Stanford



Brooke Weigel

Assistant Professor of Oceans

Bio

BIO

Dr. Brooke Weigel is a marine ecologist. Her research focuses on the ecology, physiology, and genomics of marine algae and microbial communities in the ocean. She is particularly interested in the feedbacks between climate change, kelp forests, microbes & carbon cycling in the ocean. Her research uses a variety of tools and methods, including field and lab experiments, genomics, bioinformatics, algal culturing, scientific scuba diving, ecophysiology, and biogeochemistry. Overall, her esearch aims to improve our understanding of coastal marine ecosystems with the overall goal of ensuring a healthy, productive, and resilient ocean. The Weigel Lab is based at Hopkins Marine Station in Pacific Grove, CA.

ACADEMIC APPOINTMENTS

- Assistant Professor, Oceans

HONORS AND AWARDS

- NSF Postdoc Research Fellowship in Biology, National Science Foundation (2023)
- William Rainey Harper Dissertation Fellowship, University of Chicago (2020)
- Booth Prize for Excellence in Graduate Student Teaching, University of Chicago (2019)
- GAANN Quantitative Ecology Fellowship, U.S. Department of Education (2017)
- EPA Greater Research Opportunities Undergraduate Fellowship, Environmental Protection Agency (2011)

PROFESSIONAL EDUCATION

- PhD, University of Chicago , Evolutionary Biology (2021)
- MS, University of North Carolina Wilmington , Marine Biology (2016)
- BA, St. Olaf College , Biology and Environmental Studies (2013)

LINKS

- Weigel Lab Website: https://weigel-lab.stanford.edu/

Teaching

COURSES

2026-27

- Marine Algae: Biodiversity & Sustainable Solutions: OCEANS 120H, OCEANS 220H (Win)
- Quals Prep Workshop: OCEANS 304 (Win)

- Scientific Illustration at Hopkins Marine Station: OCEANS 176H, OCEANS 276H (Spr)

2025-26

- Environmental Change and Marine Biodiversity: OCEANS 125H, OCEANS 225H (Spr)
- Marine Algae: Biodiversity & Sustainable Solutions: OCEANS 120H, OCEANS 220H (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Madolyn Kelm

Postdoctoral Faculty Sponsor

Kindall Murie

Doctoral (Program)

Peter Garneau, Caroline Rice, Kathrina Welborn

Publications

PUBLICATIONS

- **Foundational kelp species reveal links between host traits, the environment and the associated microbial community.** *Royal Society open science*
  Pfister, C. A., Stanfield, E., Bogan, M., Weigel, B. L., Volbrecht, S., Scorza, K.
  2025; 12 (10): 250637
- **Elevated light and CO2levels increase photosynthetic rates of diverse snow algal communities from the North Cascades.** *The New phytologist*
  Weigel, B. L., Castillo, G., Pata, H. K., Young, J. N., Kodner, R. B.
  2025
- **Warming Seawater Temperature and Nutrient Depletion Alters Microbial Community Composition on a Foundational Canopy Kelp Species.** *Environmental microbiology*
  Molnar, N. B., Weigel, B. L., Fales, R. J., Pfister, C. A.
  2025; 27 (3): e70077
- **Population genomics reveals strong impacts of genetic drift without purging and guides conservation of bull and giant kelp.** *Current biology : CB*
  Bemmels, J. B., Starko, S., Weigel, B. L., Hirabayashi, K., Pinch, A., Elphinstone, C., Dethier, M. N., Rieseberg, L. H., Page, J. E., Neufeld, C. J., Owens, G. L.
  2025; 35 (3): 688-698.e8
- **Taxonomy and phylogeny of the family Suberitidae (Porifera: Demospongiae) in California.** *Zootaxa*
  Turner, T. L., Rouse, G. W., Weigel, B. L., Janusson, C., Lemay, M. A., Thacker, R. W.
  2024; 5447 (1): 1-28
- **Interactive effects of temperature and nitrogen on the physiology of kelps (Nereocystis luetkeana and Saccharina latissima)** *FRONTIERS IN MARINE SCIENCE*
  Fales, R. J., Weigel, B. L., Carrington, E., Berry, H. D., Dethier, M. N.
  2023; 10
- **Effects of temperature and nutrients on microscopic stages of the bull kelp (Nereocystis luetkeana, Phaeophyceae).** *Journal of phycology*
  Weigel, B. L., Small, S. L., Berry, H. D., Dethier, M. N.
  2023; 59 (5): 893-907
- **The Diversity and Functional Capacity of Microbes Associated with Coastal Macrophytes.** *mSystems*
  Miranda, K., Weigel, B. L., Fogarty, E. C., Veseli, I. A., Giblin, A. E., Eren, A. M., Pfister, C. A.
  2022; 7 (5): e0059222

- **Functional Insights into the Kelp Microbiome from Metagenome-Assembled Genomes.** *mSystems*
  Weigel, B. L., Miranda, K. K., Fogarty, E. C., Watson, A. R., Pfister, C. A.
  2022; 7 (3): e0142221
- **Spatial organization of the kelp microbiome at micron scales.** *Microbiome*
  Ramírez-Puebla, S. T., Weigel, B. L., Jack, L., Schlundt, C., Pfister, C. A., Mark Welch, J. L.
  2022; 10 (1): 52
- **Differential impacts of alternate primary producers on carbon cycling.** *Ecology*
  Miranda, K. K., Weigel, B. L., McCoy, S. J., Pfister, C. A.
  2021; 102 (9): e03455
- **Promoting inclusive metrics of success and impact to dismantle a discriminatory reward system in science.** *PLoS biology*
  Davies, S. W., Putnam, H. M., Ainsworth, T., Baum, J. K., Bove, C. B., Crosby, S. C., Côté, I. M., Duplouy, A., Fulweiler, R. W., Griffin, A. J., Hanley, T. C., Hill, T., Humanes, et al
  2021; 19 (6): e3001282
- **Oxygen metabolism shapes microbial settlement on photosynthetic kelp blades compared to artificial kelp substrates.** *Environmental microbiology reports*
  Weigel, B. L., Pfister, C. A.
  2021; 13 (2): 176-184
- **The dynamics and stoichiometry of dissolved organic carbon release by kelp.** *Ecology*
  Weigel, B. L., Pfister, C. A.
  2021; 102 (2): e03221
- **Invertebrate grazing and epilithon assemblages control benthic nitrogen fixation in an N-limited river network** *FRESHWATER SCIENCE*
  Weigel, B. L., Welter, J. R., Furey, P. C.
  2020; 39 (3): 508-520
- **Sea Cucumber Intestinal Regeneration Reveals Deterministic Assembly of the Gut Microbiome.** *Applied and environmental microbiology*
  Weigel, B. L.
  2020; 86 (14)
- **Kelp beds and their local effects on seawater chemistry, productivity, and microbial communities.** *Ecology*
  Pfister, C. A., Altabet, M. A., Weigel, B. L.
  2019; 100 (10): e02798
- **Successional Dynamics and Seascape-Level Patterns of Microbial Communities on the Canopy-Forming Kelps Nereocystis luetkeana and Macrocystis pyrifera.** *Frontiers in microbiology*
  Weigel, B. L., Pfister, C. A.
  2019; 10: 346
- **Digest: Floral ambush in the sun: Evolution of flower-dwelling and UV-white reflectance in crab spiders** *EVOLUTION*
  Weigel, B. L.
  2017; 71 (8): 2134-2135
- **Effects of reciprocal transplantation on the microbiome and putative nitrogen cycling functions of the intertidal sponge, Hymeniacidon heliophila.** *Scientific reports*
  Weigel, B. L., Erwin, P. M.
  2017; 7: 43247
- **Intraspecific Variation in Microbial Symbiont Communities of the Sun Sponge, Hymeniacidon heliophila, from Intertidal and Subtidal Habitats.** *Applied and environmental microbiology*
  Weigel, B. L., Erwin, P. M.
  2016; 82 (2): 650-8