

DR. HEATHER MCNAIR

Postdoctoral Researcher
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EDUCATION

Ph.D. Interdepartmental Graduate Program in Marine Science 2018
University of California Santa Barbara, Santa Barbara, CA

B.A. Marine Science and **B.S.** Environmental Science 2010
University of California Berkeley, Berkeley, CA

RESEARCH APPOINTMENTS

Postdoctoral Scholar April 2018-Present
University of Rhode Island, Graduate School of Oceanography
The role of microzooplankton grazing in ocean carbon export
Advisor: Dr. Susanne Menden-Deuer

Doctoral Research Scholar 2012-2018
University of California Santa Barbara, Evolution Ecology and Marine Biology
Single-cell silica production and growth rates of natural diatom communities
Advisors: Dr. Mark Brzezinski and Dr. Jeffrey Krause

PUBLICATIONS (ORCID: 0000-0003-2044-981X) *DENOTES UNDERGRADUATE AUTHOR

13. **McNair, H.M.**, Morison, F., Graff, J.R., Rynearson, T. A. and Menden-Deuer, S. *Microzooplankton grazing constrains pathways of carbon export in the subarctic North Pacific.* (in revision). *Limnology and Oceanography*.
12. Seigel, D. A., Cetinić, I., Graff, J. R., Lee, C., Nelson, N., Perry, M.J., Ramos, I. S., Steinberg, D. K., Buesseler, K., Hamme, R., Fassbender, A. J., Nicholson, R., Omand, M. M., Robert, M., Thompson, A., Behrenfeld, M., Benitez-Nelson, C., Bisson, K.,...Zhang, X. *Overview of the EXport Processes in the Ocean from RemoTe Sensing (EXPORTS) Northeast Pacific Field Deployment.* (in review). *Elementa*.
11. **McNair, H.M.**, Hammond, C.N.* and Menden-Deuer, S. (2021). *Relationships of phytoplankton volume to elemental composition are robust to volume measurement methods and growth environment.* *Journal of Plankton Research*. doi.org/10.1093/plankt/fbab014
10. Marrec, P., **McNair, H.M.**, Franzè, G., Morison, F., Strock, J., and Menden-Deuer, S. (2021). *Seasonal variability in planktonic food web structure and function of the Northeast US Shelf.* *Limnology and Oceanography*. doi.org/10.1002/lno.11696
9. Closset, I., **McNair, H.M.**, Brzezinski, M.A., Krause, J.W., Thamatrakoln, K. and Jones, J. (2021). *Diatom response to alterations in upwelling and nutrient dynamics associated with climate forcing in the California Current System.* *Limnology and Oceanography*. doi.org/10.1002/lno.11705
8. Menden-Deuer, S., Morison, F., Montalbano, A.L., Franzè, G., Strock, J., Rubin, E., **McNair, H.M.**, Mouw, C., Marrec, P. (2020). *Multi-instrument assessment of particle size*

distribution and concentration in mono-specific phytoplankton laboratory cultures and whole plankton communities from the North Atlantic. *Frontiers in Marine Science.*
doi.org/10.3389/fmars.2020.00254

7. **McNair, H.M.** and Menden-Deuer S. (2020). *Protist grazing contributes to microbial food web at the upper boundary of the twilight zone in the subarctic Pacific.* *Marine Ecology Progress Series.* 636:235-241. doi:10.3354/meps13246
6. Krause, J.W., Brzezinski, M.A., Largier, J., **McNair, H.M.**, Maniscalco, M., Bidle, K., Allen, A., Thamtracoln, K. (2020). *The interaction of physical and biological factors as drivers of phytoplankton spatial distribution in the northern California Current.* *Limnology and Oceanography.* doi: 10.1002/lno.11431
5. **McNair, H.M.**, Brzezinski, M.A., Krause, J.W. (2018) *Diatom populations in an upwelling environment decrease silica content to avoid growth limitation.* *Environmental Microbiology* 20 (11). doi:10.1111/1462-2920.14431
4. **McNair, H.M.**, Brzezinski, M.A., Till, C.P., Krause, J.W. (2018) *Taxon-specific contribution to silica production in natural diatom assemblages.* *Limnology and Oceanography* 63 (3). doi: 10.1002/lno.10754.
3. Cohen, N.R., Ellis, K.A., Lampe, R.H., **McNair, H.M.**, Twining, B.S., Maldonado, M.T., Brzezinski, M.A., Kuzminov, F.I., Thamtracoln, K., Till, C.P., Bruland, K.W., Sunda, W.G., Bargu, S., Marchetti, A. (2017) *Diatom transcriptional and physiological responses to changes in iron bioavailability across ocean provinces.* *Frontiers in Marine Science,* <https://doi.org/10.3389/fmars.2017.00360>.
2. Jones, J.M., Sweet, J., Brzezinski, M.A., **McNair, H.M.**, Passow, U. (2016) *Evaluating Carbonate System Algorithms in a Nearshore System: Does Total Alkalinity Matter?* *PLoS ONE* 11(11): e0165191. <https://doi.org/10.1371/journal.pone.0165191>
1. **McNair, H. M.**, Brzezinski, M. A. and Krause, J.W. (2015) *Quantifying diatom silicification with the fluorescent dye, PDMPO.* *Limnology and Oceanography: Methods*, 13: 587-599, doi:10.1002/lom3.10049

Editorial

Bisson, K.M., Baetge, N., Kramer, S.J., Catlett, D., Girling, G., **McNair, H.M.**, Arrington, E., Hayes, D., Jacobs, C., James, A., Closset, I., Fischer, A.D., Wagner, S., Reading, M., Comstock, J., Amiri, S., Harvey, E., Carlson, C., Gaube, P., Drushka, K., Valentine, D. (2020). *California wildfire burns boundaries between science and art.* *Oceanography.*

SEA-GOING CRUISE EXPERIENCE

NASA EXport Processes in the Ocean from RemoTe Sensing <i>RRS James Cook</i> , Chief Sci: David Siegel, Debbie Steinberg and Jason Graff	Porcupine Abyssal Plain May 1-Jun 1, 2021
NASA EXport Processes in the Ocean from RemoTe Sensing <i>R/V Roger Revelle</i> , Chief Sci: David Siegel, Debbie Steinberg and Jason Graff	Ocean Station PAPA Aug 10-Sep 12, 2018
Northeast Shelf-Long Term Ecological Research <i>R/V Endeavor</i> Chief Sci: Heidi Sosik	Northeast US Continental Shelf Feb 3-Feb 8, 2021 Aug 19-Aug 24, 2019 Feb 1-6, 2019 Jan 31-Feb 5, 2018

Across the Channel: Investigating Diel Dynamics <i>R/V Sally Ride</i> Chief Sci. Kelsey Bisson and Nick Baetge (student led cruise)	Santa Barbara Channel, CA Dec 16-22, 2017
Silicon & Nitrogen Observed in the Water Column Biologic Isotope Records During Sedimentation <i>R/VIB Nathaniel B. Palmer</i> Chief Sci: Rebecca Robinson	Southern Ocean Jan 20-Mar 6, 2017
Molecular Underpinnings of Silica in the California Current <i>R/V Oceanus</i> Chief Sci: Kimberlee Thamatrakoln	California Current OR & CA April 19-May 2, 2015
IrnBru <i>R/V Melville</i> Chief Sci: Ken Bruland	California Current July 4-21, 2014
DYE labeling of diatom silica <i>R/V Point Sur</i> Chief Sci: Jeffrey Krause	Central Coastal California June 27-July 5, 2013

FUNDING, AWARDS, AND HONORS

NASA Established Program to Stimulate Competitive Research (EPSCoR) (\$4900) <i>Interrogating grazing-induced changes in diatom silicification and resulting impacts on microzooplankton grazers.</i>	2020
Research Accelerator Award (\$3,000) <i>Awarded for inspiring marine ecology work</i>	2016
Coastal Fund of Associated Students, Major Research Funding Award (\$5,000) <i>Awarded from the UCSB students to research directly addressing Santa Barbara coastal issues</i>	2015
Nejet Ezal Memorial Scholarship (\$1,000) <i>Scholarship for an essay entitled "The walkabout" talking about my journey to grad school</i>	2014
Outstanding Teaching Assistant, Nominated <i>Nominated by Sally McIntyre and students for being an innovative and effective teacher</i>	2013

INVITED TALKS

<i>Pressures that shape phytoplankton communities and their biogeochemistry feedbacks</i> , Bio at Noon Seminar series, URI Graduate School of Oceanography, RI	2018
<i>Applications of confocal microscopy and Imaris</i> , Microscopy Workshop, Neuroscience Research Institute, UC Santa Barbara, CA	2015
<i>Dyeing Diatoms</i> , Department seminar series, Dauphin Island Sea Lab, AL	2014

CONFERENCE PRESENTATIONS *DENOTES UNDERGRADUATE AUTHOR

12. **McNair, H.M.**, Morison, F., Graff, J.R, Rynearson, T. A., and Menden-Deuer, S. *Herbivorous protist grazing balances phytoplankton growth in the North Pacific, leaving little primary production for export*. Oral Presentation. Ocean Science Meeting. San Diego, CA, 2020.

11. *Hammond, C.H., **McNair, H.M.**, and Menden-Deuer, S. *Comparing phytoplankton carbon to volume relationships using three-dimensional (3D) and two-dimensional (2D) imaging*. Poster. Ocean Science Meeting. San Diego, CA, 2020.
10. Maniscalco, M.A., Brzezinski, M.A., **McNair, H.M.**, Krause, J.K., and Thamatrakoln, K. *Diatom community transcriptomic response to nitrate and silicon limitation*. Oral Presentation. Ocean Science Meeting. San Diego, CA, 2020.
9. Marrec, P., **McNair, H.M.**, Morison, F., Franzè, G., Strock, J., Menden-Deuer, S. *Plankton population dynamics and food web structure on the Northeast US Shelf (NES-LTER): early indication of seasonal shifts in production regimes*. Poster. Ocean Science Meeting. San Diego, CA, 2020.
8. **McNair, H.M.**, Morison, F., Rubin, E., Graff, J., Rynearson, T. and Menden-Deuer, S. *Herbivorous protists affect phytoplankton abundance and community size structure in the North Pacific during EXPORTS*. Poster. OCB Summer Workshop. Woods Hole, MA, 2019.
7. **McNair, H.M.**, Brzezinski, M.A. and Krause, J.W. *Plasticity in silica content allows diatoms to evade silicon limited growth in an upwelling environment*. Poster. OCB Summer Workshop. Woods Hole, MA, 2018.
6. **McNair, H.M.**, Brzezinski, M.A., Till, C.P., and Krause J.W. *Taxon-specific contribution to elemental cycling in natural diatom assemblages*. Oral presentation. Ocean Science Meeting. Portland, OR, 2018.
5. Maniscalco, M.A., **McNair, H.M.**, Lampe, R.H., Cohen, N., Ellis, K., Marchetti, A., Twining, B., Till, C.P., Coale, T., Bruland, K.W., Brzezinski, M.A., and Thamatrakoln, K. *Molecular drivers behind increased Si:N uptake in an iron stressed diatom assemblage*. Oral Presentation. Ocean Science Meeting. Portland, OR, 2018.
4. **McNair, H.M.**, Brzezinski, M.A., Krause J.W., Parker, C., Brown, M., Coale, T., and Bruland, K. *Pumping iron and silica bodybuilding*. Oral presentation. Ocean Science Meeting. New Orleans, LA, 2016.
3. **McNair, H.M.**, Brzezinski, M.A. and Krause J.W. *Genus-specific contributions to diatom community silica production*. Poster. Silicamics, Brest, France 2015.
2. **McNair, H.M.**, Brzezinski, M.A. and Krause J.W. *Peering into a 'black box' measurement-resolving group-specific silicon production rates in a natural diatom assemblage*. Poster. Molecular Life of Diatoms. Seattle, WA, 2015.
1. **McNair, H.M.**, Brzezinski, M.A. and Krause J.W. *Who does what? Partitioning silica production among diatom groups in field assemblages*. Poster. Ocean Science Meeting. Honolulu, HI, 2014.

TEACHING EXPERIENCE

Teaching Assistant, Processes in Oceans (undergraduate 80 students) UCSB Profs. Dr. Uta Passow and Dr. Debora Iglesias-Rodriguez	2016
Teaching Assistant, Methods in Aquatic Ecology (undergraduate 12 students) UCSB Prof. Dr. Sally MacIntyre	2013-2015
Instructor/Mentor, Created a field experiment for a one-week intensive program with students from California community colleges in the Cooke Bridges Program, University of California Santa Barbara	2013

Guest lecture: University of Rhode Island, Biological Oceanography	2019, 2020
Guest lecture: University of California Santa Barbara, Introduction to Oceans	2016

MENTORING EXPERIENCE

Mentor NSF REU Summer intern	2019
Co-mentor NSF REU Summer intern	2018
Co-mentor EPSCOR RI Summer intern	2018
Mentor of undergraduate/post bachelor lab assistant	2015- 2017
Mentor and project lead with undergraduate intern	2015
Mentor/Reference for phytoplankton science project San Marcos High School	2014

PROFESSIONAL SERVICE AND DEVELOPMENT

Justice, Equity, Diversity and Inclusion committee member <i>tasked with finding meaningful, real ways in which GSO can address systemic discrimination</i>	2021-current
Participant, Academics for Black Survival and Wellness <i>21 d training and education</i>	2020
Participant, ShutDownSTEM <i>a day of conversation to move GSO towards diversity and inclusion</i>	2020
Coordinator Bio@Noon seminar series, URI Graduate school of Oceanography	2020
Participant, Professional Skills for Career Success: Winter Intensive <i>Workshops: effective mentoring, effective management, building job readiness</i>	2020
Organizer, professional development workshops and talks	
Making Connections: An evening of professional development conversations	2019
Annual talk for undergraduate students <i>My path to grad school</i>	2013-2016
Panel for undergraduate students <i>Demystifying Graduate School</i>	2013
Member, Society for Women in Marine Science <i>We're going to need a bigger boat, symposium oceanography pod host</i>	2018-present 2020
Coordinator, Marine Science Department Seminar	2013, 2016
Member, Grad Students for Diversity in Science	2016-2018
<i>Reviewer manuscripts: Environmental Microbiology, Limnology and Oceanography, Environmental Science and Technology, Journal of Phycology</i>	
<i>Reviewer grants: NSF Biological Oceanography</i>	

COMMUNITY ENGAGEMENT

URI GSO Open house for the RI community	2018
Volvo Ocean Race Ocean Exploration Zone	2018
Co-lead for STEAM room <i>A cross-disciplinary exhibition of artwork, research, and images from artists and marine scientists from UCSB and beyond.</i>	2016
Guest speaker, "Dyeing diatoms", Dos Pueblos High School Biology Club	2014