK Hall. Discharge frequency analysis for optimizing monitoring efforts in the tributaries of Lake Yojoa, Honduras. Multicultural Undergraduate Research Art and Leadership Symposium. 2022. Poster.
- 2021 **Fadum, JM**, MRV Ross, SN Topp, and EK Hall. Opportunities and Limitations of Remote Sensing in Tropical Lakes. American Geophysical Union (AGU) Fall Meeting. December 2021. Oral.

2021	Fadum, JM , MRV Ross, SN Topp, and EK Hall. Opportunities and Limitations of Remote Sensing in Tropical Lakes. Colorado State University's Graduate Student Showcase, <i>Virtual</i> . November 2021. Poster.
2021	Fadum, JM and EK Hall. Forty years of change in a monomictic tropical lake. Association for the Sciences of Limnology and Oceanography (ASLO) Summer Meeting, <i>Virtual</i> . June 2021. Oral.
2021	Fadum, JM and EK Hall. Resumen de investigaciones en Lago de Yojoa y el uso de los sensores remotos para el monitoreo del lago. Oficina de AMUPROLAGO, Sector Lago de Yojoa, Honduras. June 2021. Seminar.
2021	Fadum, JM and EK Hall. Understanding the heterogeneity of nutrient limitation in tropical lake ecosystems. Front Range Student Ecology Symposium, <i>Virtual</i> . February 2021. Oral.
2020	Hall, EK, JM Fadum , and CA Barby. Understanding the impacts of net-pen aquaculture on lake ecosystems. Natural Resource Ecology Lab's seminar series, Fort Collins, CO, USA. December 2020. Seminar.
2020	Fadum, JM and EK Hall. Nitrogen dynamics in a large tropical lake. Front Range Student Ecology Symposium, Fort Collins, CO, USA. February 2020. Oral.
2019	Fadum, JM and EK Hall. Nitrogen dynamics in a large tropical lake. Natural Resource Ecology Lab's seminar series, Fort Collins, CO, USA. November 2019. Seminar.
2019	Fadum, JM , EK Hall, and CA Barby. Investigating changing nutrient limitation in a large tropical lake: A case study of Lake Yojoa, Honduras. Association for the Sciences of Limnology and Oceanography (ASLO) Summer Meeting, San Juan, Puerto Rico. February 2019. Oral.
2019	Barby, CA, JM Fadum , and EK Hall. Changing nutrient dynamics of a large tropical watershed. Association for the Sciences of Limnology and Oceanography (ASLO) Summer Meeting, San Juan, Puerto Rico. February 2019. Oral.
2018	Fadum, JM and EK Hall. The big deal about small nutrient changes in a tropical lake. Colorado State University's Graduate Student Showcase, Fort Collins, CO, USA. November 2018. Poster.
2018	Fadum, JM . State of upper and lower Hoffman Lakes and proposed solutions to mitigate eutrophication. Presentation and panel participation at the Friends of Hoffman Lake Fall meeting. Loveland, CO, USA. September 2018. Seminar.
2016	Fadum, JM and EK Hall. Sustainable freshwater ecosystems: comparative analysis of intensive aquaculture and watershed nutrient loading in a large tropical lake. Hydrology Days 2016, Fort Collins, CO, USA. March 2016. Poster.

RECENT FUNDING AND AWARDS RECEIVED

2024	Carnegie Institute of Canada Research Grant (\$20,634.34, Lead PI)
2023	Colorado State University Nominee (1 of 2) to the ProQuest Distinguished Dissertation Award
2023	WCNR Outstanding Dissertation Award
2023	LOREX alumni Travel Grant (\$1,200)
2022	Simons Postdoctoral Fellowship (\$270,000)
2021	Vice President for Research (VPR) Graduate Fellowship 3 Minute Challenge Finalist
2021	Undergraduate Choice Poster at 2021 Graduate Student Showcase
2020	NSF DEB # 2120441 awarded to EKH ("Co-PI", as credited by PI) (\$235,115)

SERVICE

2026	Session Chair: ASLO-SIL Meeting, Montreal, Canada
2026	Session Chair: Ocean Sciences Meeting, Glasgow, Scotland
2026	Carnegie Science Community and Culture Committee Member
2024	Foothill College Science Learning Institute STEM Internship Mentor

2024	Advancing Inclusive Mentoring Program Winter 2024 Cohort
2023-2024	Carnegie Institute Postdoc Association (CIPA), Stanford Campus co-representative
2023	Carnegie Mentoring Program: Peer Mentor
2022-2023	Multicultural Undergraduate Research Art and Leadership Symposium (MURALS) Mentor
2022-2023	Skills for Undergraduates Participating in Ecological Research (SUPER) Mentor
2022	Multicultural Undergraduate Research Art and Leadership Symposium (MURALS) Volunteer
2020-2021	NREL/ESS Graduate Student Representative
2020-2021	Soup and Science: Invited speaker coordinator
2020-2021	LOREX Diversity and Inclusion Committee
2020	Natural Resource Ecology Lab Education Committee Student Representative
Fall 2020	GDPE Small Grant Reviewer
2019-2020	Front Range Student Ecological Symposium: Fundraising Chair
Fall 2019	NREL Travel Grant Committee Member Graduate Affairs Working Group
2018-2020	President and Co-founder of Colorado State University's First-Generation Student Network
2018-2020	Member of Colorado State University's Graduate Student Council (GSC)
2018-2019	Graduate Recruitment Assistant (Dep. of Ecosystem Science and Sustainability)
2019	Front Range Student Ecological Symposium: Outreach and Social Co-chair
2018	Front Range Stable Isotope Days Planning Committee Member

TEACHING APPOINTMENTS

Fall 2022	GTA: ESS 474 (Limnology)
Spring 2021	GTA: WR 204 (Sustainable Watersheds)
Fall 2020	Online course development (CSU course number: NCT-CFPD 101-202) for CSU Online (WR 204)
Fall 2020	Co-Instructor: WR 304 (Sustainable Watersheds)
Fall 2020	GTA (Awarded Fellowship): ECOL 505 (Foundations of Ecology)
Spring 2020	GTA: ESS 330 (Quantitative Reasoning)
Fall 2019	GTA: WR 304 (Sustainable Watersheds)
Spring 2019	GTA: BZ/ESS 474 (Limnology)
Fall 2018	WR 304 (Sustainable Watersheds)
Spring 2018	GTA: ESS 330 (Quantitative Reasoning)

RESEARCH SKILLS

- **Diverse Data Analysis and Modeling:** Numerical modeling (postdoctoral research), as well as machine learning models, remote sensing, and bioinformatics experience (PhD research). Data management and statistical analysis, using version control workflows in both R and Python for ecological, geochemical, geospatial, and survey data.
- **Data Management:** Creating data management and replicable QA/QC protocols when integrating and analyzing data from multiple sources including collected data, data provided by both federal and private sector collaborators, data from previously published studies, data publicly available on the web through data retrieval interfaces (e.g. NOAA and USGS) as well as the Google Earth Engine Code Editor (e.g. ECMWF).
- **Field Research and Sampling:** Extensive experience in marine and freshwater sampling (both in the water column and sediments) in diverse environments (both lentic and lotic environments ranging from tropics to high alpine). Collaborative sampling work within teams of experts, with students, and with citizen scientists. Both International (Honduras, Israel, and Canada) and domestic (California and Colorado) fieldwork experience.
- **Maintenance, Calibration, and Deployment of Field Sensors:** Proficiency with a variety of instruments including HOBO U20L-01 and U30 USB, Seabird CTDs, Hydrolab MS5 Multiparameter Sondes, and miniDOT loggers.

- **Policy Relevant Research:** In collaboration with AMUPROLAGO (Santa Cruz de Yojoa, Cortés, Honduras, C.A.), developed multiple publications (including publication of open access Spanish translations) which were referenced in Honduras's 'Plan de Rescate Ambiental del Lago de Yojoa'.
- **Wet Lab Work:** DNA and RNA extraction, standard nutrient measurements, bench top and instrumentation (Shimadzu TOC-L, Velp 802 elemental analyzer, Infinite M200 TECAN, 10-AU fluorometer, among others).
- **Funding procurement and budget management:** Development of successful proposals for both federal and private funding sources. Submission of annual spending and impact reports. Management of complex budgets for all aspects of research projects (including lab fees, consumables, travel, publication fees, salary and fringe etc.)

ADDITIONAL EMPLOYMENT AND VOLUNTEER ACTIVITIES

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|---|------------|
| Varsity Volleyball Coach (Girls and Boys), Khan Lab School, Mountain View, CA | 2024- 2025 |
| <ul style="list-style-type: none"> • Design practice plans, teach fundamental skills, and communicate expectations to players and parents. • Help players to develop self-confidence and sportsmanship • Coordinate scheduling of practices and games with the Athletic Director. | |
| Hotline advocate, Sexual Assault Victim Advocate (SAVA) Center, Fort Collins, CO | 2020-2022 |
| <ul style="list-style-type: none"> • Answered the crisis hotline when office was closed (6 pm to 8 am, typically three nights per month). • Provided a compassionate space for conversation and often led callers through grounding exercises. • Met individuals at local hospitals for SANE exams and provided information on legal options. • Completed a 40-hour suicidal ideation de-escalation training. | |
| Liaison, CSU Water Center, Fort Collins, CO | 2018-2019 |
| <ul style="list-style-type: none"> • Worked with community groups to develop citizen science initiatives • Met with HOAs to explain likely mechanisms behind their local environmental issues and proposed monitoring plans • Provided white papers as well as non-technical community presentations | |
| SheSprints triathlon 'swim buddy', Denver, CO | 2017-2020 |
| <ul style="list-style-type: none"> • Supported athletes who were uncomfortable in the water or about their first open water swim. • Swam with and then assisted athletes with their transition from the swim to bike portion of the event. | |
| Outdoor Educator and Guide, Horizons Outdoor Learning Center, Harrisonburg, VA | 2016 |
| <ul style="list-style-type: none"> • Developed aquatic ecological educational activities and led groups through team building exercises. • Facilitated climbing, backpacking, and caving trips for participants (ages 3rd grade through young adult). | |
| Manager and Interim Director of Operations, CSU Volleyball, Fort Collins, CO | 2013-2015 |
| <ul style="list-style-type: none"> • Coordinated with facilities management for special events and summer camps • Organized team travel and day of needs of visiting teams • Planned and oversaw donor events | |