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Engineering & Scientific Consulting

Laura Lilly, Ph.D.

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Professional Profile

Dr. Laura Lilly is a biological oceanographer with interdisciplinary background and expertise in marine food webs, climate-ocean dynamics, human use and management of coastal systems, and sustainability and climate solutions. Dr. Lilly possesses over a decade of experience in oceanography and marine resources, ecological systems, and climate change and adaptation, with extensive skills in both technical data analysis and effective communication.

Dr. Lilly's graduate and postdoctoral training focused on quantifying the impacts of climate variability and physical ocean changes on marine zooplankton and finfish in various geographic regions of the California Current System and global oceans. At Exponent, Dr. Lilly has focused on evaluation of potential ecological impacts of brine discharges from coastal oil and gas wells, offshore wind-induced electromagnetic fields (EMF), and various chemical contaminants in terrestrial, riparian, coastal, and deep-ocean environments. Dr. Lilly also has experience developing and implementing institutional waste reduction programs and extensive working knowledge of climate adaptation and engineering solutions, including carbon capture, uptake, and storage (CCUS) and marine carbon dioxide removal (mCDR).

Dr. Lilly has various technical capabilities, including an array of statistical data analysis skills (timeseries analysis, ecological statistics, evaluation of large and incomplete datasets, and data interpolation), Lagrangian particle tracking, GIS mapping, and coding languages (R, MATLAB, Python). She has conducted extensive literature reviews, critical assessment of scientific publications and reports, and authored scientific blogs for public information outreach. Dr. Lilly has extensive experience in team collaboration and leadership as a seagoing oceanographer with over 250 days at sea, including on-the-deck troubleshooting ability for faulty scientific instrumentation and software.

Academic Credentials & Professional Honors

Ph.D., Oceanography, University of California, San Diego, 2021

M.S., Earth Sciences, Stanford University, 2013

B.S., Earth Sciences, Stanford University, 2012

Fulbright Futures Postdoctoral Fellow, 2022

National Science Foundation Graduate Research Fellow, 2016-2020

Phi Beta Kappa, 2012

Prior Experience

Fulbright Futures Postdoctoral Fellow, University of Queensland, 2022

Postdoctoral Scholar, NOAA NWFSC/Oregon State University, 2021-2022

Co-Founder and President, Scripps Sustainability Group, UC San Diego, 2017-2021

Research Analyst, Southern California Coastal Ocean Observing System, 2015

California Sea Grant State Fellow, West Coast Governors Alliance, 2013-2014

Professional Affiliations

Integrated Ocean Observing System (IOOS) Advisory Committee, 2024-2027

Association for the Sciences of Limnology and Oceanography (ASLO)

Languages

Spanish

Publications

Lilly LE, Suthers IM, Everett JD, Richardson AJ. A global review of pyrosomes: Shedding light on the ocean's elusive gelatinous “fire-bodies”. Limnology and Oceanography Letters 2023; 8(6): 812-29.

Lilly LE, Cornuelle BD, Ohman MD. Using a Lagrangian particle tracking model to evaluate impacts of El Niño-related advection on euphausiids in the southern California Current System. Deep Sea Research Part I: Oceanographic Research Papers 2022; 187: 103835.

Lilly LE, Ohman MD. Euphausiid spatial displacements and habitat shifts in the southern California Current System in response to El Niño variability. Progress in Oceanography 2021; 193: 102544.

Lilly LE, Send U, Lankhorst M, Martz TR, Feely RA, Sutton AJ, Ohman MD. Biogeochemical Anomalies at Two Southern California Current System Moorings During the 2014–2016 Warm Anomaly-El Niño Sequence. Journal of Geophysical Research: Oceans 2019; 124(10): 6886-6903.

Lilly LE, Ohman MD. CCE IV: ENSO-related zooplankton community shifts in the southern California Current System. Deep Sea Research Part I: Oceanographic Research Papers 2018; 140: 36-51.

Lilly LE, Bonaventura J, Lipnick MS, Block BA. Effect of temperature acclimation on hemoglobin-oxygen binding in Pacific bluefin tuna (Thunnus orientalis) and yellowfin tuna (Thunnus albacares). Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology 2015; 181: 36-44.

Lilly LE, Blinebry SK, Viscardi CM, Perez L, Bonaventura J, McMahon TJ. Parallel Assay of Oxygen Equilibria of Hemoglobin. Analytical Biochemistry 2013; 441: 63-68.

Presentations

(Selected)

Invited Seminars:

Lilly LE. Here to stay or just passing through? Insights into the mechanisms and impacts of zooplankton

community variability. Oral seminar, Ecology Seminar Series, School of Biological, Earth, and Environmental Sciences, University of New South Wales, Sydney, Australia, 2022.

Lilly LE. Analyzing physical drivers of seasonal and interannual zooplankton community variability in the California Current System. Oral seminar, Marine Ecology Seminar Series, Hatfield Marine Science Center, Newport, OR, 2021.

Lilly LE, Ohman MD. ENSO-related zooplankton variability in the southern California Current System. Oral seminar, Marine Biology Seminar, CICESE, Ensenada, BC, Mexico, 2018.

Conference Presentations:

Lilly LE, Fisher JL, Jacobson KC, Hunsicker ME, Zeman SM, Cervantes BT, Fewings MR, Morgan CA, Ciannelli L. Seasonal composition and spring transition timing of the copepod community off Newport, OR. Oral presentation, Eastern Boundary Upwelling Systems (EBUS) Conference, Lima, Peru, 2022.

Lilly LE, Ohman MD. Forecasting ENSO impacts on the California Current Ecosystem planktonic food web. Oral presentation, US CLIVAR Workshop, Woods Hole Oceanographic Institution, 2022.

Lilly LE, Cornuelle BD, Ohman MD. Using a Lagrangian particle tracking model to evaluate impacts of El Niño-related advection on euphausiids in the Southern California Current System. Oral presentation, Ocean Sciences Meeting, Honolulu, HI, 2022.

Lilly LE, Ohman MD. El Niño-related spatial displacements of subtropical and cool-water euphausiids in the southern California Current System. Oral presentation, Association for the Sciences of Limnology and Oceanography (ASLO) Conference, San Juan, Puerto Rico, 2019.

Peer Reviews

Nature Climate Change

Nature: Communications Biology

Deep-Sea Research Part II

Marine Biodiversity

Progress in Oceanography

Journal of Plankton Research

Frontiers in Marine Science

Science of the Total Environment