

Robert J. Miller

9 Mendocino Dr., Goleta, CA 93117

(805) 708-4181

rjmiller@ucsb.edu

EDUCATION

- 1998 - 2005** **Ph.D., University of Massachusetts Boston**, Biology.
Ecological factors shaping subtidal rock wall communities in the Gulf of Maine
Advisor: Ron J. Etter
- 1994 - 1998** **M.S., University of Hawaii at Manoa**, Biological Oceanography.
Feeding selectivity and particle processing rates of deep sea megafaunal deposit feeders: a thorium-234 tracer approach
Advisor: Craig R. Smith
- 1988 - 1992** **B.S., Nova Southeastern University**, Marine Biology.
Honors thesis: *Ossicles as an indicator of stalked crinoid population density*
Advisor: Charles G. Messing

PROFESSIONAL RECORD

- 2021 –** **Acting Deputy Director**, Marine Science Institute, University of California Santa Barbara.
- 2018 –** **Research Biologist**, Marine Science Institute, University of California Santa Barbara.
- 2011 –** **Lecturer**, Department of Ecology Evolution and Marine Biology, University of California Santa Barbara.
- 2014 – 2018** **Associate Research Biologist**, Marine Science Institute, University of California Santa Barbara.
- 2010 – 2014** **Assistant Research Biologist**, Marine Science Institute, University of California Santa Barbara.
- 2008 – 2010** **Postdoctoral Scholar**, Center for the Environmental Impact of Nanomaterials, Bren School of Environmental Science, University of California Santa Barbara. Supervisor: Hunter Lenihan.
- 2006 – 2008** **Postdoctoral Scholar**, Santa Barbara Coastal Long Term Ecological Research program, Marine Science Institute, University of California Santa Barbara. Co-Supervisors: Daniel Reed and Mark Brzezinski.
- 1993 – 1995** **Fisheries Biologist**, Southwest Fisheries Science Center, National Marine Fisheries Service, NOAA. Supervisor: Joan Browder.

2022

Reed, D.C., R.J. Schmitt, A.B. Burd, D. Burkepile, J. Kominoski, K. McGlatherey, **R.J. Miller**, J.T. Morris, J.C. Zinnert. Responses of coastal ecosystems to climate change: insights from long-term ecological research. *BioScience* (in Press).

McLean, D.L., L.C. Ferreira, ...**R.J. Miller**, et al. (#29 of 46 authors total). Influence of offshore oil and gas structures on seascape ecological connectivity. *Global Change Biology* (in Press).

Hernan, G., A.K. Dubel, J.E. Caselle, D.J. Kushner, **R.J. Miller**, D.C. Reed, J.L. Sprague, A. Rassweiler. Measuring the efficiency of alternative biodiversity monitoring sampling strategies. *Frontiers in Marine Science*. 9:820790.

Emery, K.A., V.R. Kramer, N.K. Schooler, K.M. Michaud, J.R. Madden, D.M. Hubbard, **R.J. Miller**, J.E. Dugan. Habitat partitioning by mobile intertidal invertebrates of sandy beaches shifts with the tides. *Ecosphere* ecs2.3920.

2021

Chavez, F., **R.J. Miller**, F.E. Muller-Karger, K. Iken, G. Canonico, K. Egan, J. Price, and W. Turner. MBON—Marine Biodiversity Observation Network: An observing system for life in the sea. *Oceanography* 34(2):12–15.

Rognstad, R.L., A. Rassweiler, D.C. Reed, L. Kui, and **R.J. Miller**. Species archetype models of kelp forest communities reveal diverse responses to environmental gradients. *Oceanography* 34(2):92–101.

Chavez, F.P., M. Min, K. Pitz, N. Truelove, J. Baker, D. LaScala-Grunewald, M. Blum, K. Walz, C. Nye, A. Djurhuus, **R.J. Miller**, K.D. Goodwin, F.E. Muller-Karger, H.A. Ruhl, and C.A. Scholin. Observing life in the sea using environmental DNA. *Oceanography* 34(2):102–119.

H.M. Page, J. Schamel, K.A. Emery, N.K. Schooler, J.E. Dugan, A. Guglielmino, D.M. Schroeder, L. Palmstrom, D.M. Hubbard, **R.J. Miller**. Diet of a threatened endemic fox reveals variation in sandy beach resource use on California Channel Islands. *PloS One* 16(10):e0258919.

Lowman, H.E., K.A. Emery, J.E. Dugan, **R.J. Miller**. Nutritional quality of giant kelp declines due to warming ocean temperatures. *Oikos* oik.08619.

Cedeno, T.H., M.A. Brzezinski, **R.J. Miller**, D.C. Reed. An evaluation of surge uptake capability in the giant kelp (*Macrocystis pyrifera*) in response to pulses of three different forms of nitrogen. *Marine Biology* 168:166.

Castorani, M.C., S.L. Harrer, **R.J. Miller**, D.C. Reed. Disturbance structures canopy and understory productivity along an environmental gradient. *Ecology Letters* 24(10), pp.2192-2206.

Emery K.A., J.E. Dugan, R.A. Bailey, **R.J. Miller**. Species identity drives ecosystem function in a subsidy-dependent coastal ecosystem. *Oecologia* 196:1195-1206.

Meyer-Gutbrod, E., L. Kui, **R.J. Miller**, M. Nishimoto, L. Snook, M. Love. Moving on up: Vertical distribution shifts in rocky reef fish species during climate-driven decline in dissolved oxygen from 1995 to 2009. *Global Change Biology* 27(23):6280-93.

Lamy, T., K.J. Pitz, F.P. Chavez, C.E. Yorke, **R.J. Miller**. Environmental DNA reveals the fine-grained and hierarchical spatial structure of kelp forest fish communities. *Scientific Reports* 11(1):1-3.

Miller, P.M., T. Lamy, H.M. Page, **R.J. Miller**. Sea urchin microbiomes vary with habitat and resource availability. *Limnology and Oceanography Letters* 6(3):119-26.

Malakhoff, K., **R.J. Miller**, 2021. After 15 years, no evidence for trophic cascades in marine protected areas. *Proceedings of the Royal Society B*.

Muller-Karger, F., M. Kavanaugh, K. Iken, E. Montes, F.P. Chavez, H. Ruhl, **R.J. Miller**, and 22 others. Marine Life 2030: Forecasting changes to ocean biodiversity to inform decision-making: a critical role for the Marine Biodiversity Observation Network (MBON). *Marine Technology Society Journal* 55:84-85

Iwaniec, D., M. Gooseff, K. Suding, D. Johnson, D. Reed, D. Peters, B. Adams, J. Barrett, B. Bestelmeyer, M. Castorani, E. Cook, M. Davison, P. Groffman, N. Hanan, L. Huenneke, P. Johnson, D. McKnight, **R.J. Miller**, G. Okin, D. Preston, A. Rassweiler, C. Ray, O. Sala, R. Schooley, T. Seastedt, M. Spasojevic, E. Vivoni. Connectivity: insights from the US Long Term Ecological Research Network. *Ecosphere* 12(5):e03432.

Detmer, A.R., **R.J. Miller**, D.C. Reed, T.W. Bell, A.C. Stier, H.V. Moeller. Variation in disturbance to a foundation species structures the dynamics of a benthic reef community. *Ecology* 102(5):e03304.

Smith, J.M., G. Blasco, M.A. Brzezinski, J.M. Melack, D.C. Reed, **R.J. Miller**. Factors influencing urea use by giant kelp (*Macrocystis pyrifera*, Phaeophyceae). *Limnology and Oceanography* 66(4):1190-200.

2020

Lamy, T., C. Koenigs, S.J. Holbrook, **R.J. Miller**, A.C. Stier, D.C. Reed. Foundation species promote community stability by increasing diversity in a giant kelp forest. *Ecology* 101(5), p.e02987.

Meyer-Gutbrod, E.L., M.S. Love, D.M. Schroeder, J.T. Claisse, L. Kui, **R.J. Miller**. Forecasting the legacy of offshore oil and gas platforms on fish community structure and productivity. *Ecological Applications*. 30(8):e02185.

Bell, T.W., N.J. Nidzieko, D.A. Siegel, **R.J. Miller**, K.C. Cavanaugh, N. Nelson, D.C. Reed, D. Fedorov, C. Moran, J.N. Snyder, C.E. Yorke, M. Griffith. The utility of satellites and autonomous remote sensing platforms for monitoring offshore aquaculture farms: A case study for canopy forming kelps. *Frontiers in Marine Science* 7:1083.

Rassweiler, A., A.K. Dubel, G. Hernan, D.J. Kushner, J.E. Caselle, J.L. Sprague, L. Kui, T. Lamy, S.E. Lester, **R.J. Miller**. Roving divers surveying fish in fixed areas capture similar patterns in biogeography but different estimates of density when compared with belt transects. *Frontiers in Marine Science*, 7:272.

Miller, R.J., A.S. Adeyemi, H.M. Page, L. Kui, H.S. Lenihan, A.A. Keller. Nano and traditional copper and zinc antifouling coatings: Metal release and impact on marine sessile invertebrate communities. *Journal of Nanoparticle Research*, 22:1-5.

2019

Yorke, C.E., H.M. Page, **R.J. Miller**. Sea urchins mediate the availability of kelp detritus to benthic consumers. *Proceedings of the Royal Society B*, 286:20190846.

Page, H.M., S.F. Zaleski, **R.J. Miller**, J.E. Dugan, D.M. Schroeder, B. Doheny. Regional patterns in shallow water invertebrate assemblages on offshore oil and gas platforms along the Pacific continental shelf. *Bulletin of Marine Science*, 95(4):617-38.

Page, H.M., R.D. Simons, S.F. Zaleski, **R.J. Miller**, J.E. Dugan, D.M. Schroeder, B. Doheny, J.H.R. Goddard. Distribution and potential larval connectivity of the non-native *Watersipora* (Bryozoa) among harbors, offshore oil platforms, and natural reefs. *Aquatic Invasions*, 14(4):615-637.

Kröncke, I., H. Neumann, J.W. Dippner, S.J. Holbrook, T. Lamy, **R.J. Miller**, B.M. Padedda, S. Pulina, D.C. Reed, M. Reinikainen, C.T. Satta. Comparison of biological and ecological long-term trends related to northern hemisphere climate in different marine ecosystems. *Nature Conservation* 34: 311-341.

Lamy, T., S. Wang, D. Renard, K.D. Lafferty, D.C. Reed, **R.J. Miller**. Species insurance trumps spatial insurance in stabilizing biomass of a marine macroalgal metacommunity. *Ecology* 100(7):e02719.

Michaud, K.M., K.A. Emery, J.E. Dugan, D.M. Hubbard, **R.J. Miller**. Wrack resource use by intertidal consumers on sandy beaches. *Estuarine, Coastal and Shelf Science* 221:66-71.

Sainz, J.F., E. Di Lorenzo, T.W. Bell, S. Gaines, H.L. Lenihan, **R.J. Miller**. Spatial planning of marine aquaculture under climate decadal variability: A case study for mussel farms in southern California. *Frontiers in Marine Science*, 6:253.

Yorke, C.E., B. Hanns, N. Shears, H.M. Page, **R.J. Miller**. Living kelp versus plankton as food sources for suspension feeders. *Marine Ecology Progress Series*, 614:21-33.

Meyer-Gutbrod, E.L., L. Kui, M.M. Nishimoto, M.S. Love, D.M. Schroeder, **R.J. Miller**. Fish densities associated with structural elements of oil and gas platforms in southern California. *Bulletin of Marine Science*, 95(4):639-56.

Meyer-Gutbrod, E.L., M.S. Love, J.T. Claisse, H.M. Page, D.M. Schroeder, **R.J. Miller**. Decommissioning impacts on biotic assemblages associated with shell mounds beneath southern California offshore oil and gas platforms. *Bulletin of Marine Science*, 95(4):683-702.

2018

Castorani, M.C., D.C. Reed, **R.J. Miller**. Loss of foundation species: disturbance frequency outweighs severity in structuring kelp forest communities. *Ecology*, 99(11):2442-2454.

Muller-Karger, F.E., E. Hestir, C. Ade, K. Turpie, D.A. Roberts, D.A. Siegel, **R.J. Miller**, D. Humm, N. Izenberg, M. Keller, F. Morgan. Satellite sensor requirements for monitoring essential biodiversity variables of coastal ecosystems. *Ecological Applications*, 28(3):749-760.

Lamy, T., D.C. Reed, A. Rassweiler, D.A. Siegel, L. Kui, T.W. Bell, R.D. Simons, **R.J. Miller**. Scale-specific drivers of kelp forest communities. *Oecologia* 186:217-233.

Miller, R.J., K.D. Lafferty, T. Lamy, L. Kui, A. Rassweiler, D.C. Reed. Giant kelp, *Macrocystis pyrifera*, increases faunal diversity through physical engineering. *Proceedings of the Royal Society B*, 285 (1874):20172571.

Viola, S.M., H.M. Page, S.F. Zaleski, **R.J. Miller**, B. Doheny, J.E. Dugan, D.M. Schroeder, S.C. Schroeter. Anthropogenic disturbance facilitates a non-native species on offshore oil platforms. *Journal of Applied Ecology*, 55:1583-1593.

Lenihan, H.S., C.H. Peterson, **R.J. Miller**, M. Kayal, M. Potoski. Biotic disturbance mitigates effects of multiple stressors in a marine benthic community. *Ecosphere* 9(6), p.e02314.

Smith, J.M., M.A. Brzezinski, J.M. Melack, **R.J. Miller**, D.C. Reed. Urea as a source of nitrogen to giant kelp (*Macrocystis pyrifera*). *Limnology and Oceanography Letters* 3(4): 365-373.

Muller-Karger, F.E., P. Miloslavich, N.J. Bax, S. Simmons, M.J. Costello, I. Sousa Pinto, G. Canonico, W. Turner, M. Gill, E. Montes, B.D. Best, J. Pearlman, P. Halpin, D. Dunn, A. Benson, C. Martin, L. Weatherdon, W. Appeltans, P. Provoost, E. Klein, C. Kelble, **R.J. Miller**, F.P. Chavez, K. Iken, S. Chiba, D. Obura, L. Navarro, H.M. Pereira, V. Allain, S. Batten, L. Benedetti-Checchi, J.E. Duffy, R. Kudela, L. Rebelo, Y. Shin, G. Geller. Advancing marine biological observations and data requirements of the complementary essential ocean variables (EOVs) and essential biodiversity variables (EBVs) frameworks. *Frontiers in Marine Science*, 5:21.

- 2017** **Miller, R.J.**, E.B. Muller, B. Cole, T. Martin, R. Nisbet, G.K. Bielmyer-Fraser, T.A. Jarvis, A.A. Keller, G. Cherr, H.S. Lenihan. Photosynthetic efficiency predicts toxic effects of metal nanomaterials in phytoplankton. *Aquatic Toxicology*, 183:85-93.
- Keller, A.A., A.S. Adeleye, J.R. Conway, K.L. Garner, L. Zhao, G.N. Cherr, J. Hong, J.L. Gardea-Torresdey, H.A. Godwin, S. Hanna, Z. Ji, C. Kaweeteerawat, S. Lin, H. Lenihan, **R.J. Miller**, 7 others. Comparative environmental fate and toxicity of copper nanomaterials. *NanoImpact* 7:28-40.
- 2016** Reed, D.C., L. Washburn, A. Rassweiler, **R.J. Miller**, T.W. Bell, S. Harrer. Extreme warming challenges sentinel status of kelp forests as indicators of climate change. *Nature Communications* 13 (7):13757.
- Simons, R.D, H.M. Page, S. Zaleski, **R.J. Miller**, J.E. Dugan, D.M. Schroeder, B. Doheny. The effects of anthropogenic structures on habitat connectivity and the potential spread of non-native invertebrate species in the offshore environment. *PloS One* 11 (3): e0152261.
- Reed D.C., J.C. Nelson, S.L. Harrer, **R.J. Miller**. Estimating biomass of benthic kelp forest invertebrates from body size and percent cover data. *Marine Biology* 163 (5):1-6.
- Reed, D.C., A.R. Rassweiler, **R.J. Miller**, H.M. Page, S.J. Holbrook. The value of a broad temporal and spatial perspective in understanding dynamics of kelp forest ecosystems. *Marine and Freshwater Research* 67 (1):14-24.
- 2015** **Miller, R.J.**, H.M. Page, D.C. Reed. Trophic versus structural effects of a marine foundation species, giant kelp (*Macrocystis pyrifera*). *Oecologia* 179 (4): 1199-1209.
- Reed, D.C., C.A. Carlson, E.R. Halewood, J.C. Nelson, S.L. Harrer, A. Rassweiler, **R.J. Miller**. Patterns and controls of reef-scale production of dissolved organic carbon by giant kelp *Macrocystis pyrifera*. *Limnology and Oceanography* 60(6):1996-2008.
- Baptista, M.S., **R.J. Miller**, E.R. Halewood, S.K. Hanna, C. Almeida, V. Vasconcelos, A.A. Keller, H.S. Lenihan. Impacts of silver nanoparticles on a natural estuarine plankton community. *Environmental Science & Technology* 49(21):12968-12974.
- Koenigs, C., **R.J. Miller**, H.M. Page. Top predators rely on carbon derived from giant kelp *Macrocystis pyrifera*. *Marine Ecology Progress Series* 537:1-8.
- Miller, R.J.**, C. Juska, J. Hocevar. Submarine canyons as coral and sponge habitat on the eastern Bering Sea slope. *Global Ecology and Conservation* 4: 85-94.
- Smith, M.D., K. La Pierre, S.L. Collins, A.K. Knapp, K.L. Gross, J.E. Barrett, S.D. Frey, L. Gough, **R.J. Miller**, J.T. Morris, L.E. Rustad, J. Yarie. Global

environmental change and the nature of aboveground net primary productivity responses: Insights from long-term experiments. *Oecologia* 177 (4): 935-947.

2014

Rahimi, A.M., **R.J. Miller**, D.V. Fedorov, S. Sunderrajan, B.M. Doheny, H.M. Page, B.S. Manjunath. Marine biodiversity classification using dropout regularization. *Computer Vision for Analysis of Underwater Imagery (CVAUI)*, *IEEE* 80-87.

Bielmyer-Fraser, G.K., T.A. Jarvis, H.S. Lenihan, **R.J. Miller**. Cellular partitioning of nanoparticulate versus dissolved metals in marine phytoplankton. *Environmental Science & Technology*, 48:13443-13450.

Hanna S.K., **R.J. Miller**, H.S. Lenihan. Deposition of carbon nanotubes by a marine suspension feeder revealed by chemical and isotopic tracers. *Journal of Hazardous Materials* 279:32-37.

Hanna S.K., **R.J. Miller**, H.S. Lenihan. Accumulation and toxicity of copper oxide engineered nanoparticles in a marine mussel. *Nanomaterials* 4 (3), 535-547.

Beck, G., **R.J. Miller**, J. Ebersole. Mass mortality and slow recovery of *Diadema antillarum*: could compromised immunity be a factor? *Marine Biology* 161 (5): 1001-1013.

Muller, E.B., S.K. Hanna, H.S. Lenihan, **R.J. Miller**, R.M. Nisbet. Impact of engineered zinc oxide nanoparticles on the energy budgets of *Mytilus galloprovincialis*. *Journal of Sea Research* 10.1016/j.seares.2013.12.013.

2013

Miller, R.J., H.M. Page, M. Brzezinski. $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ of particulate organic matter in the Santa Barbara Channel: drivers and implications for trophic inference. *Marine Ecology Progress Series* 474:53-66.

Hanna, S.K., **R.J. Miller**, D. Zhou, A.A. Keller, H.S. Lenihan. Accumulation and toxicity of metal oxide nanoparticles in a soft-sediment estuarine amphipod. *Aquatic Toxicology* 142: 441-446.

Yorke, C.E., **RJ Miller**, H.M. Page, D.C. Reed. Importance of kelp detritus as a component of suspended particulate organic matter in giant kelp *Macrocystis pyrifera* forests. *Marine Ecology Progress Series* 493: 113-125.

Page, H.M., A.J. Brooks, M. Kulbicki, R. Galzin, **R.J. Miller**, D.C. Reed, R.J. Schmitt, S.J. Holbrook, C. Koenigs. Stable isotopes reveal trophic relationships and diet of consumers in temperate kelp forest and coral reef ecosystems. *Oceanography* 26(3):180-189.

Hanna, S.K., **R.J. Miller**, E.B. Muller, R.M. Nisbet, H.S. Lenihan. Impact of engineered zinc oxide nanoparticles on the individual performance of *Mytilus galloprovincialis*. *PloS One* 8 (4), e61800.

Jarvis, T.A., **R.J. Miller**, H.S. Lenihan, G.K. Bielmyer. Toxicity of ZnO nanoparticles to the copepod *Acartia tonsa*, exposed through a phytoplankton diet. *Environmental Toxicology and Chemistry* 32: 1264–1269.

Adeleye, A.S., A.A. Keller, **R.J. Miller**, H.S. Lenihan. Persistence of commercial nanoscaled zero-valent iron (nZVI) and by-products. *Journal of Nanoparticle Research* 15 (1): 1-18.

Harrer, S.L., D.C. Reed, S.J. Holbrook, **R.J. Miller**. Patterns and controls of the dynamics of net primary production by understory macroalgal assemblages in giant kelp forests. *Journal of Phycology* 49:248–257.

Miller, R.J., H.M. Page, M. Brzezinski. $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ of particulate organic matter in the Santa Barbara Channel: drivers and implications for trophic inference. *Marine Ecology Progress Series* 474:53-66.

2012

Miller, R.J., H.M. Page. Kelp as a trophic resource for marine suspension feeders: a review of isotope-based evidence. *Marine Biology* 159:1391-1402.

Miller, R.J., S. Bennett, A.A. Keller, S. Pease, H.S. Lenihan. TiO_2 nanoparticles are phototoxic to marine phytoplankton. *PLoS One* 7:e30321.

Holden, P., R.M. Nisbet, H.S. Lenihan, **R.J. Miller**, G. Cherr, J. Schimel, J. Gardea-Torresdey. Ecological nanotoxicology: integrating nanomaterial hazard considerations across the subcellular, population, community, and ecosystems levels. *Accounts of Chemical Research*: 46 (3):813–822.

Xia, T., D. Malasarn, S. Lin, Z. Ji, H. Zhang, **R.J. Miller**, A.A. Keller, R.M. Nisbet, B.H. Harthorn, H.A. Godwin, H.S. Lenihan, R. Liu, J. Gardea-Torresdey, Y. Cohen, L. Mädler, P.A. Holden, J.I. Zink, A.E. Nel. Implementation of a multidisciplinary approach to solve complex nano EHS problems by the UC Center for the Environmental Implications of Nanotechnology. *Small* 10.1002/sml.201201700.

Miller, R.J., S.L. Harrer, D.C. Reed. Addition of species abundance and performance predicts community primary production of macroalgae. *Oecologia* 168:797–806.

Keller, A.A., K. Garner, **R.J. Miller**, H.S. Lenihan. Toxicity of nanosized zero-valent iron to freshwater and marine organisms. *PLoS One* 7(8): e43983.

Miller, R.J., J. Hocevar, R.P. Stone, D.V. Fedorov. Structure-forming corals and sponges and their use as fish habitat in Bering Sea submarine canyons. *PLoS One* 7(3): e33885.

Miller, R.J., S. Bennett, A.A. Keller, S. Pease, H.L. Lenihan. TiO_2 nanoparticles are phototoxic to marine phytoplankton. *PLoS One* 7(1): e30321.

- 2011** **Miller, R.J.**, D.C. Reed, M. Brzezinski. Partitioning of primary production among giant kelp (*Macrocystis pyrifera*), understory macroalgae, and phytoplankton on a temperate reef. *Limnology and Oceanography* 56:119-132.
- Thomas, C.R., S. George, A.M. Horst, Z. Ji, **R.J. Miller**, J. Peralta-Videa, T. Xia, S. Pokhrel, L. Madler, J. Gardea-Torresday, P. Holden, A.A. Keller, H.L. Lenihan, A. Nel, J. Zink. Nanomaterials in the environment: from materials to high-throughput screening to organisms. *ACS Nano*, 5:13-20
- Miller, R.J.**, R.J. Etter. Rock walls: small-scale diversity hotspots in the subtidal Gulf of Maine. *Marine Ecology Progress Series*, 425:153-165.
- 2010** **Miller, R.J.**, H.S. Lenihan, E.B. Muller, N. Tseng, S.K. Hanna, A.A. Keller. Impacts of metal oxide nanoparticles on marine phytoplankton. *Environmental Science & Technology*, 44:7329-7334.
- Keller, A.A., X. Wang, D. Zhou, H.L. Lenihan, G. Cherr, B. Cardinale, **R.J. Miller**, J. Zhaoxia. Stability and aggregation of metal oxide nanoparticles in natural aqueous matrices. *Environmental Science and Technology*, 44:1962–1967.
- 2009** **Miller, R.J.**, D.C. Reed, M. Brzezinski. Community structure and productivity of subtidal turf and foliose algal assemblages. *Marine Ecology Progress Series*, 388:1-11.
- 2008** **Miller, R.J.**, R.J. Etter. Shading facilitates invertebrate dominance in the rocky subtidal Gulf of Maine. *Ecology* 89:452-462.
- 2007** **Miller, R.J.**, A.J. Adams, J.P. Ebersole, E. Ruiz. Evidence for positive density-dependent effects in recovering *Diadema antillarum* populations. *Journal of Experimental Marine Biology and Ecology*, 349:215-222.
- Simoncini M., **R.J. Miller**. Feeding preference of *Strongylocentrotus droebachiensis* (Echinoidea) for a dominant native ascidian, *Aplidium glabrum*, relative to the invasive ascidian *Botrylloides violaceus*. *Journal of Experimental Marine Biology and Ecology* 342:93-98.
- Bullard, S.G., G. Lambert, M.R. Carman, J. Byrnes, R. Whitlatch, G. Ruiz, **R.J. Miller**, L. Harris, P.C. Valentine, J.S. Collie, J. Pederson, D.C. McNaught, A.N. Cohen, R.G. Asch, J. Dijkstra, K. Heinonen. The colonial ascidian *Didemnum* sp. A: current distribution, basic biology and potential threat to marine communities of the northeast and west coasts of North America. *Journal of Experimental Marine Biology and Ecology* 342 (1): 99-108.
- 2004** Adams, A.J., **R.J. Miller**, J.P. Ebersole. Tethers make juvenile surgeonfish (Acanthuridae) vulnerable to attacks by benthic invertebrates. *Bulletin of Marine Science* 74:207-211.

- 2003** **Miller, R.J.**, A.J. Adams, N.B. Ogden, J.C. Ogden, J.P. Ebersole. *Diadema antillarum* 17 years after mass mortality: is recovery beginning on St. Croix? *Coral Reefs* 22:181-187.
- 2000** **Miller, R.J.**, C.R. Smith, D.J. DeMaster, W.L. Fornes. Feeding selectivity and particle processing by deep-sea megafaunal deposit feeders: a ²³⁴Th tracer approach. *Journal of Marine Research* 58: 653-673

RESEARCH FUNDING (Total as PI/Co-PI >\$36M)

- 2021** NASA Biodiversity and Ecosystem Forecasting: Assessing spatial biodiversity dynamics in kelp forest ecosystems using spaceborne remote sensing. PI: Tom Bell (WHOI) Co-PI: **R.J. Miller**. 2021-24, \$651,253 (\$383,450 to UCSB).
- National Park Service: Channel Islands National Park sandy beach monitoring power analysis. PI: **R.J. Miller**. 2021-22, \$36,095.
- 2020** National Science Foundation: CoPe RCN: New Technology to Inform Coastal Science and Management. PI: **R.J. Miller**. Co-PIs: N. Nidzieko, E. Eliason, E. DiLorenzo, C. Garza. 2020-23, \$489,999.
- Bureau of Ocean Energy Management (BOEM): Pacific Seabird Monitoring Network I - Planning and Designing. PI: **R.J. Miller**. Co-PI: B. Halpern. \$100,000.
- California Ocean Protection Council (CA OPC): Restoring Rocky Intertidal Foundation Species across California. PI: **R.J. Miller**. Co-PIs: P. Raimondi, J. Smith, R. Ambrose, K. Cavanaugh. 2020-21, \$1,693,582.
- Pacific States Marine Fisheries Commission: Identifying missing links in the transfer and retention of domoic acid in commercially important California crab species. PI: C. Culver. Co-PIs: P. Miller, M. Page, **R.J. Miller**, R. Behrens. 2020-23, \$787,221.
- 2019** BOEM: Understanding Biological Connectivity Among Offshore Structures and Natural Reefs. PI: M. Page. Co-PIs: P. Miller, **R.J. Miller**, R. Simons, J. Dugan. 2019-24. \$400,000.
- CA OPC: Evaluating the performance of California's MPA network through the lens of sandy beach and surf zone. PI: J. Dugan. Co-PIs: **R.J. Miller**, M. Page, S. Hamilton, D. Hubbard, J. Marrin-Jarrin, D. Robinnette. 2019-21. \$1,000,000.
- NSF: LTER: Environmental drivers and ecological consequences of kelp forest dynamics (SBV IV). PI: **R.J. Miller**. Co-PIs: D. Reed, G. Hofmann, A. Stier, D. Siegel. 2018-24, \$6,762,000.

NASA Biodiversity and Ecosystem Forecasting: Southern California Bight Marine Biodiversity Observation Network. PI: **R.J. Miller**. Co-PIs: D. Siegel, K. Lafferty, C. Carlson, M. Page, D. Reed. 2018-22, \$1,049,941.

NSF: Linking nearshore kelp forest dynamics to sandy beach ecosystems REU Supplement. PI: J. Dugan. Co-PIs: **R.J. Miller**, C. Ohlmann. 2018. \$10,225.

DOE ARPA-E: Genome wide association studies for breeding *Macrocystis pyrifera*. PI: F. Alberto. Co-PIs: D. Reed, **R.J. Miller**, S. Nuhzdin. 2018-22. \$3,073,944; \$642,463 to UCSB.

DOE ARPA-E: Scalable Aquaculture Monitoring System SAMS. PI: D. Siegel. Co-PIs: N. Nidieko, T. Bell, **R.J. Miller**. 2018-22. \$2,003,890.

2017 NSF: SSI: LIMPID: Large scale IMage Processing Infrastructure Development. PI: B. Manjunath. Co-PIs: T. Pollock, **R.J. Miller**, S. Nuhzdin. 2018-22. \$3,073,944.

NSF: Linking nearshore kelp forest dynamics to sandy beach ecosystems REU Supplement. PI: J. Dugan. Co-PIs: **R.J. Miller**, C. Ohlmann. 2017. \$10,225.

2016 NOAA: Detecting and forecasting climate effects on spatial patterns of biodiversity and productivity in West Coast Sanctuaries. PI: **R.J. Miller**. Co-PIs: A. Rassweiler, D. Reed. 2016-18, \$140,750.

NSF: LTER: Land/Ocean Interactions and the Dynamics of Kelp Forest Communities. PI: D. Reed. Co-PIs: D. Siegel, S. Holbrook, J. Melack, , **R.J. Miller** (added in 2016). 2012-18. \$4,772,158

NASA: Supplement to support cross-MBON activities. PI: **R.J. Miller**. 2016, \$40,000.

BOEM: Net Environmental Benefit Analysis of Pacific Platform Decommissioning Scenarios. PI: M. Love. Co-PI: **R.J. Miller**. 2016-19. \$455,000.

NSF: RAPID: Tracing the Origin and Fate of Particulate Organic Matter in Nearshore Marine Sediments. PI: D. Reed. Co-PIs: M. Page, **R.J. Miller**. 2016-18. \$178,256.

2015 BOEM: Archaeological and Biological Assessment of Submerged Landforms in the Pacific Coast. PI: **R.J. Miller**. Co-PIs: M. Page, J. Dugan. 2015-17. \$560,121.

Southern California Water Resources Project: Develop Techniques to Genetically Identify Ichthyoplankton Larvae. PI: **R.J. Miller**. Co-PI: A. Thompson. 2015-17, \$81,266.

NSF: Linking nearshore kelp forest dynamics to sandy beach ecosystems. PI: J. Dugan. Co-PIs: **R.J. Miller**, C. Ohlmann. 2015-19. \$997,312.

- 2014** NASA: Demonstrating an Effective Biodiversity Observation Network in the Santa Barbara Channel. PI: **R.J. Miller**. Co-PIs: D. Siegel, K. Lafferty, C. Carlson, A. Rassweiler, B. Manjunath, P. Kyriakidis, M. Love, D. Reed, D. McCauley, D. Iglesias-Rodriguez, J. Hildebrand, A. Thompson. 2014-19, \$5,162,041.
- 2013** BOEM: Understanding the Role of Offshore Structures in Managing Potential Watersipora Invasions. PI: M. Page. Co-PIs: **R.J. Miller**, R. Simons, J. Dugan. 2013-18. \$800,000.
- NSF/EPA: CEIN-Predictive Toxicological Assessment and Safe Implementation of Nanotechnology in the Environment. PI: A. Keller. Co-PIs: T. Holden, H. Lenihan, R. Nesbitt, **R.J. Miller**. 2013-18. \$5,954,528.
- NSF: Sources of Particulate Organic Matter and their Use by Suspension-feeders in New Zealand Kelp Forests. PI: **R.J. Miller**. Co-PI: M. Page. 2013-15, \$58,354.
- 2010** NSF: Sources of Particulate Organic Matter and their Use by Suspension-feeders in California Kelp Forests. PI: M. Page. Co-PI: **R.J. Miller**. 2010-14, \$ 899,463.

PRESENTATIONS

- 2022** **R.J. Miller**. Technology for a Regional Ecosystems Services Observation Network in southern and central California. RESON workshop, February, virtual.
- 2021** **R.J. Miller**, D. Siegel, T. Bell, D. Catlett, K. Cavanaugh. Southern California Bight Marine Biodiversity Observation Network: Satellite Observations. NASA Biodiversity and Ecosystem Forecasting annual meeting, October, virtual.
- R.J. Miller**. Vision for creating a Regional Ecosystems Services Observation Network in southern and central California. RESON workshop, June, virtual.
- M. Castorani, S. Harrer, **R.J. Miller**, D. Reed. Disturbance structures canopy and understory productivity along an environmental gradient: evidence from a 10-year experiment at Santa Barbara Coastal LTER. Ecological Society of America, virtual, August.
- M. Castorani, D. Reed, **R.J. Miller**. Disturbance structures kelp canopy and understory productivity along an environmental gradient: evidence from a 10-year experiment. Western Society of Naturalists, virtual, November.
- K. Emery, J. Dugan, **R.J. Miller**, D. Hubbard. The role of cross-ecosystem subsidies and consumer populations in sandy beach ecosystem CO₂ fluxes. Coastal & Estuarine Research Federation Conference, virtual, November.
- 2020** **R.J. Miller**. Application of CNS models in the ViQi framework to automate image analysis for intertidal monitoring (invited). Multiagency Rocky Intertidal Monitoring Network meeting, virtual, April.

A. Harper, C. Anderson, J. Newton, B. Block, S. Bograd, G. Canonico, F. Chavez, D. Costa, **R.J. Miller**, F. Muller-Karger, J. Price, H. Ruhl, W. Turner, M. Weise, B. Woodward. Improving the collection, coordination, and delivery of information on California Current Large Marine Ecosystem conditions for societal needs. Ocean Sciences Meeting, San Diego CA, February.

N. Schooler, K. Emery, J. Dugan, **R.J. Miller**, M. Page, D. Schroeder, L. Beresford, J. Madden. Cross-ecosystem subsidies support surf zone fish on island beaches. Ocean Sciences Meeting, San Diego CA, February.

T. Cedeno, **R.J. Miller**, D. Reed. An evaluation of surge uptake capability in *Macrocystis pyrifera* in response to pulses of three different forms of nitrogen. Ocean Sciences Meeting, San Diego CA, February.

L. Washburn, N. Nidzieko, **R.J. Miller**, B. Emery, A. Kirincich. Complex coastal flows and connectivity between kelp forests and the coastal ocean in the Southern California Bight. Ocean Sciences Meeting, San Diego CA, February.

R.J. Miller, T. Lamy, M. Castorani, A. Stier, A. Rassweiler, K. Lafferty, D. Reed. Foundation species and biodiversity support and stabilize kelp forest ecosystems. Ocean Sciences Meeting, San Diego CA, February.

J. Saintz, E. DiLorenzo, T. Bell, S. Gaines, **R.J. Miller**. Spatial planning of marine aquaculture under decadal climate variability: A case study for mussel farms in southern California. Ocean Sciences Meeting, San Diego CA, February.

E. Meyer-Gutbrod, M. Love, D. Schroeder, **R.J. Miller**. Forecasting the ecological legacy of aging offshore oil and gas platforms. Ocean Sciences Meeting, San Diego CA, February.

E. Meyer-Gutbrod, M. Love, D. Schroeder, **R.J. Miller**. Forecasting the ecological legacy of aging offshore oil and gas platforms. Offshore Oil Platform Decommissioning Forum, Aquarium of the Pacific, Long Beach CA, January.

K. Emery, J. Dugan, **R.J. Miller**, D. Hubbard, C. Ohlmann, J. Madden. Community structure and ecosystem multifunctionality respond to a strong local-scale gradient in wrack subsidies to sandy beaches. Western Society of Naturalists, virtual, November.

2019

R.J. Miller, K. Lafferty, T. Lamy, L. Kui, A. Rassweiler, D. Reed, M. Page. Giant kelp, *Macrocystis pyrifera*, increases faunal diversity through physical engineering. 12th International Temperate Reefs Symposium (ITRS), Hong Kong, January.

R.J. Miller. Imaging in Marine Science: the role of deep learning models. LIMPID Symposium, UCSB, July.

R.J. Miller, T. Lamy, M. Castorani, A. Stier, A. Rassweiler, D. Reed. Spatial dynamics and connectivity of kelp forests and adjacent ecosystems. SBC LTER All Scientists Meeting, UCSB, June.

R.J. Miller. MBON program priorities and future sustainability. SCB MBON All Scientists Meeting, UCSB, June.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, C. Jerde, D. Iglesias-Rodriguez, T. Bell, A. Thompson, D. Catlett, K. Cavanaugh. Southern California Bight Marine Biodiversity Observation Network: progress & challenges. MBON all-hands meeting, Washington DC, May.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, C. Jerde, D. Iglesias-Rodriguez, T. Bell, A. Thompson, D. Catlett, K. Cavanaugh. Southern California Bight Marine Biodiversity Observation Network: progress & challenges. NASA Biodiversity and Ecosystem Forecasting annual meeting, Washington DC, Washington DC, May.

R.J. Miller, T. Lamy, M. Castorani, A. Stier, A. Rassweiler, D. Reed. Giant kelp as a foundational species at SBC LTER. LTER Science Council meeting, San Juan, Puerto Rico, May.

T. Lamy, S. Wang, D. Renard, D. Reed, **R.J. Miller**. Species insurance trumps spatial insurance in stabilizing biomass of a marine macroalgal metacommunity. International Long Term Ecological Research Network 2nd Open Science Meeting, Leipzig, Germany, September.

R.J. Miller, M. Page, J. Dugan, M. Brzezinski. Trophic connectivity between the coastal ocean and kelp forests. SBC LTER Science Planning meeting, UCSB, March.

R.J. Miller, D. Federov, K. Kvilkval. Deep Learning for all: application of CNS models in the ViQi framework to automate image analysis for marine science (invited). Bureau of Ocean Energy Management science seminar, Camarillo CA, February.

2018 **R.J. Miller**. Imaging in marine science. LIMPID project kickoff meeting, Santa Barbara CA, February.

J. Dugan, C. Ohlmann, **R.J. Miller**, D. Hubbard, K. Emery, T. Koeper, J. Madden. Fate and transport of giant kelp in coastal California waters. Ocean Sciences Meeting, Portland, OR, February.

M. Page, R. Simons, S. Zaleski, **R.J. Miller**, J. Dugan, D. Schroeder, B. Doheny, J. Goddard. Distribution and potential larval connectivity of the non-native Watersipora (Bryozoa) among offshore platforms, harbors and natural reefs. Ocean Sciences Meeting, Portland, OR, February.

R.J. Miller. Santa Barbara Channel Marine Biodiversity Observation Network: CINMS relevance. Research Activities Panel meeting for Channel Islands National Marine Sanctuary Advisory Council, March.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, D. Reed, A. Rassweiler, D. Iglesias-Rodriguez, A. Thompson, T. Bell, T. Lamy. Santa Barbara Channel Marine Biodiversity Observation Network: progress & challenges. MBON all-hands meeting, Washington DC, April.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, D. Reed, A. Rassweiler, D. Iglesias-Rodriguez, A. Thompson, T. Bell, T. Lamy. Santa Barbara Channel Marine Biodiversity Observation Network: progress & challenges. NASA Biodiversity and Ecosystem Forecasting Science Workshop, Washington DC, April.

R.J. Miller. Spatial dynamics and connectivity of kelp forests and adjacent ecosystems. SBC LTER All Scientists meeting, UCSB, May.

E. Meyer-Gutbrod, **R.J. Miller,** M. Love, M. Nishimoto, L. Kui. Net Environmental Benefit Analysis of Pacific platform decommissioning scenarios. U.S. GeoHab 2018 – 18th International Symposium, Santa Barbara CA, May.

R.J. Miller. MBON program priorities and future sustainability SBC MBON all-scientists meeting, UCSB, June.

R.J. Miller. New technology for coastal observation. NSF Coastlines and People (CoPe) Scoping Workshop, San Diego CA, September.

R.J. Miller. Visualizing nuances in ocean biodiversity. InterACT fundraising event, UCSB, September.

M. Castorani, T. Bell, **R.J. Miller,** D. Reed, D. Reuman, L. Sheppard, D. Walter, Disturbance structures the dynamics, synchrony, and biodiversity of giant kelp forests. Coastal & Estuarine Research Federation Conference, Mobile AL, November.

N. Schooler, Z. Gold, J. Dugan, **R.J. Miller,** M. Page, K. Emery, D. Schroeder. Detecting surf zone fish diversity using environmental DNA and other nondestructive methods. Coastal & Estuarine Research Federation Conference, Mobile AL, November.

K. Emery, J. Dugan, **R.J. Miller,** D. Hubbard, C. Ohlmann. Kelp subsidies drive community structure and ecosystem function on sandy beaches. Coastal & Estuarine Research Federation Conference, Mobile AL, November.

J. Dugan, D. Hubbard, K. Emery, **R.J. Miller,** C. Ohlmann. Quantifying ecological responses to trophic connectivity between kelp forests and sandy

beaches. Coastal & Estuarine Research Federation Conference, Mobile AL, November.

M. Cornish, K. Emery, J. Dugan, **R.J. Miller**, D. Hubbard. Secondary production of intertidal consumers on sandy beaches. Coastal & Estuarine Research Federation Conference, Mobile AL, November.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, C. Jerde, D. Iglesias-Rodriguez, A. Thompson, T. Bell, D. Catlett, K. Cavanaugh, B. Manjunath. Santa Barbara Channel Marine Biodiversity Observation Network. Acoustic Telemetry Network workshop, Santa Cruz CA, November.

J. Peters, D. Reed, D. Burkepile, **R.J. Miller**. Using long-term monitoring data to model consumer-mediated nutrient cycling in kelp forests. Western Society of Naturalists, Tacoma WA, November.

M. Castorani, D. Reed, **R.J. Miller**. Loss of foundation species: disturbance frequency outweighs severity in structuring kelp forest communities. Western Society of Naturalists, Tacoma WA, November.

M. O'Brien, L. Kui, **R.J. Miller**. Measurement ontologies: A field of dreams for essential biodiversity variables. American Geophysical Union conference, San Francisco CA, December.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, C. Jerde, D. Iglesias-Rodriguez, A. Thompson, T. Bell, D. Catlett, K. Cavanaugh, B. Manjunath. Southern California Bight Marine Biodiversity Observation Network: intersections with CalCOFI. CalCOFI annual meeting, Scripps, San Diego CA, December.

2017

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, D. Reed, A. Rassweiler, D. Iglesias-Rodriguez, A. Thompson, T. Bell, T. Lamy, B. Manjunath. Santa Barbara Channel Marine Biodiversity Observation Network. MBON all-project meeting, Washington DC., May.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, D. Reed, A. Rassweiler, D. Iglesias-Rodriguez, A. Thompson, T. Bell, T. Lamy, B. Manjunath. Santa Barbara Channel Marine Biodiversity Observation Network: progress and challenges. NASA Biodiversity and Ecosystem Forecasting Science Workshop, Washington DC, May.

R.J. Miller, D. Reed, D. Siegel, S. Holbrook, J. Melack. Santa Barbara Coastal LTER overview. LTER Science Council meeting, Hubbard Brook LTER, Lincoln NH, May.

R.J. Miller. MBON national and international program priorities. SBC MBON all-scientists meeting, UCSB, June.

T. Lamy, D. Reed, K. Lafferty, R. Rhognstad, **R.J. Miller**. Testing the role of giant kelp, *Macrocystis pyrifera*, as a foundation species: insights from long-term studies. Ecological Society of America, Portland OR, August.

M. O'Brien, **R.J. Miller**, L. Kui. Managing Marine Biodiversity Observation Network (MBON) data for secondary use. Ecological Society of America, Portland OR, August.

K. Emery, J. Dugan, **R.J. Miller**. Species identity controls consumer-mediated ecosystem function in a sandy beach ecosystem. Ecological Society of America, Portland OR, August.

J. Dugan, **R.J. Miller**, C. Ohlmann, D. Hubbard, K. Emery. Patterns and processes affecting transport, retention and fate of kelp subsidies to sandy beach ecosystems. Ecological Society of America, Portland OR, August.

D. Reed, L. Washburn, T. Bell, C. Blanchette, **R.J. Miller**. El Niño coupled with anomalous ocean warming challenge sentinel status of giant kelp as an indicator of climate change. Ocean Sciences meeting, Honolulu HI, April.

J. Saarinen, G. Canonico-Hyde, F. Muller-Karger, A. Benson, W. Appletans, K. Iken, **R.J. Miller**. The Marine Biodiversity Observation Network (MBON): A partnership to understand life in the sea. Coastal & Estuarine Research Federation Conference, Providence RI, November.

K. Emery, J. Dugan, **R.J. Miller**. Species identity controls consumer-mediated ecosystem function in a sandy beach ecosystem. Coastal & Estuarine Research Federation Conference, Providence RI, November.

J. Dugan, K. Emery, **R.J. Miller**, C. Ohlmann, D. Hubbard, T. Koeper, J. Madden. Patterns and processes affecting transport, retention and fate of kelp subsidies to sandy beach ecosystems. Coastal & Estuarine Research Federation Conference, Providence RI, November.

M. Castorani, D. Reed, **R.J. Miller**. Loss of giant kelp forests: how disturbance frequency and severity affect reef communities. Western Society of Naturalists, Monterey CA, November.

R. Rhognstad, T. Lamy, L. Kui, D. Reed, A. Rassweiler, **R.J. Miller**. Species archetype models reveal diverse responses to environmental gradients. Western Society of Naturalists, Monterey CA, November.

C. Yorke, **R.J. Miller**, M. Page. Kelp detritus as an autochthonous resource to subtidal invertebrates. Western Society of Naturalists, Monterey CA, November.

2016

D. Reed, L. Washburn, T. Bell, C. Blanchette, **R.J. Miller**. Recent physical-chemical anomalies and associated ecological responses in southern California kelp forests. Ocean Sciences meeting, New Orleans LA, February.

S. Viola, M. Page, **R.J. Miller**, S. Zaleski, B. Doheny, J. Dugan, D. Schroeder. The role of disturbance, larval supply, and native community on the establishment of a non-native species on oil platforms in the Santa Barbara Channel. Ocean Sciences meeting, New Orleans LA, February.

M. Page, S. Zaleski, R. Simons, **R.J. Miller**, J. Dugan, B. Doheny, D. Schroeder. Distribution, abundance, and potential larval connectivity of the non-native bryozoan *Watersipora* on offshore oil platforms and natural reefs. Ocean Sciences meeting, New Orleans LA, February.

S. Zaleski, M. Page, **R.J. Miller**, B. Doheny, J. Dugan, D. Schroeder. Regional patterns in invertebrate assemblages on offshore oil platforms along the Pacific outer continental shelf. Ocean Sciences meeting, New Orleans LA, February.

C. Yorke, **R.J. Miller**, M. Page, N. Shears, B. Hanns. Trophic resources to subtidal suspension feeders in kelp ecosystems. Ocean Sciences meeting, New Orleans LA, February.

F. Muller-Karger, K. Iken, **R.J. Miller**, J.E. Duffy, F. Chavez, E. Montez. A demonstration Marine Biodiversity Observation Network (MBON): understanding marine life and its role in maintaining ecosystem services (Invited). Ocean Sciences meeting, New Orleans LA, February.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, M. Love, D. Reed, A. Rassweiler, J. Hildebrand, D. Iglesias-Rodriguez, A. Thompson, B. Manjunath, P. Kyriakidis, T. Lamy. Demonstrating an effective Marine Biodiversity Observation Network in the Santa Barbara Channel. Ocean Sciences meeting, New Orleans LA, February.

D. Federov, **R.J. Miller**, K. Kvilkval, B. Doheny, S. Sampson, B. Manjunath. BisQue: cloud-based system for management, annotation, visualization, analysis and data mining of underwater and remote sensing imagery. Ocean Sciences meeting, New Orleans LA, February.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, M. Love, D. Reed, A. Rassweiler, J. Hildebrand, D. Iglesias-Rodriguez, A. Thompson, B. Manjunath, P. Kyriakidis, T. Bell, T. Lamy. Santa Barbara Channel Marine Biodiversity Observation Network: progress & challenges. NASA Biodiversity and Ecosystem Forecasting Science Workshop, College Park MD, May.

T. Lamy, **R.J. Miller**, A. Rassweiler, D. Siegel, P. Kyriakidis, D. Reed, J. Staines. Uncovering the complex and multiscale drivers of marine community dynamics. 11th International Temperate Reefs Symposium (ITRS), Pisa, Italy, June.

R.J. Miller. SBC LTER overview and relevance to potential Cape Kelp LTER (invited). University of Cape Town, South Africa, October.

R.J. Miller, K. Lafferty, T. Lamy, L. Kui, A. Rassweiler, D. Reed. Responses of biodiversity to fluctuations in foundation species. International LTER Open Science Meeting, Skukuza, South Africa, October.

R.J. Miller, E. Meyer-Gutbrod, M. Love, M. Nishimoto, L. Kui. Net Environmental Benefit Analysis of Pacific platform decommissioning scenarios. BOEM Environmental Studies meeting, UCSB, November.

D. Reed, L. Washburn, A. Rassweiler, **R.J. Miller**, T. Bell, S. Harrer. Extreme warming event challenges the sentinel status of kelp forests as indicators of climate. SBC LTER All Scientists meeting, UCSB, November.

E. Montes, F. Muller-Karger, F. Chavez, S. Gittings, G. Canonico, M. Kavanaugh, K. Iken, **R.J. Miller**, E. Duffy, P. Miloslavich. National Marine Sanctuaries as sentinel sites for a demonstration Marine Biodiversity Observation Network (MBON). AGU Fall Meeting, San Francisco CA, December.

R.J. Miller, D. Reed, L. Washburn, A. Rassweiler, T. Bell, S. Harrer. Extreme warming challenges sentinel status of kelp forests as indicators of climate change (Invited). AGU Fall Meeting, San Francisco CA, December.

2015

R.J. Miller, M. Page, C. Yorke, C. Koenigs. Kelp as a trophic resource to reef food webs. ASLO Aquatic Sciences, Granada, Spain, February.

S. Patton, **R.J. Miller**, M. Page. Carbon turnover in tissues of three southern California suspension feeders. ASLO Aquatic Sciences, Granada, Spain, February.

M. Page, S. Zaleski, **R.J. Miller**, J. Dugan, R. Simons, D. Schroeder, B. Doheny. The exotic bryozoan *Watersipora subtorquata* on offshore oil platforms: distributional changes, dispersal pathways, and management.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, M. Love, D. Reed, A. Rassweiler, J. Hildebrand, D. Iglesias-Rodriguez, A. Thompson, B. Manjunath, P. Kyriakidis. Santa Barbara Channel Marine Biodiversity Observation Network. NASA CC&E Joint Science Workshop, College Park MD, April.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, M. Love, D. Reed, A. Rassweiler, J. Hildebrand, D. Iglesias-Rodriguez, A. Thompson, B. Manjunath, P. Kyriakidis. Demonstrating an effective Marine Biodiversity Observation Network in the Santa Barbara Channel: The role of remote sensing. International Congress of Conservation Biology, Montpellier France, August.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, M. Love, D. Reed, A. Rassweiler, J. Hildebrand, D. Iglesias-Rodriguez, A. Thompson, B. Manjunath, P. Kyriakidis. Santa Barbara Channel Marine Biodiversity Observation Network. LTER All Scientists Meeting, Estes Park CO, September.

R.J. Miller, J. Dugan, C. Ohlmann. Patterns & processes affecting the delivery and retention of kelp. SBC LTER midterm NSF site review, UCSB, October.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, M. Love, D. Reed, A. Rassweiler, J. Hildebrand, D. Iglesias-Rodriguez, A. Thompson, B. Manjunath, P. Kyriakidis. Santa Barbara Channel Marine Biodiversity Observation Network: progress and challenges. National MBON meeting, Monterey CA, October.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, M. Love, D. Reed, A. Rassweiler, J. Hildebrand, D. Iglesias-Rodriguez, A. Thompson, B. Manjunath, P. Kyriakidis. Demonstrating an effective Biodiversity Observation Network in the Santa Barbara Channel (invited). Southern CA Coastal Water Research Project, Costa Mesa CA, December.

2014

D. Reed, A. Rassweiler, **R.J. Miller**. The value of a long-term perspective in understanding short-term dynamics of giant kelp ecosystems. 10th International Temperate Reefs Symposium, University of Western Australia, Perth AU, January.

R.J. Miller, M. Page, C. Yorke. The role of kelp in temperate reef food webs (invited). Leigh Marine Lab, Leigh NZ, January.

R.J. Miller, M. Page, C. Yorke. Kelp detritus as a food source for suspension feeders (invited). Leigh Marine Lab, Leigh NZ, February.

M. Page, S. Zaleski, **R.J. Miller**, J. Dugan, D. Schroeder. The exotic bryozoan *Watersipora subtorquata* on offshore oil platforms: distribution, abundance, dispersal pathways, and management considerations. Ocean Sciences meeting, Honolulu HI, February.

R.J. Miller. Demonstrating an effective Biodiversity Observation Network in the Santa Barbara Channel (invited). Channel Islands National Marine Sanctuary Advisory Board, UCSB, September.

R.J. Miller, D. Siegel, C. Carlson, K. Lafferty, M. Love, D. Reed, A. Rassweiler, J. Hildebrand, D. Iglesias-Rodriguez, A. Thompson, B. Manjunath, P. Kyriakidis. SBC MBON site visit, NASA & BOEM, UCSB, October.

R.J. Miller. Demonstrating an effective Biodiversity Observation Network in the Santa Barbara Channel (invited). Channel Islands National Marine Sanctuary Congressional Caucus, UCSB, November.

2013

R.J. Miller, H. Lenihan, A. Keller. Effects of copper nanomaterials on aquatic ecosystems. CEIN copper working group meeting, UCLA, Los Angeles CA, July.

R.J. Miller, H. Lenihan, E. Muller, R. Nisbett, A. Keller. Impacts of Cu, Ag, Zn, and CeO₂ nanoparticles on marine phytoplankton: integrating environmental chemistry, cytotoxicity, physiology, demographics, and Dynamic Energy Budget

models. Sustainable Nanotechnology Organization Conference, UCSB, November.

R.J. Miller, M. Page, C. Yorke. Kelp detritus as a food source for suspension feeders. Western Society of Naturalists, Oxnard CA, November.

J. Madden, **R.J. Miller**, C. Yorke, M. Page. Life history characteristics of the obligate kelp-dwelling limpet, *Acmaea insessa*. Western Society of Naturalists, Oxnard CA, November.

C. Yorke, **R.J. Miller**, M. Page. Is kelp detritus a significant food source to kelp forest suspension feeders? Western Society of Naturalists, Oxnard CA, November.

R.J. Miller, D. Reed, A. Rassweiler, M. Page, J. Byrnes. Biotic and abiotic drivers of kelp forest structure and function. SBC LTER All Scientists meeting, November.

2012 **R.J. Miller**. Using physiology to predict population and community processes in algae (invited). UCD Bodega Bay Marine Lab, Bodega CA, April.

R.J. Miller, M. Page, M. Brzezinski. $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ of particulate organic matter in the Santa Barbara Channel: drivers and implications for trophic inference. LTER Network All Scientists Meeting, Estes Park CO, September.

R.J. Miller, M. Page, M. Brzezinski. $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ of particulate organic matter in the Santa Barbara Channel: drivers and implications for trophic inference (invited). Leigh Marine Lab, Leigh NZ, December.

R.J. Miller, M. Page, C. Yorke, C. Koenigs. Sources of particulate organic matter and their use by benthic suspension-feeders in the coastal California ecosystem. SBC LTER All Scientists meeting, UCSB, November.

C. Koenigs, **R.J. Miller**, M. Page. Trophic relations in the kelp forest canopy. Western Society of Naturalists, Monterey CA, November.

R.J. Miller, M. Page, M. Brzezinski. $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ of particulate organic matter in the Santa Barbara Channel: drivers and implications for trophic inference. Western Society of Naturalists, Monterey CA, November.

2011 **R.J. Miller**, D. Reed, M. Brzezinski. Primary production in California kelp forests. SBC LTER research seminar, UCSB, January.

R.J. Miller. Effects of nanomaterials on marine phytoplankton. CEIN seminar, Bren, UCSB, August.

R.J. Miller, D. Reed, A. Rassweiler, M. Page, J. Byrnes. Biotic and abiotic drivers of kelp forest structure and function. SBC LTER All Scientists meeting, November.

- 2010** **R.J. Miller**, M. Page. Sources of particulate organic matter and their use by benthic suspension-feeders in the coastal California ecosystem. SBC-LTER Science Meeting, May.
- 2009** **R.J. Miller**, H. Lenihan, N. Tseng, E. Muller, A. Keller. Effects of metal oxide nanoparticles on marine phytoplankton. CEIN Science Meeting, UCSB, August.
- R.J. Miller**, H. Lenihan, N. Tseng. Differential effects of metal oxide nanoparticles on marine phytoplankton. CEIN international meeting, Washington DC, September.
- R.J. Miller**, D. Reed, M. Brzezinski. Disturbance, assemblage structure and the partitioning of primary production among giant kelp understory macroalgae and phytoplankton. SBC LTER Midterm Site Review, September.
- R.J. Miller**, D. Reed, M. Brzezinski. Partitioning of primary production among giant kelp (*Macrocystis pyrifera*), understory macroalgae and phytoplankton on a temperate reef. Western Society of Naturalists, Monterey CA, November.
- 2008** **R.J. Miller**. Primary production in the kelp forest (invited). Santa Barbara City College seminar, October.
- 2006** **R.J. Miller**, R. Etter. Shading facilitates sessile invertebrate dominance in the rocky subtidal Gulf Of Maine. 7th International Temperate Reef Symposium, UCSB, Santa Barbara CA, June.
- 2004** **R.J. Miller**, A. Adams, J. Ebersole. Status and trends of *Diadema* recovery in St. Croix, USVI (invited). TNC *Diadema* Workshop. Miami, FL.
- 2003** **R.J. Miller**, R. Etter. Physical and biological factors affecting rock wall communities in the rocky subtidal Gulf Of Maine. Benthic Ecology Meeting, Groton CT.
- 2001** **R.J. Miller**, A. Adams, N. Ogden, J. Ogden, J. Ebersole. *Diadema antillarum* 17 years after mass mortality: is recovery beginning on St. Croix? Benthic Ecology meeting, Orlando, Florida.
- 1998** **R.J. Miller**, C. Smith, D. DeMaster. Food selection by deep-sea megafaunal surface deposit feeders as indicated by ²³⁴Th, chlorophyll, and amino acid measurements. 8th Deep Sea Biology Symposium, Monterey CA.
- 1996** C. Smith, **R.J. Miller**, D.J. DeMaster, W. Fornes. Age-dependent bioturbation of deep-sea sediments. ASLO Ocean Sciences meeting, San Diego.
- K. Selph, M. Landry, **R.J. Miller**, H. Al-Mutairi. Temporal variability in the mesozooplankton community at ocean station ALOHA. ASLO Ocean Sciences meeting, San Diego.

AWARDS & HONORS

- 2003** Best student presentation in Community Ecology, Benthic Ecology Meeting.
- 1998-2001** NSF Graduate Student Traineeship in Biodiversity Conservation
- 1992** Outstanding Academic Achievement Award in Math and Science, Nova University.
- 1991** National Science Foundation REU fellowship, University of Maryland.
- 1989-1992** Gold Circle full tuition academic scholarship, Nova University.

TEACHING EXPERIENCE

- 2010-** Co-instructor with Mark Page, Biology of the Land-Marine Interface (EEMB 170). UCSB (2020-21 skipped due to covid).
- 2013** Instructor, Coastal Marine Ecosystems (ESM 254). Bren School of Environmental Science and Management UCSB.
- 2012** Instructor, Applied Marine Ecology (ESM 260). Bren School of Environmental Science and Management, UCSB.
- 2008-2012** Invited lecturer on kelp forest ecology, Natural History of the Channel Islands (Geog 149/ ES 111). UCSB.
- 2000-2005** Teaching assistant, Biology (BIOL 111, 112), Genetics (BIOL 252), Ecology (BIOL 342), Evolutionary Medicine (BIOL 392). University of Massachusetts Boston.
- 2005** Teaching assistant, Diving Research Methods (EEMB 5589), Experimental Design and Biostatistics (BIOT 6214). Three Seas program, Northeastern University.
- 2000-2004** Invited lecturer & field trip leader, Marine Biology (Biology S-74). Harvard University Summer School.
- 1996-97** Teaching assistant, Oceanography 201: The Science of the Sea. University of Hawaii at Manoa.
- 1997-98** Invited lecturer, discussion leader, Oceanography 628: Benthic Biological Oceanography.
- 1996** Instructor, Coral reef ecology and field sampling methods. Coral Cay Conservation, Belize.
- 1990-91** Teaching assistant, Invertebrate Zoology (BIO 3300), Aquaculture (OCMB 6200). Nova University, Ft. Lauderdale FL.

PROFESSIONAL SERVICE AND MEMBERSHIP

2021-	Deputy Director	Interim, Marine Science Institute, UCSB.
2021-	Chair	Resource Committee, Marine Science Institute, UCSB.
2021-	Member	Marine Science Institute Advisory Committee, UCSB.
2020-	Co-Chair	Research Advisory Panel, Channel Islands National Marine Sanctuary.
2020-	Member	Board of Editors, <i>Ecosphere</i> , Ecological Society of America.
2018-	Member	Earth Research Institute Advisory Committee, UCSB.
2018-	Member	Office of Research Bridge Funding Pilot Program Committee, UCSB.
2018-	Member	Pacific Marine & Estuarine Fish Habitat Partnership (PMEP) nearshore working group.
2011-	Member	Diving Control Board, UCSB.
2022	Panelist	NSF Biological Oceanography.
2022	Expert reviewer	XPRIZE Carbon Removal Competition, Musk Foundation.
2021	Chair	Academic Merit Review Committee, MSI, UCSB.
2021	Member	Academic Merit Review Committee, MSI, UCSB.
2020	Member	CSU COAST State Science Information Needs Program.
2020	Panelist	NSF Coastlines and People Program.
2020	Co-Chair	Ecology and Biogeochemistry of Macroalgae. Session at ASLO Ocean Sciences Meeting.
2020	Member	Search Committee, Earth Research Institute MSO.
2020	Chair	Academic Merit Review Committee, MSI, UCSB.
2020	Member	Academic Merit Review Committee, MSI, UCSB.
2019	Member	Academic Merit Review Committee, MSI, UCSB.
2019	Chair	Academic Merit Review Committee, MSI, UCSB.
2019	Lead	Site External Review Team, NSF LTER program
2018	Panelist	NSF Biological Oceanography Program
2018	Member	Plum Island Ecosystem LTER External Advisory Team
2018	Chair	Academic Merit Review Committee, MSI, UCSB.
2016	Member	Academic Merit Review Committee, MSI, UCSB.
2016	Co-Chair	MBON Voyage: Integrating Marine Biodiversity into Ocean Observing Systems. Session at ASLO OSM.

2016-19	Member	Marine Science Institute Advisory Committee, UCSB.
2015	Chair	Academic Merit Review Committee, MSI, UCSB.
2015-16	Member	Analytical Lab Advisory Committee, MSI, UCSB.
2014-20	Member	Research Advisory Panel, Channel Islands National Marine Sanctuary.
2014	Panelist	NSF Ocean Sciences Postdoctoral Fellowship Program
2013	Member	Academic Merit Review Committee, MSI, UCSB.
2011	Member	Academic Merit Review Committee, ERI, UCSB

GRADUATE COMMITTEES

Year	Institution	Role	Student	Degree	Current Position
2022-	UCSB (IGPMS)	Advisor	Inez Mangino	Ph.D.	-
2021-	UCSB (IGPMS)	Advisor	William Ray	Ph.D.	-
2021-	UCSB (EEMB)	Member	Erin de Leon Sanchez	Ph.D.	-
2020-	UCSB (IGPMS)	Advisor	Billie Beckley	Ph.D.	-
2020-	UCSB (IGPMS)	Member	Hayley Goss	Ph.D.	-
2020-	UCSB (EEMB)	Member	An Bui	Ph.D.	-
2018-	UCSB (IGPMS)	Advisor	Kristen Michaud	Ph.D.	-
2018-	UCSB (Bren)	Advisor	Stephen Whitaker	Ph.D.	Biologist, Channel Islands National Park
2019-	UCSB (Bren)	Member	Jose Zenteno	Ph.D.	-
2016-	UCSB (IGPMS)	Advisor	Katrina Malakhoff	Ph.D.	-
2021	UCSB (IGPMS)	Member	Kyle Emery	Ph.D.	Postdoc, UCLA
2021	UCSB (Bren)	Member	Jade Saintz	Ph.D.	-
2020	UCSB (IGPMS)	Co-Advisor	Tiffany Ceden	M.S.	Kaiser Permanente
2019	UCSB (IGPMS)	Advisor	Christie Yorke	Ph.D.	UCSB MSI Analytical Laboratory
2018	UCSB (IGPMS)	Member	Nicholas Schooler	Ph.D.	Cal Lutheran University
2018	UCSB (IGPMS)	Member	Craig Koenigs	M.S.	Cogstone Resource Management
2017	UCSB (IGPMS)	Member	Sloane Viola	M.S.	Climate Program Manager, Office of Governor Gavin Newsom
2013	Museum National d'Histoire Naturelle	Examineur	Régis Gallon	Ph.D.	Conservatoire National des Arts et Métiers
2012	UCSB (IGPMS)	Member	Christine Sanschi	M.S.	Paua Marine Research Group

UNDERGRADUATE MENTORSHIP

Year	Institution	Role	Student	Program
2021	UCSB (MSI)	Advisor	Molly Gans	Amherst College Honors
2020	UCSB (EEMB)	Co-Advisor	Raine Detmer	UCSB Honors project
2018	UCSB (MSI)	Co-Advisor	Michael Cornish	NSF REU
2018	UCSB (MSI)	Co-Advisor	William DeJesus	NSF Ocean Change REU
2017	UCSB (MSI)	Co-Advisor	Kristen Michaud	NSF REU
2020-	UCSB (MSI)	Co-Advisor	Valerie Kramer	NSF REU
2016	UCSB (MSI)	Co-Advisor	Jacqueline Hsu	NSF REU
2015	UCSB (EEMB)	Co-Advisor	John Leidl	UCSB Honors Project
2015	UCSB (EEMB)	Advisor	Tiffany Cedeno	UCSB Honors Project
2014	UCSB (MSI)	Co-Advisor	Rebecca Howard	UCSB Honors Project
2014	UCSB (MSI)	Advisor	Jessica Madden	NSF REU
2014	UCSB (MSI)	Member	Stephanie Patton	NSF REU
2013	UCSB (EEMB)	Advisor	Crystal Dunlop	UCSB Honors Project
2012	UCSB (MSI)	Co-Advisor	Craig Koenigs	NSF REU
2011	UCSB (MSI)	Co-Advisor	Christie Yorke	NSF REU
2011	UCSB (Bren)	Advisor	Edward Hu	UCSB Honors Project
2010	UCSB (Bren)	Advisor	Scott Pease	UCSB Honors Project
2010	UCSB (Bren)	Advisor	Alex Moreland	UCSB Honors Project
2010	UCSB (Bren)	Advisor	Nancy Tseng	UCLA Research Credit
2004	UMass Boston	Co-Advisor	Glenn Banegura	McNair Research Fellowship
2003	UMass Boston	Co-Advisor	Melissa Simoncini	NSF REU
2002	UMass Boston	Co-Advisor	Miriam Goldstein	NSF REU

