

Holly V. Moeller

Department of Ecology, Evolution & Marine Biology
University of California, Santa Barbara, Santa Barbara, California, 93106
hvmoller@ucsb.edu +1 856 905-3244 <https://moellerlab.org/>

EDUCATION:

- 2010-2015 Ph.D., Stanford University**, Biology Department, Ecology and Evolution
The role and maintenance of diversity in a multi-partner mutualism: Trees and Ectomycorrhizal Fungi
Co-Advisors: Tadashi Fukami and Peter Vitousek
- 2008-2010 M.S., MIT/Woods Hole Oceanographic Institution**, Biological Oceanography
On the economic optimality of marine reserves when fishing damages habitat
Advisor: Michael G. Neubert
- 2004-2008 B.A., Rutgers, the State University of New Jersey**, Chemistry and Biology
Honors Thesis: *The bioenergetics of a marine ciliate, Mesodinium rubrum*
Advisor: Paul G. Falkowski

POSITIONS HELD:

- 2017-Present Assistant Professor, Ecology, Evolution & Marine Biology, University of California, Santa Barbara**
- 2017 Biodiversity Research Centre Postdoctoral Fellow, University of British Columbia**
- 2015-2016 NSF Postdoctoral Fellow, Biology, Woods Hole Oceanographic Institution**
Mixotrophy and the role of metabolic flexibility in community assembly and function
Co-Supervisors: Matthew D. Johnson and Michael G. Neubert
- 2014 Adjunct Lecturer, Environmental Studies & Sciences, Santa Clara University**
Instructor, Introduction to Environmental Science Lecture and Lab

PEER-REVIEWED PUBLICATIONS:

(bold = lab member; * = undergrad mentee; † = postdoc serving as senior author)

- 2023 Smith, A***, **LM Bogar**[†], and **HV Moeller**. Fungal Fight Club: Phylogeny and growth rate predict competitive outcomes among ectomycorrhizal fungi. *FEMS Microbiology Ecology* (in press).
- Brown, AL**, **GA Casarez***, and **HV Moeller**. Acquired phototrophy as an evolutionary path to mixotrophy. *The American Naturalist* (in press).
- Weverka, JR, **HV Moeller**, and JP Schimel. Chemodiversity controls microbial assimilation of soil organic carbon: A theoretical model. *Soil Biology and Biochemistry* (in press).
- Speare, K, A Duran, MW Miller, **HV Moeller**, and DE Burkepile. Scale-dependent habitat selection by larvae of a reef-building coral. *Marine Ecology Progress Series* (in press).
- Archibald, KM**, HM Sosik, **HV Moeller**, and MG Neubert. Predator switching strength controls stability in diamond-shaped food web modules. *Journal of Theoretical Biology* 570: 111536.
- Chu, T***, **HV Moeller**, and **KM Archibald**[†]. Competition between phytoplankton and mixotrophs leads to metabolic character displacement. *Ecological Modelling* 481: 110331.

- Kaare-Rasmussen, JO***, **HV Moeller**, and **F Pfab**[†]. Modeling food-dependent symbiosis in *Exaptasia pallida*. *Ecological Modelling* 481: 110325.
- Moeller, HV**, RM Nisbet, and AC Stier. Cascading benefits of mutualists' predators on foundation species: a model inspired by coral reef ecosystems. *Ecosphere* 14(1): e4382.
- Johnson, MD, **HV Moeller**, **C Paight**, RM Kellogg, MR McIlvin, MA Saito, and E Lasek-Nesselquist. Functional control and metabolic integration of stolen organelles in a photosynthetic ciliate. *Current Biology* 33(5): 973-980.
- Wieczynski, D, **HV Moeller**, and JP Gibert. Mixotrophic microbes create carbon tipping points under warming. *Functional Ecology* 37(7): 1771-2085.
- Kopecky, KL, AC Stier, RJ Schmitt, SJ Holbrook, and **HV Moeller**. Material legacies can degrade resilience: Structure-retaining disturbances promote regime shifts on coral reefs. *Ecology* 104(4): e4006.
- 2022** **Gonzalez, LM***, SR Proulx, and **HV Moeller**. Modeling the metabolic evolution of mixotrophic phytoplankton in response to rising ocean surface temperatures. *BMC Ecology and Evolution* 22: 136.
- Archibald, K**, S Dutkiewicz, C Laufkoter, and **HV Moeller**. Thermal responses in global marine planktonic food webs are mediated by temperature effects on metabolism. *Journal of Geophysical Research – Oceans* 127(12): e2022JC018932.
- Lepori-Bui, M**, **C Paight**, **E Eberhard**, **CM Mertz***, and **HV Moeller**. Evidence for evolutionary adaptation of mixotrophic nanoflagellates to warmer temperatures. *Global Change Biology* 28: 7094-7107.
- Paight, C**, MD Johnson, E Lasek-Nesselquist, and **HV Moeller**. Cascading effects of prey identity on gene expression in a kleptoplastidic ciliate. *Journal of Eukaryotic Microbiology* 70(1): e12940.
- Brown, AL**, **F Pfab**, **EC Baxter***, **AR Detmer**, **HV Moeller**, RM Nisbet, and R Cunning. Analysis of a mechanistic model of corals in association with multiple symbionts: Within-host competition and recovery from bleaching. *Conservation Physiology* 10(1): coac066.
- Pfab, F**, **AL Brown**, **AR Detmer**, **EC Baxter***, **HV Moeller**, R Cunning, and RM Nisbet. Timescale separation and models of symbiosis: state space reduction, multiple attractors, and initialization. *Conservation Physiology* 10(1), coac026.
- Hsu, V***, **F Pfab**, and **HV Moeller**. Niche expansion via acquired metabolism facilitates competitive dominance in planktonic communities. *Ecology* 103:e3693.
- Detmer, AR**, R Cunning, **F Pfab**, **AL Brown**, AC Stier, RM Nisbet, and **HV Moeller**. Fertilization by coral-dwelling fish promotes coral growth but can exacerbate bleaching response. *Journal of Theoretical Biology* 541:111087.
- Falcó, C*** and **HV Moeller**. Optimal spatial management in a multi-use marine habitat: Balancing fisheries and tourism. *Natural Resource Modeling* 35(1): e12309.
- 2021** **Runte, GC**, **AH Smith***, **HV Moeller**, and **LM Bogar**[†]. Spheres of influence: Host tree proximity and soil chemistry shape rRNA, but not DNA, communities of symbiotic and free-living soil fungi in a mixed hardwood-conifer forest. *Frontiers in Ecology and Evolution* 9: 397.
- Detmer, AR***, RJ Miller, DC Reed, TW Bell, AC Stier, and **HV Moeller**. Variation in disturbance to a foundation species structures the dynamics of a benthic reef community. *Ecology* 102(5): e03304.
- Hsu, V***, and **HV Moeller**. Metabolic symbiosis facilitates species coexistence and

- generates light-dependent priority effects. *Frontiers in Ecology and Evolution* 8: 491.
- Moeller, HV, V Hsu***, **M Lepori-Bui**, **L Mesrop**, **C Chinn***, and MD Johnson. Prey type constrains growth and photosynthetic capacity of the kleptoplastidic ciliate *Mesodinium chamaeleon* (Ciliophora). *Journal of Phycology* 57(3): 916-930.
- 2020** **Bui, A**, D Orr, **M Lepori-Bui**, K Konicek, HS Young, and **HV Moeller**. Soil fungal community composition and functional similarity shift across distinct climatic conditions. *FEMS Microbiology Ecology* 96(12): f1aa193.
- Moeller, HV**, MG Neubert, and MD Johnson. Intraguild predation enables coexistence of competing phytoplankton in a well-mixed water column. *Ecology* 100 (12): e02874.
- Pisapia, C, PJ Edmunds, **HV Moeller**, B Riegl, M McWilliam, CD Wells, and MS Pratchett. Projected shifts in coral size structure in the Anthropocene. *Advances in Marine Biology: Population Dynamics of the Reef Crisis* 87: 31-60.
- Rice, MM, BL Maher, AMS Correa, **HV Moeller**, NP Lemoine, AA Shantz, DE Burkepile, and NJ Silbiger. Macroborer presence on corals increases with nutrient input and promotes parrotfish bioerosion. *Coral Reefs* 39: 409-418.
- Visalli, ME, BD Best, RB Cabral, ... **HV Moeller**, ... DJ McCauley. Data-driven approach for highlighting priority areas for protection in marine areas beyond national jurisdiction. *Marine Policy* 122: 103927.
- 2019** **Moeller, HV**, C Laufkötter, EM Sweeney, and MD Johnson. Light-dependent grazing: A new mechanism for formation of Deep Chlorophyll Maxima. *Nature Communications* 10: 1978.
- 2018** **Moeller, HV** and MD Johnson. Preferential plastid retention by the acquired phototroph *Mesodinium chamaeleon*. *Journal of Eukaryotic Microbiology* 65(2): 148-158.
- Doering, GN, I Scharf, **HV Moeller***, and JN Pruitt*. Social tipping points in animal societies in response to heat stress. *Nature Ecology & Evolution* 2(8): 1298.
*Denotes equal contribution by senior authors.
- Pruitt, JN, A. Berdahl, C Riehl, N Pinter-Wollman, **HV Moeller**, et al. Social tipping points in animal societies. *Proceedings of the Royal Society B* 285(1887): 20181282.
- Johnson, MD and **HV Moeller**. Mixotrophy in protists: from model systems to mathematical models. *Frontiers in Marine Science* 5: 490.
- 2017** Johnson, MD, E Lasek-Nesselquist, **HV Moeller**, et al. *Mesodinium rubrum*: The symbiosis that wasn't. *PNAS* 114(7): E1040-E1042.
- 2016** **Moeller, HV** and KG Peay. Competition-function tradeoffs in ectomycorrhizal fungi. *Peer J* 4:e2270.
- Moeller, HV**, IA Dickie, T Fukami, and DA Peltzer. Hierarchical neighbor effects on mycorrhizal community structure and function. *Ecology & Evolution* 6(15): 5416-5430.
- Herrera, T, **HV Moeller**, and MG Neubert. High-seas fish wars generate marine reserves. *PNAS* 113(14): 3767-3772.
- Moeller, HV**, E Peltomaa, MD Johnson, and MG Neubert. Acquired phototrophy stabilizes coexistence and shapes intrinsic dynamics of an intraguild predator and its prey. *Ecology Letters* 19: 393-402.
- Pedersen, E, J Marleau, M Granados, **HV Moeller**, and F Guichard. Non-hierarchical movement promotes stability and resilience in a tritrophic system. *The American Naturalist* 187(5): E116-E128.
- Moeller, HV** and MG Neubert. Multiple friends with benefits: An optimal mutualist

- management strategy? *The American Naturalist* 187(1): E1-E12.
- 2015** **Moeller, HV**, IA Dickie, T Fukami, and DA Peltzer. Mycorrhizal co-invasion and novel interactions depend on neighborhood context. *Ecology* 96(9): 2336-2347.
- Moeller, HV** and MG Neubert. Economically optimal marine reserves without spatial heterogeneity in a simple two-patch model. *Natural Resource Modeling* 28(3): 244-255.
- Wood, J, I Dickie, **HV Moeller**, D Peltzer, K Boot, G Rattray, and J Wilmshurst. Novel interactions between non-native mammals and fungi facilitate establishment of invasive pines. *Journal of Ecology* 103: 121-129.
- 2014** **Moeller, HV**, KG Peay, and T Fukami. Ectomycorrhizal fungal traits reflect environmental conditions along a coastal California edaphic gradient. *FEMS Microbiology Ecology* 87(3): 797-806.
- 2013** **Moeller, HV** and MG Neubert. Habitat damage, marine reserves, and the value of spatial management. *Ecological Applications* 23, 959-971.
- Karp, DS, **HV Moeller**, and LO Frishkoff. Non-random extinction patterns can modulate pest-control service decline. *Ecological Applications* 23: 840-849.
- Sailley, SF, HW Ducklow, **HV Moeller**, WR Fraser, OME Schofield, DK Steinberg, LM Garzio, and SC Doney. Carbon fluxes and pelagic ecosystem dynamics near two western Antarctic Peninsula Adelie penguin colonies: an inverse model approach. *Marine Ecology Progress Series* 492: 253-272.
- 2012** Ducklow, H, SC Doney, ... **HV Moeller**, et al. Marine Pelagic Ecosystems: The West Antarctic Peninsula. In: Antarctic Ecosystems: An extreme environment in a changing world, 121-159.
- 2011** **Moeller, HV**, MD Johnson, and PG Falkowski. Photoacclimation in the phototrophic marine ciliate, *Mesodinium rubrum* (Ciliophora). *Journal of Phycology* 47: 324-332.
- 2009** Johnson, MD, J Volker, **HV Moeller**, E Laws, KJ Breslauer, and PG Falkowski. Universal constant for heat production in protists. *PNAS* 106: 6696-6699.
- Submitted* **Barbaglia, GS, C Paight, MA Honig, R Marczak, M Lepori-Bui, and HV Moeller**. Environment-dependent metabolic investments in the mixotrophic chrysophyte *Ochromonas*. In revision for *Journal of Phycology*.

GRANTS AND FUNDING:

-
- 2023-2028** NSF Biological Oceanography. "CAREER: How do mixotroph phenotypic plasticity and evolution constrain climate feedbacks?" To HV Moeller. (\$1,104,048)
- Army Institute for Collaborative Biotechnologies. "Identifying microbial networks for signal detection and propagation." To HV Moeller. (\$892,000)
- 2022-2026** NSF Biological Oceanography. "Collaborative Research: Community structure of marine macroalgae: a trait-based approach." To PI RJ Miller (HV Moeller co-PI). (\$1,180,593)
- 2020-2023** Simons Foundation Early Career Investigator in Marine Microbial Ecology and Evolution. (\$666,000)
- 2020-2022** Army Institute for Collaborative Biotechnologies. "Effects of plastid acquisition on toxin production in marine food chains." To HV Moeller. (\$194,000)
- 2019-2025** NSF Emerging Frontiers. "Collaborative Research: URoL : Epigenetics 2: Predicting phenotypic and eco-evolutionary consequences of environmental-energetic-epigenetic linkages." PI: H Putnam; Co-PIs: HV Moeller, R Nisbet, R Cunning, S Roberts, J Eirin-Lopez (\$2,998,175)

NSF Biological Oceanography. “BEE: Testing the evolutionary response of mixotrophs to future ocean conditions.” To HV Moeller. (\$536,087)

Hellman Faculty Fellowship (\$35,000)

2018-2023 Army Institute for Collaborative Biotechnologies. “Harnessing acquired metabolism in microbial systems.” To HV Moeller. (\$332,511)

2017-2019 Norma J. Lang Early Career Fellowship from the Psychological Society of America. “Quantifying niche partitioning along an acquired phototrophy gradient.” To HV Moeller. (\$9,826)

2016 - present Department of Energy Joint Genome Institute CSP17 503035. “The role of acquired phototrophy in phytoplankton blooms: Insights from the *Mesodinium rubrum* genome.” To MD Johnson et al. (HV Moeller led writing)

WHOI Coastal Oceans Institute / Ocean Life Institute Grant 22443.01. “Dynamic bioeconomic models of marine reserves when fishing damages habitat.” To MG Neubert and HV Moeller (\$44,904)

University of British Columbia Biodiversity Research Centre Postdoctoral Fellowship (\$110,000)

2015-2016 NSF Postdoctoral Research Fellowship in Biology Grant DBI- 401332. “Mixotrophy and the role of metabolic flexibility in community assembly and function.” (\$138,000)

Woods Hole Oceanographic Institution Postdoctoral Scholarship (\$88,250; declined)

2013 Achievement Rewards for College Scientists Fellowship (\$24,000)

2012 NSF Doctoral Dissertation Improvement Grant (\$15,000)

2009 NSF Graduate Research Fellowship (\$121,500)

2008 MIT Linden Earth Systems Fellowship (\$10,000)

2007 NSF Research Experience for Undergraduates Fellow, University of Alaska Southeast, Juneau Campus. Advisors: Matt Heavner and Eran Hood.

2004 Rutgers University Merit Award (\$96,000)

INVITED PRESENTATIONS:

2023 **Moeller, HV.** Trade, Borrow, or Steal: How Acquired Metabolism Drives Evolutionary Innovation. UC San Francisco Basic Science Seminar in Biochemistry. 26 September.

Moeller, HV. All Mixed Up: Can mixotroph traits predict future function? Trait-Based Approaches Meeting. Copenhagen, Denmark. 15 August.

Moeller, HV. Trade, Borrow, or Steal: How acquired metabolism creates ecological opportunity and fuels evolutionary innovation. University of Texas, Austin. 13 February.

Moeller, HV. Trade, Borrow, or Steal: How acquired metabolism creates ecological opportunity and fuels evolutionary innovation. Institute of Biodiversity and Ecosystem Dynamics, University of Amsterdam. 26 January. (virtual)

2022 **Moeller, HV.** Evolutionary transitions from heterotrophy to phototrophy: The *Mesodinium* genus. EMBO Comparative Genomics of Unicellular Eukaryotes: Interactions and Symbioses, Sant Feliu de Guixols, Spain. 13 September.

2021 **Moeller, HV.** The ecological and evolutionary consequences of acquired metabolism. W. K. Kellogg Biological Station, Michigan State University. 17 September.

Moeller, HV. The ecological and evolutionary consequences of acquired metabolism.

- University of Alabama. 1 November. (virtual)
- 2020** **Moeller, HV.** Trade, Borrow, or Steal: How acquired metabolism fuels ecological opportunity and evolutionary innovation. University of British Columbia Biodiversity Research Centre. 9 December. (virtual)
- Moeller, HV.** Trade, Borrow, or Steal: How acquired metabolism shapes ecological communities. Drexel University. 8 October. (virtual)
- Moeller, HV.** Jacks of All Trades or Masters of None: Mixotrophy in the global ocean. Rutgers University. 21 September. (virtual)
- Moeller, HV.** Modeling Complex Endosymbiosis: Empirical and mathematical studies of the genus *Mesodinium*. Norma J. Lang Lecture, Phycological Society of America Annual Meeting. 29 July. (virtual)
- Moeller, HV.** Jacks of All Trades or Masters of None: How diverse mixotroph strategies shape current and future oceans. Scripps Institute of Oceanography. 27 May. (virtual)
- 2019** **Moeller, HV.** Acquired metabolism, ecological opportunity, and evolutionary innovation. UCLA. 16 October. Los Angeles, CA, USA.
- Moeller, HV.** When bad partners do good: Maintenance of partner quality variation in multispecies mutualism. Evolution Meeting (T806). 23 June. Providence, RI, USA.
- Moeller, HV.** How acquired metabolism fuels ecological opportunity and evolutionary innovation. University of Nebraska-Lincoln. 18 April. Lincoln, NE, USA.
- Moeller, HV.** Trade, Borrow, or Steal: How acquired metabolism fuels ecological opportunity and evolutionary innovation. California State University, Northridge. 5 April. Northridge, CA, USA.
- 2018** **Moeller, HV.** Smearing the Niche: Acquired metabolism, ecological opportunity, and evolutionary innovation. Gordon Conference: Unifying Ecology Across Scales. 25 July. Biddeford, ME, USA.
- Moeller, HV.** Mixotrophic modulators of the surface ocean. University of Southern California. 6 March. Los Angeles, CA, USA.
- 2017** **Moeller, HV.** Trade, Borrow, or Steal: Acquired metabolism and evolutionary innovation. University of California, Riverside. 5 October. Riverside, CA, USA.
- Moeller, HV** and MG Neubert. Acquired metabolism as an evolutionary path to mixotrophy. ICMA-VI. 21 October. Tucson, AZ, USA.
- Moeller, HV** and MG Neubert. Acquired Metabolism: An evolutionary pathway to mixotrophy? Ecological Society of America Annual Meeting, OOS 44-6. 11 August. Portland, OR, USA.
- Moeller, HV.** Tree-ectomycorrhizal symbioses: Does diversity confer function? Canadian Society for Ecology & Evolution Meeting. 8 May. Victoria, BC, Canada.
- Moeller, HV.** Trade, borrow, or steal: How acquired metabolism confers phenotypic plasticity. 13th Annual Early Career Scientists Symposium: Ecology and Evolutionary Biology of Phenotypic Plasticity. University of Michigan. 11 March. Ann Arbor, MI, USA.
- 2016** **Moeller, HV.** Optimizing fisheries management: Habitat damage, marine reserves and the value of spatial knowledge. University of Maine. 14 October. Orono, ME, USA.
- Moeller, HV.** Mixotrophic Modulators of the Biological Pump. Ocean Carbon Biogeochemistry Summer Workshop. 25 July. Woods Hole, MA, USA.
- Moeller, HV.** Trade, Borrow, or Steal: Acquired metabolism in community ecology.

University of California, Berkeley. 10 February. Berkeley, CA, USA.

Moeller, HV. Trade, Borrow, or Steal: Acquired metabolism in community ecology. University of California, Santa Barbara. 21 January. Santa Barbara, CA, USA.

2015 Moeller, HV. Trade, Borrow, or Steal: Acquired metabolism in community ecology. Georgia Institute of Technology. 3 December. Atlanta, GA, USA.

Moeller, HV. Trade, Borrow, or Steal: Acquired metabolism in community ecology. Vanzant Seminar Series, Rice University. 19 November. Houston, TX, USA.

Moeller, HV. Trade, Borrow, or Steal: Acquired metabolism in community ecology. University of Pennsylvania. 5 November. Philadelphia, PA, USA.

Moeller, HV. The role and maintenance of diversity in a multi-partner mutualism. Biology Department Seminar Series, Woods Hole Oceanographic Institution. 2 April. Woods Hole, MA, USA.

Moeller, HV. Habitat damage, marine reserves, and the value of spatial knowledge. School for Marine Science & Technology Seminar Series, University of Massachusetts, Dartmouth. 18 February. Fairhaven, MA, USA.

2013 Moeller, HV, MG Neubert. Optimal investment in a multi-mutualist system: Trees and ectomycorrhizal fungi. Oral Presentation: American Mathematical Society Joint Meeting, 1086-92-1753. San Diego, CA, USA.

2012 Moeller, HV, and MG Neubert. Accounting for habitat damage increases the economic optimality of marine reserves. Oral Presentation: American Mathematical Society Joint Meeting, 1077-92-2201. Boston, MA, USA.

2010 Moeller, HV, and MG Neubert. On the economic optimality of marine reserves when fishing damages habitat. Biology Department Seminar Series, Woods Hole Oceanographic Institution. August. Woods Hole, MA, USA.

CONTRIBUTED PRESENTATIONS:

2023 Moeller, HV, K Klitgaard, and LM Bogar. Leaky or loyal? Bet-Hedging investment strategies in multispecies mutualisms. Ecological Society of America Annual Meeting, Portland, OR, USA.

Moeller, HV, K Archibald, G Barbaglia, L Gonzalez, M Honig, S Leles, M Lepori-Bui, R Marczak, F Pfab, and SR Proulx. All Mixed Up: How metabolic tradeoffs and synergies shape mixotrophs' evolutionary responses to climate change. American Society of Naturalists Meeting, Asilomar, CA, USA.

2022 Moeller, HV, K Archibald, G Barbaglia, L Gonzalez, M Honig, S Leles, M Lepori-Bui, R Marczak, F Pfab, and SR Proulx. All Mixed Up: How metabolic tradeoffs and synergies shape mixotrophs' evolutionary responses to climate change. Ecological Society of America Annual Meeting, Montreal, QC, Canada.

Moeller, HV, K Archibald, G Barbaglia, L Gonzalez, S Leles, M Lepori-Bui, R Marczak, F Pfab, and SR Proulx. All Mixed Up: Quantifying mixotroph metabolic tradeoffs to improve predicted responses to ocean warming. Ocean Sciences Meeting, February, Virtual.

2020 Moeller, HV, M Lepori-Bui, and C Laufkötter. Do mixotrophs modulate a positive climate feedback loop? Modeling the evolutionary responses of mixotrophs to future ocean conditions. Ocean Sciences Meeting (OB41A-04). 20 February. San Diego, CA, USA.

2019 Moeller, HV, MD Johnson, and MG Neubert. Trait-based evolution of acquired phototrophs: New models for complex endosymbiosis. 4th Trait Based Approaches Workshop. 20 August. Buckinghamshire, UK.

- 2018** **Moeller, HV** and MD Johnson. The *Mesodinium* genus as a model for secondary endosymbiosis. Joint Phycological Society of America/International Society of Protistology Meeting. 31 July. Vancouver, BC, Canada.
- Moeller, HV**, C Laufkötter, EM Sweeney, Y Shaked, and MD Johnson. A new hypothesis for Deep Chlorophyll Maximum formation: Light-dependent grazing. Ocean Sciences Meeting, MM14A-1421. 13 February. Portland, OR, USA.
- 2016** **Moeller, HV**, E Peltomaa, MD Johnson, and MG Neubert. Acquired phototrophy stabilizes coexistence and shapes intrinsic dynamics in planktonic communities. Poster Presentation: Ocean Sciences Meeting, PP24B-0557. 23 February. New Orleans, LA, USA.
- Moeller, HV**, E Peltomaa, MD Johnson, and MG Neubert. Merging models and data to understand acquired phototroph blooms. Poster Presentation: EMBO-EMBL Symposium on A New Age of Discovery for Aquatic Microeukaryotes. 27 January. EMBL, Heidelberg, Germany.
- 2015** **Moeller, HV**, MD Johnson, and MG Neubert. Acquired phototrophs as mediators of planktonic community dynamics. Poster Presentation: OCB Trait-Based Approaches to Ocean Life Workshop. 5 October. Waterville Valley, NH, USA.
- Moeller, HV**, E Lasek-Nesselquist, and MD Johnson. Regulation of acquired metabolic potential by the marine ciliate *Mesodinium rubrum*. Oral presentation: Ecological Society of America Annual Meeting, COS 72-1. 12 August. Baltimore, MD, USA.
- Moeller, HV**, and MG Neubert. Accounting for habitat damage increases the economic optimality of marine reserves. Oral Presentation: MPE 2013+ Workshop on Natural Resources. 5 June. Howard University, Washington, D.C., USA.
- 2014** **Moeller, HV**, and MG Neubert. Optimal investment in a multi-mutualist system: Trees and ectomycorrhizal fungi*. Oral Presentation: Ecological Society of America Annual Meeting, COS 139-10. Sacramento, CA, USA.
- *Awarded the Volterra Prize for Best Student Talk in Mathematical Ecology*
- 2013** **Moeller, HV**, IA Dickie, DA Peltzer, and T Fukami. Novel fungal partnerships highlight host flexibility in the New Zealand Douglas-fir invasion. Oral Presentation: Ecological Society of America Annual Meeting, COS 93-3. Minneapolis, MN, USA.
- Moeller, HV**. Optimal investment in a multi-mutualist system: Trees and ectomycorrhizal fungi. Oral Presentation: AARMS Math Biology Workshop. July. St. John's, NFLD, Canada.
- Moeller, HV**. Accounting for habitat damage increases the economic optimality of marine reserves. Oral Presentation: AARMS Workshop on the Sustainability of Aquatic Ecosystem Networks. 24 October. Fredericton, NB, Canada.
- 2012** **Moeller, HV**, KG Peay, and T Fukami. Turnover in the ectomycorrhizal fungal community along a soil age gradient. Oral Presentation: Ecological Society of America Annual Meeting, COS 66-2. Portland, OR, USA.
- 2010** **Moeller, HV**, and MG Neubert. The role of marine reserves in optimal harvesting when fishing damages habitat. Oral Presentation: Ecological Society of America Annual Meeting, COS 22-5. Pittsburgh, PA, USA.
- 2007** Heavner, MJ, DR Fatland, **HV Moeller**, E Hood, and MS Schultz. Sensor webs in digital earth. Poster: American Geophysical Union Fall Meeting, Session II. San Francisco, CA, USA.

NON-TECHNICAL PUBLICATIONS and PRESENTATIONS:

- 2018** "Trade, Borrow, or Steal: How Life Exceeds its Metabolic Potential." Public Talk, Santa Barbara Museum of Natural History Science Pub Night, Santa Barbara, 8 October 2018.

- 2017 “Trade, Borrow, or Steal: How Life Exceeds its Metabolic Potential.” Public Talk, Café Scientifique Vancouver, 28 March 2017.
- 2015 Guest columnist, **Millennium Assessment of Humans and the Biosphere Blog**
- 2007-2015 “**Seeing Green**” Columnist, The Stanford Daily, The MIT Tech, the Rutgers Daily Targum, examples online at: www.stanforddaily.com/author/hollymoeller/
**Winner of the 2014 California Journalism Awards Katharine M. Macdonald Student Award and the 2013 Stanford Daily William F. Woo Prize.*
- 2012 “Future depends on long-term planning,” **San Francisco Chronicle**, 12 October.
 “Say, Don’t Spray,” collected in **Real Science Writing**, 6th Edition.
 “Species count down at Stanford’s Lake Lagunita as dry spring drives species away,” **Peninsula Press**, 23 May.
 “Noise pollution drives birds out of their homes, study shows,” **Peninsula Press**, 7 May.

TEACHING and MENTORING EXPERIENCE:

Postdoctoral Scholars Supervised:

Dr. Laura Bogar, 2019-2022; current Assistant Professor, UC Davis
 Dr. Alexandra Brown, 2019-2022; current Postdoctoral Researcher, UC Berkeley
 Dr. Ferdinand Pfab, 2020-present
 Dr. Christopher Paight, 2020-2023; current Research Scientist, Naval Health Research Center
 Dr. Kevin Archibald, 2020-present
 Dr. Suzana Leles, 2021-present
 Dr. Zach Reitz, 2023-present
 Dr. Bethany Stevens, 2023-present

Graduate Students Mentored:

An Bui, M.Sc., 2020
 Michelle Lepori-Bui, NSF Graduate Fellow, M.Sc. 2022
 Gabe Runte, M.Sc., 2022; Ph.D. in progress
 A. Raine Detmer, NSF Graduate Fellow, Ph.D. in progress

Undergraduates Directly Advised:

Veronica Hsu, 2017-2021 (2 first-author papers); Goldwater Scholar; Ph.D. student at Harvard
 Grace Casarez, 2018-2021 (1 co-first-author paper); M.S. in Applied Math from Stanford
 Carles Falcó i Gandia, 2018-2019 (1 first-author paper); Ph.D. student at Oxford
 Logan Gonzalez, 2018-2020 (1 first-author paper); NSF Graduate Fellow (2023); Ph.D. student at Rutgers
 Kristen Klitgaard, 2019-2020; research scientist at BeeFlow
 A. Raine Detmer, 2019-2020 (1 first-author paper); current Ph.D. student at UCSB
 Ethan Baxter, 2020-2023; current Ph.D. student in Applied Math at Northwestern
 Jagger Joyner, 2020-2022; botanist at Santa Barbara Botanical Garden
 Alex Smith, 2020-2021 (1 first-author paper); M.S. in Biology from CU Denver (2023)
 Congyi Zeng, 2020-2022; current MS student, Bioinformatics, Yale
 Tianyi Chu, 2021-2022 (1 first-author paper); current MS student, Bioinformatics, Yale
 Gina Barbaglia, 2021-2023 (1 first-author paper submitted)
 Jennifer Gladstone, 2021-2022
 Blake Bradfield, 2021-2022
 Jakob Kaare-Rasmussen, 2022-present (1 first-author paper); ESA Lotka Prize for Best Poster (2022)
 Josephine Kaminaga, 2022-2023
 Sophia Mirrashidi, 2022-2023
 Alan Sheu, 2022-present
 Maggie Doyle, 2023-present

Courses Taught:

- EEMB 92: Applying Mathematics in the Life Sciences, 2023-present. Special instruction and support for 20 first-year students from historically minoritized and underrepresented backgrounds.
- EEMB 120: Introduction to Ecology, 2018-present. 120 students, upper division lecture course.
- EEMB 179: Ecological Modeling, 2019-present. 75 students, upper division lecture & lab course.
- EEMB 595CA: Construction and Analysis of Ecological Models, 2020-present. 15 graduate students, guided independent modeling course.
- EEMB 507: Introduction to Graduate Research. 2022-present. 15-20 graduate students.
- EEMB 508/509: Foundations of Ecology and Evolution. 2018-present. 15-20 graduate students.

HONORS AND AWARDS:

- Scholarship* Ecological Society of America Early Career Fellow (2023)
 Rollie F. Lambertson Award for Best Theory Paper (2017)
 ESA Math Ecology Section Volterra Prize for Best Student Talk (2014)
 Frances Lou Kallman Award for Graduate Student Excellence (2014)
 Barry M. Goldwater Scholarship (2007-2008)
 Peter F.E. Marapodi Scholarship (2005-2008)
 Phyllis Dunbar Award for Excellence in Physical Chemistry (2006)
 Croda Award for Outstanding Organic Chemistry Laboratory Student (2006)
 National Starch Award for General Academic Excellence (2005)
 Phi Beta Kappa (2006)
 National Society for Collegiate Scholars (2005)
 Dean's Award for Co-Curricular Excellence (2004, 2005)
 IBM Thomas J. Watson Memorial Scholar (2004-2008)
 Robert C. Byrd Scholarship (2004-2008)
 National Merit Scholar (2004)
- Journalism* California Journalism Awards Katherine M. Macdonald Student Award (2014)
 William F. Woo Award for Best Opinion Columnist (2013)
- Teaching* Stanford University Excellence in Teaching Award (2011)

PROFESSIONAL SERVICE and OUTREACH:

- 2023-** Associate Director, Earth Research Institute, UC Santa Barbara
- 2021-22** Chair, Theoretical Ecology Section, Ecological Society of America
- 2020-21** Vice-Chair, Theoretical Ecology Section, Ecological Society of America
- 2016-present** Member and scientific advisor, National Network of Ocean and Climate Change Interpreters: Central California Regional Study Circle
- 2016** Classroom guest instructor, Biology, Cape Cod Academy (9th grade)
- 2015-2016** Postdoctoral Representative, WHOI Gender Equity Committee
 President and Biology Representative, WHOI Postdoctoral Association
- 2015** Guest instructor, Ecology, Woods Hole Summer Science School (10-year-olds)
- 2014** Featured guest, Goggles Optional podcast, Episode 13: The secret life of fungi
- 2013-2014** Graduate Voice and Influence Program, Stanford University
 Graduate Student Peer Mentor, Stanford University
- 2010-2012** Eco-Evo Lunch Seminar Series Coordinator, Stanford University
- 2007-2008** President, Phi Lambda Upsilon Chemistry Honors Society, Rutgers University
 Undergraduate representative, Rutgers Executive Dean Search Committee

Ad-hoc reviewer *Acta Oecologica; The American Naturalist; Biological Invasions; Ecology Letters; Ecosystems; Ecological Applications; FEMS Microbiology Ecology; Frontiers in Microbiology; Fungal Ecology; Harmful Algae; Journal of Theoretical Biology; Marine Ecology Progress Series; Molecular Ecology; New Phytologist; PNAS; Symbiosis; Trees: Structure and Function*

PROFESSIONAL DEVELOPMENT and WORKSHOP PARTICIPATION

- 2010-present** Participant and (since 2016) Co-Leader and Faculty Mentor, Nantucket Annual Math Ecology Retreat (ACKME). UMass Nantucket Field Station, Nantucket, MA, USA. Annually in October or November.
Workshop for graduate students and postdocs to generate and analyze new mathematical models.
- 2020** Participant, MicroEuks National Conference. 8-10 June.
- 2017** Participant, Pan-microbial Trait Ecology investigative workshop. NIMBioS, University of Tennessee, Knoxville, TN, USA. 14-16 June.
- 2016** Participant, Game Theoretic Modeling Tutorial. NIMBioS, University of Tennessee, Knoxville, TN, USA. 25-27 April.
Science Fellow, National Network for Ocean and Climate Change Interpretation, Spring 2016 Study Circle A.
Participant, EMBO-EMBL Symposium: A New Age of Discovery for Aquatic Microeukaryotes. EMBL Heidelberg, Germany. 26-29 January.
- 2015** Participant, OCB: Trait-Based Approaches to Understanding Marine Life Workshop, Waterville Valley, NH, USA. 5-8 October.
Participant, MPE 2013+ Workshop on Natural Resources. Howard University, Washington, D.C., USA. 4-6 June.
- 2013-2014** Inaugural class, Graduate Voice and Influence Program. Stanford University.
Workshop series on causes of and solutions for gender inequality in academia.
- 2013** Participant, AARMS Mathematical Biology Workshop. Memorial University, Newfoundland, St. John's, Newfoundland, Canada. 27-29 July.
Participant, AARMS-CRM Workshop on Sustainability of Aquatic Ecosystem Networks. Fredericton, New Brunswick, Canada. 22-25 October.
- 2011** Student, Functioning of Boreal Forest Ecosystems Ph.D. course. SLU, Umeå, Sweden. 4-10 June.
Student, Joint MBI-NIMBioS-CAMBAM Summer Graduate Program: Mathematical Ecology and Evolution. Mathematical Biosciences Institute, Columbus, Ohio, USA. 25 July-5 August.
- 2009** Student, Tutorial in Optimal Control Theory. NIMBioS, University of Tennessee, Knoxville, Tennessee, USA. 21-23 November.
- 2007** NSF Research Experience for Undergraduates Fellow. University of Alaska, Southeast. June-August.