

## ***Jennifer E. Smith, Ph.D., Marine Ecologist***

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### **CONTACT INFORMATION**

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### **RESEARCH INTERESTS**

*My research focuses on understanding how benthic marine communities are structured and how they function under different natural and anthropogenic disturbance regimes.*

### **EDUCATION**

*Ph.D. University of Hawai'i, Manoa, Honolulu, HI, December 2003  
Department of Botany & Ecology, Evolution and Conservation Biology  
Dissertation Title: Algal Blooms on Coral Reefs: Assessing the impacts of nutrients, herbivores and invasive species on community structure.  
B.S. Humboldt State University, Arcata, CA, May 1997  
Dual degree in Zoology & Biology*

### **APPOINTMENTS**

**JULY 2014-PRESENT ASSOCIATE PROFESSOR**  
*Scripps Institution of Oceanography, Ocean Bioscience, Center for Marine Biodiversity and Conservation, University of California, San Diego*

**JULY 2008- 2014 ASSISTANT PROFESSOR**  
*Scripps Institution of Oceanography, Ocean Bioscience, Center for Marine Biodiversity and Conservation, University of California, San Diego*

**2005-2008 POSTDOCTORAL SCHOLAR**  
*National Center for Ecological Analysis and Synthesis, University of California, Santa Barbara. Investigating the relative importance of herbivores and nutrients on coral reef community structure*

**2005 RESEARCHER**  
*Scripps Institution of Oceanography, University of California, San Diego.  
Benthic marine ecologist on the Line Islands Research Expedition.*

**2004-2005 FACULTY RESEARCHER**  
*Department of Botany, University of Hawai'i. Investigating the causes and consequences of macroalgal blooms on Maui.*

### **PUBLICATIONS**

- 95.** Fox, M.D., G.J. Williams, M.D. Johnson, V.Z. Radice, B.J. Zgliczynski, E.L.A. Kelly, F.L. Rohwer, S.A. Sandin, **J.E. Smith** (2018) Gradients in primary production predict trophic strategies of mixotrophic corals across spatial scales. *Current Biology* 28(21): 3355-3364 e4
- 94.** Galtier d'Auriac, I. R.A. Quinn, H. Maughan, L. Nothias, M.J. Little, C.A. Kapon, A. Cobian, B.T. Reyes, K. Green, S.D. Quistad, M. Leray, **J.E. Smith**, P.C. Dorrestein, F.L. Rohwer, D.D. Deheyn, A.C. Hartmann (2018) Before platelets: the production of platelet activating factor during growth and stress in a basal marine organism. *Proc. R. Soc. B* 285 (1884), 20181307
- 93.** Calhoun SK, Haas AF, Takeshita Y, Johnson MD, Fox MD, Kelly ELA, Mueller B, Vermeij MJA, Kelly LW, Nelson CE, Price NN, Roach TNF, Rohwer FL, **Smith JE** (2017) Exploring the occurrence of and explanations for nighttime

- spikes in dissolved oxygen across coral reef environments. *PeerJ Preprints* 5:e2935v2
92. Williams, G.J., S.A. Sandin, B.J. Zgliczynski, M.D. Fox, J.M. Gove, J.S. Rogers, K.A. Furby, A.C. Hartmann, Z.R. Caldwell, N.N. Price, **J.E. Smith** (2018) Biophysical drivers of coral trophic depth zonation. *Marine Biology* 165 (4), 60.
  91. Nakajima et al (2018). Release of dissolved and particulate organic matter by soft coral and subsequent microbial degradation *JMBE* 504: 53-60
  90. Lewis, L.S., Y. Eynaud, **J.E. Smith** (2018) Comparative metabolic ecology of tropical herbivorous echinoids on a coral reef. *PLoS One* 13: e0190470
  89. Ruttenberg, B., J.E. Caselle, A.J. Estep, A.E. Johnson, K.L. Marhaver, L.J. Richter, S.A. Sandin, M.J.A. Vermeij, **J.E. Smith**, D. Grenda, A. Cannon (2018). Ecological assessment of the marine ecosystems of Barbuda, West Indies: Using rapid scientific assessment to inform ocean zoning and fisheries management. *PloS one* 13 (1), e0189355.
  88. Edwards, C.B., Y. Eynaud, G.J. Williams, N.E. Pedersen, B.J. Zgliczynski, A.C.R. Gleason, **J.E. Smith**, S.A. Sandin (2017) Large-area imaging reveals biologically driven non-random spatial patterns of corals at a remote reef. *Coral Reefs* 36: 1290-1305
  87. Kersten, R.D., Lee, S., Fujita, D. Pluskal, T., Kram, S. **J.E. Smith**, Takahiro Iwai, Joseph P Noel, Makoto Fujita, Jing-Ke Weng (2017) A red algal Bourbonane Sesquiterpene Synthase defined by microgram-scale NMR-coupled crystalline sponge XRD analysis. *Journal of the American Chemical Society* 139: 16838-16844.
  86. Nakajima, R., H. Namazaki, L.S. Lewis, A. Khen, **J.E. Smith**, N. Nakatomi, H. Kurihara (2017) Planktonic trophic structure in a coral reef ecosystem-grazing versus microbial food webs and the production of mesozooplankton. *Progress in Oceanography* 156: 104-120. <https://doi.org/10.1016/j.pocean.2017.06.007>
  85. Johnson, M.D., S. Comeau, C. Lantz, **J.E. Smith** (2017) Complex and interactive effects of ocean acidification and temperature on epilithic and endolithic coral reef turf algal assemblages. *Coral Reefs*
  84. Kelly, E.L.A., Y. Eynaud, I. Williams, R. Sparks, M. Dailer, S.A. Sandin, **J.E. Smith** (2017) A budget of algal production and consumption by herbivorous fish in an Herbivore Fisheries Management Area, Maui, Hawaii. *Ecosphere* 8: e01899. <https://doi.org/10.1002/ecs2.1899>
  83. Furby, K., **J.E. Smith**, S.A. Sandin (2017) *Porites superfusa* mortality and recovery from a bleaching event at Palmyra Atoll, USA. *Peer J* 5: e3204 <https://doi.org/10.7717/peerj.3204>
  82. McLaughlin, K., et al. (2017) An evaluation of ISFET sensors for coastal pH monitoring applications. *Regional Studies in Marine Science* 12: 11-18.
  81. Kelly, E.L.A., Eynaud, Y., Clements, S.M., **Smith, J.E.** (2016) Investigating functional redundancy versus complementarity in Hawaiian herbivorous coral reef fishes. *Oecologia* 182: 1151-1163. doi:10.1007/s00442-016-3724-0
  80. Nakajima, R., N. Nakatomi, H. Kurihara, M.D. Fox, **J.E. Smith**, K. Okaji (2016) Crown-of-thorns starfish larvae can feed on organic matter released from corals. *Diversity* 8, 18
  79. Takeshita, Y. McGillis, W. Briggs, E. Carter, A. Donham, E. Martz, T. Price, N.N. **Smith, J.E.** (2016) Assessment of net community production and calcification of a coral reef using a boundary layer approach. *J of Geophysical Research, Oceans* 121: 5655-5671. DOI 10.1002/2016JC011886
  78. Mullen, A., Treibitz, T., Roberts, P., Kelly, E.L.A., Horwitz, R., **Smith, J.E.**, Jaffe, J.S. (2016) Underwater microscopy for in situ studies of benthic ecosystems. *Nature Communications*. DOI: 10.1038/ncomms12093

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76. Haas, A.F., M.F.M. Fairoz, L.W. Kelly, C.E. Nelson, E.A. Dinsdale, R.A. Edwards, S. Giles, M. Hatay, N. Hisakawa, B. Knowles, Y.W. Lim, H. Maughan, O. Pantos, T.N.F. Roach, S.E. Sanchez, C.B. Silveira, S.A. Sandin, **J.E. Smith**, F.L. Rohwer *Global microbialization of coral reefs*. (2016) *Nature Microbiology*, 16042, doi:10.1038/nmicrobiol.2016.42
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73. **Smith, J.E.**, S.A. Sandin, P.S. Vroom, I. Williams, E. Sala, D. Obura, R. Brainard, A. Carter, S. Grillo, C. Edwards, L. Lewis, J. Harris (2016) *Baselines and evidence of human impact on coral reefs across the central Pacific*. *Proceedings of the Royal Society, Biology*
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71. Haas AF, Guibert M, Foerschner A, Co T, Calhoun S, George E, Hatay M, Dinsdale E, Sandin SA, Smith JE, Vermeij MJA, Felts B, Dustan P, Salamon P, Rohwer F. (2015) *Can we measure beauty? Computational evaluation of coral reef aesthetics*. *PeerJ* 3:e1390
70. Takeshita, Y., C. A. Frieder, T. R. Martz, J. R. Ballard, R. A. Feely, S. Kram, S. Nam, M. O. Navarro, N. N. Price, and **J. E. Smith** (2015) *Including high frequency variability in coastal ocean acidification projections*. *Biogeosciences*
69. Kram SL, Price NN, Donham Em, Johnson MD, Kelly ELA, Hamilton SL and Smith JE (2015) *Variable responses of temperate calcified and fleshy macroalgae to ocean acidification and warming*. *ICES Journal of Marine Science. Special Issue on Ocean Acidification*
68. DeMartini, E.E. and **J.E. Smith** (2015) *Effects of fishing on the fishes and habitat of coral reefs*. In *Ecology of Fishes on Coral Reefs*. Cambridge University Press. Pp 135-144.
67. Harris, J.L., L.S. Lewis, and **J.E. Smith** (2015) *Quantifying scales of spatial variability in algal turf assemblages on coral reefs*. *Marine Ecology Progress Series*. doi:10.3354/meps11344
66. Beijbom, O., P.J. Edmunds, C. Roelfsema, **J.E. Smith**, D.I. Kline, B. Neal, M. Dunlap, V. Moriarty, T. Fan, C. Tan, S. Chan, T. Treibitz, A. Gamst, B.G. Mitchell, D. Kriegman (2015) *Towards automated annotation of benthic survey images: variability of human experts and operational modes of automation*. *PLoS One*

65. Bracken, M. E. S., Hillebrand, H., Borer, E. T., Seabloom, E. W., Cebrian, J., Cleland, E. E., Elser, J. J., Gruner, D. S., Harpole, W. S., Ngai, J. and **Smith, J. E.** (2015) Signatures of nutrient limitation and co-limitation: responses of autotroph internal nutrient concentrations to nitrogen and phosphorus additions. *Oikos*. doi: 10.1111/oik.01215
64. Lim YW, Cuevas DA, Silva GGZ, Aguinaldo K, Dinsdale E, **Smith JE** et al. (2014) Sequencing at sea: Challenges and experiences in Ion Torrent PGM sequencing during the 2013 Southern Line Islands Research Expedition. *PeerJ PrePrints* 2:e433v1 <http://dx.doi.org/10.7287/peerj.preprints.433v1>
63. Kelly L.W., Williams G.J., Barott K.L., Carlson C.A., Dinsdale E.A., Edwards R.A., Haas A.F., Haynes M., Lim Y.W., McDole T., **Smith, JE**, et al. (2014) Local genomic adaptation of coral reef-associated microbiomes to gradients of natural variability and anthropogenic stressors. *Proceedings of the National Academy of Sciences* **111**(28), 10227-10232. (doi:10.1073/pnas.1403319111).
62. Johnson, M.J., N.N. Price and **J.E. Smith** (2014) Contrasting effects of ocean acidification on tropical fleshy and calcareous algae. *PeerJ*
61. Hamilton S.L., **Smith J.E.**, Price N.N., and Sandin S.A. (2014) Quantifying patterns of fish herbivory on an uninhabited predator-dominated central Pacific coral reef, Palmyra Atoll (USA). *Marine Ecology Progress Series*
60. Haas A.F., **Smith J.E.**, Thompson M., Deheyn D.D. (2014) Effects of reduced dissolved oxygen concentrations on physiology and fluorescence of hermatypic corals and benthic algae. *PeerJ* 2:e235 <http://dx.doi.org/10.7717/peerj.235>
59. Williams G.J., Price N.N., Aeby G.S., Conklin E.J., Davy S.K., Gove J.M., Knapp I.S., **Smith J.E.**, and Work T.M. (2014) Ocean warming and acidification have complex interacting effects on the dynamics of a marine fungal disease. *PRSB* 281: 20133069; <http://dx.doi.org/10.1098/rspb.2013.3069>
58. Edwards, C.B., A. Green, A. Friedlander, M. Newman, E. Sala, S.A. Sandin, H. Sweatman, I. Williams, **J.E. Smith** (2014) Global assessment of the status of coral reef herbivorous fishes: Evidence for fishing effects. *PRSB* 281 (1774), 20131835
57. Haas AF, Gregg AK, **Smith JE**, Abieri ML, Hatay M et al. (2013) Visualization of oxygen distribution patterns caused by coral and algae. *PeerJ* 1:e106 <http://dx.doi.org/10.7717/peerj.106>
56. Haas AF, Nelson CE, Rohwer F, Wegley-Kelly L, Quistad SD, Leichter, J, Carlson, C, **Smith JE** (2013) Influence of coral and algal exudates on microbially mediated reef metabolism. *PeerJ* 1:e108 <http://dx.doi.org/10.7717/peerj.108>
55. Williams, G, **J.E. Smith**, E. Conklin, J. Gove, S.A. Sandin, E. Sala (2013) Benthic communities at two remote Pacific coral reefs: effects of reef habitat, depth, and horizontal wave energy gradients on spatial patterns. *PeerJ* 1:e81 <http://dx.doi.org/10.7717/peerj.81>
54. **Smith, J.E.**, N.N Price, A. Haas (2013) Coupled changes in dissolved oxygen and pH associated with metabolism of benthic reef organisms. *Marine Biology* 160: 2437-2447, doi: 10.1007/s00227-013-2239-z
53. Borer, E.T, M.E S. Bracken, E.W. Seabloom, **J.E. Smith**, J. Cebrian, E.E. Cleland, J.J. Elser, W. Fagan, D.S. Gruner, W.S. Harpole, H. Hillebrand, A.J. Kerkhoff, J.T. Ngai (2013) Global biogeography of autotroph chemistry: is insolation a driving force? *Oikos*
52. Nelson, C.E., S.J. Goldberg, L. Wegely-Kelly, A.F. Haas, **J.E. Smith**, F.L. Rohwer, C.A. Carlson (2013) Coral and macroalgal exudates vary in neutral

- sugar composition and differentially enrich reef bacterioplankton lineages. *ISME* 7: 962-979
51. Mcleod, E., K.R.N. Anthony, A. Andersson, R. Beeden, Y. Golbuu, J. Kleypas, K. Kroeker, D. Manzello, R. Salm, H. Schuttenberg, **J.E. Smith** (2012) Preparing to manage coral reefs for ocean acidification: Lessons from coral bleaching. *Frontiers in Ecology and the Environment* 11: 20–27. doi: <http://dx.doi.org/10.1890/110240>
  50. Vermeij, M.A., R.A. van der Heijden, J.G. Olthuis, K.L. Marhaver, P.M. Visser, **J.E. Smith** (2012) Survival and dispersal of turf algae and macroalgae consumed by herbivorous coral reef fishes. *Oecologia* 171(2):417-25. doi: 10.1007/s00442-012-2436-3
  49. Price, N.N., T. Martz, R.E. Brainard, **J.E. Smith** (2012) Diel variability in seawater pH relates to calcification and benthic community structure on coral reefs. *PLoS ONE* 7(8): e43843. doi:10.1371/journal.pone.0043843
  48. Barott, K. G.J. Williams, M.A. Vermeij, J. Harris, J.E. Smith, F.L. Rohwer, S.A. Sandin (2012) Natural history of competition between corals and algae across a gradient of human activity in the Line Islands of the Central Pacific. *MEPS* 460: 1-12
  47. Choi H., S.J. Mascuch, F.A. Villa, T. Byrum, M.E. Teasdale, **J.E. Smith**, L.B. Preskitt, D.C. Rowley, L. Gerwick, W.H. Gerwick (2012) Honaucins A-C, potent inhibitors of eukaryotic inflammation and bacterial quorum sensing: synthetic derivatives and structure-activity relationships. *Biology and Chemistry* 19(5): 589-598
  46. Dailer, M L., **J.E. Smith** and C.M Smith (2012) Responses of bloom forming and non-bloom forming macroalgae to nutrient enrichment in Hawaii, USA. *Harmful Algae* 17: 111-125
  45. Barott, K., B.R. Brito, M. Youle, K. Marhaver, M. Vermeij, **J.E. Smith**, F.L. Rohwer (2012) Microbial to reef scale interactions between the reef-building coral *Montastraea annularis* and benthic algae. *Proceedings of the Royal Society, Biology* doi:10.1098/rspb.2011.2155
  44. Kelly, L. W., K. L. Barott, E. Dinsdale, A. M. Friedlander, B. Nosrat, D. Obura, E. Sala, S. A. Sandin, **J. E. Smith**, M. J. A. Vermeij, G. J. Williams, D. Willner, and F. Rohwer. (2012) Black reefs: iron-induced phase shifts on coral reefs. *ISME Journal* 6:638-649.
  43. Freeman, L., A.J. Miller, R.D. Norris and **J.E. Smith** (2012) Classification of remote Pacific coral reefs by physical oceanographic environment. *JGR* 117: C02007
  42. Hofmann, G.E., **J.E. Smith**, K.S. Johnson, U. Send, L.A. Levin, F. Micheli, A. Paytan, N.N. Price, B. Peterson, Y. Takeshita, P.G. Matson, E. Derse Crook, K.J. Kroeker, E.B. Rivest, C.A. Tanner, P.C. Yu, T.R. Martz (2011) High frequency dynamics of ocean pH: A multi-ecosystem comparison. *PloS ONE* doi: 10.1371/journal.pone.0028983
  41. Haas, A., F.L. Rohwer, C. Carlson, C. Nelson, L. Wegley, J. Leichter and **J.E. Smith** (2011) Effects of coral reef benthic primary producers on dissolved organic carbon and microbial activity. *PLoS ONE* doi: 10.1371/journal.pone.0027973
  40. Price, N.P., S.L. Hamilton, J. Tootle and **J.E. Smith** (2011) Species specific consequences of ocean acidification for the calcareous tropical green algae *Halimeda*. *MEPS* 440: 67–78
  39. Harpole, W.S., J. Ngai, E. Cleland, E. Seabloom, E. Borer, M. Bracken, J. Elser, D. Gruner, H. Hillebrand, J. Shurin, **J.E. Smith** (2011) Nutrient co-limitation of plant communities. *Ecology Letters* 14: 852-862
  38. Barott, K.L., B. Rodriguez-Brito, J. Janoušková, K. Marhaver, **J.E. Smith**, P. Keeling, F.L. Rohwer (2011) Microbial diversity associated with four

- functional groups of benthic reef algae and the reef-building coral *Montastraea annularis*. *Environmental Microbiology* 13: 1192-1204
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  36. **Smith, J.E.** (2011) Invasive Introduced Algae. *Encyclopedia of Invasive Species*. Edited by Simberloff and Rejmánek. University of California Press.
  35. Barott, K.L., Caselle, J.E., Dinsdale, E.A., Friedlander, A.M., Maragos, J.E., Obura, D., Rohwer, F.L., Sandin, S.A., **Smith, J.E.** & Zgliczynski, B., (2010) The lagoon at Caroline/Millennium atoll, Republic of Kiribati: natural history of a nearly pristine ecosystem. *PLoS ONE*, 5(6), e10950.
  34. Carilli, J., J. Godfrey, R. Norris, S.A. Sandin, **J.E. Smith** (2010) Periodic endolithic algal blooms in *Montastraea faveolata* corals represent periods of low-level stress. *Bulletin of Marine Science* 86: 709-718
  33. McCauley, D.J., F. Micheli, H. Young, D.P. Tittensor, D.R. Brumbaugh, E. Madin, K.E. Holmes, R. Dunbar, **J.E. Smith**, H.K. Lotze, and B. Worm (2010) Acute effects of removing large fish from a near-pristine coral reef. *Marine Biology* 157(12):2739-2750
  32. **Smith, J.E.**, C.L Hunter and C.M Smith (2010) The effects of top-down and bottom-up factors on benthic coral reef community structure. *Oecologia* 163(2): 497-507
  31. Dailer, M.L., Knox, R.S., **Smith, J.E.**, Napier, M., Smith, C. M. (2010) Using delta-15N values in algal tissue to map locations and potential sources of anthropogenic nutrient inputs on the island of Maui, Hawai'i. *Marine Pollution Bulletin* 60: 655-671
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  29. Choi, H., N. Engene, **J.E. Smith**, L.B. Preskitt, and W.H. Gerwick (2010) Crossbyanols A-D, Toxic Brominated Polyphenyl Ethers from the Hawaiian Bloom-Forming Cyanobacterium *Leptolyngbya crossbyana*. *Journal of Natural Products* 73:517-522
  28. Barott, K., **J.E. Smith**, E. Dinsdale, M. Hatay, S. Sandin, and F.L. Rohwer (2009) Hyperspectral and physiological analyses of coral-algal interactions. *PLoS ONE* 4(11): e8043. doi:10.1371/journal.pone.0008043
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  26. Hillebrand, H., D.S. Gruner, M.E. Bracken, E.E. Cleland, J.J. Elser, W.S. Harpole, J.T. Ngai, E.W. Seabloom, J.B. Shurin, **J.E. Smith** (2009) Herbivore metabolism and stoichiometry each constrain herbivory at different organizational scales across ecosystems. *Ecology Letters* 12: 516-527
  25. **Smith, J.E.**, Kuwabara, J. Coney, J. Flanagan, K., Beets, J., Brown, D. Stanton, F., Takabayashi, M. duPlessis, S. Griesemer, B.K., Barnes, S., Turner, J. (2008) An unusual cyanobacterial bloom in Hawaii. *Coral Reefs* 27: 851
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  23. **Smith, J.E.**, H. Spalding, R. Okano & C. M. Smith (2009) Seaweed communities of Molokai. In *An Atlas of Molokai's Marine Ecosystems*. USGS publication.
  22. Gruner, D.S., **J.E. Smith**, E.W. Seabloom, S.A. Sandin, J.T. Ngai, H. Hillebrand, W.S. Harpole, J.J. Elser, E.E. Cleland, M.E.S. Bracken, E.T.

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  20. **Smith, J.E.**, E.J. Conklin, C.L. Hunter, C.M. Smith (2008) Response to "Fighting alien algae in Kane'ohē Bay". *Science* 319: 157-158.
  19. Elser, J.J., M.E. Bracken, E.E. Cleland, D.S. Gruner, W.S. Harpole, Hillebrand, H., J.T. Ngai, E.W. Seabloom, J.B. Shurin, **J.E. Smith** (2007) A global analysis of nitrogen and phosphorus limitation of primary producers in freshwater, marine, and terrestrial ecosystems. *Ecology Letters* 10: 1135-1142.
  18. Williams, S.L. and **J.E. Smith** (2007) A global review of the distribution, taxonomy & ecological impacts of introduced seaweeds. *Annual Review of Ecology Evolution and Systematics* 38: 327-359.
  17. Diaz-Pulido G., McCook L.J., Larkum A.W.D., Lotze H.K., Raven J.A., Schaffelke B., **Smith J.E.**, Steneck R.S. (2007) Vulnerability of macroalgae of the Great Barrier Reef to climate change. Marshall PA, Johnson J (Ed) *Climate change and the Great Barrier Reef*. Great Barrier Reef Marine Park Authority, Townsville, pp 153-192.
  16. Hillebrand, H., D.S. Gruner, M.E. Bracken, E.E. Cleland, J.J. Elser, W.S. Harpole, J.T. Ngai, E.W. Seabloom, J.B. Shurin, **J.E. Smith** (2007) Plant community structure and ecosystem productivity regulate the intrinsic control of plant diversity across major ecosystem types. *Proceedings of the National Academy of Sciences* 104: 10904-10905.
  15. **Smith, J.E.**, M. Shaw, R.A. Edwards, D. Obura, D., O. Pantos, E. Sala, S. A. Sandin, S. Smriga, M. Hatay, F.L. Rohwer (2006) Indirect effects of algae on coral: algae-mediated, microbe-induced coral mortality. *Ecology Letters* 9: 835-845.
  14. Schaffelke, B., **J.E. Smith** & C.L. Hewitt (2006) Introduced macroalgae - a growing concern. *Proceedings of the International Seaweed Symposium. Journal of Applied Phycology* 18: 529-541.
  13. Zuccarello, G.C., A.T. Critchley, **J.E. Smith** & J.A. West (2006) Systematics and genetic variation in commercial *Kappaphycus* and *Euclima* (Solieriaceae, Rhodophyta). *Proceedings of the International Seaweed Symposium. Journal of Applied Phycology* 18: 643-651.
  12. Zemke-White, W.L. and **J.E. Smith** (2006) Environmental impacts of seaweed farming in the tropics. In: Editors A.T. Critchley, M. Ohno and D.B. Largo, *World Seaweed Resources: An authoritative reference system*.
  11. Vroom P, L. Walters, K. Beach, J. Coyer, **J.E. Smith**, M. Abgrall, D. Byron, K. DeAngelis, B. Konar, J. Liss, R. Okano, C. Roberts, L. Herren, M. Woo, C.M. Smith et al. (2005) Hurricane-induced propagation and rapid regrowth of the weedy brown alga *Dictyota* in the Florida Keys. *Florida Scientist* 68(3):161-174.
  10. **Smith, J.E.**, J.W. Runcie and C.M. Smith (2005) Bloom dynamics and physiological ecology of the invasive green alga *Cladophora sericea* on West Maui. *Marine Ecology Progress Series* 302: 77-91.
  9. Conklin, E.J. and **J.E. Smith** (2005) Increases in abundance and development of management options for the invasive red alga *Kappaphycus* in Kane'ohē Bay, Hawai'i. *Biological Invasions* 7: 1029-1039.
  8. Friedlander, A., G. Aeby, E. Brown, A. Clark, S. Coles, S. Dollar, D. Gulko, C. Hunter, P. Jokiel, **J.E. Smith**, B. Walsh, I. Williams and W. Wiltse (2005) The

*Status of the Coral Reef Ecosystems of the Main Hawaiian Islands. In The Status of the Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2004.*

7. **Smith, J.E.**, C. Smith, P. Vroom, K. Beach, S. Miller (2004) Nutrient dynamics of the green alga *Halimeda tuna* on Conch Reef, Florida Keys: possible influence of internal tides on nutrient status and physiology. *Limnology and Oceanography*. 49(6): 1923-1936.
6. **Smith, J.E.**, R. Most, T. Sauvage, C. Hunter, C. Squair and E. Conklin (2004) Ecology of the invasive red alga *Gracilaria salicornia* in Waikiki and possible mitigation strategies. *Pacific Science* 58(2) 325-343.
5. Vroom, P.S., C.M. Smith, J.A. Coyer, L.J. Walters, C.L. Hunter, K.S. Beach, **J.E. Smith** (2003) Field biology of *Halimeda tuna* (Bryopsidales, Chlorophyta) across a depth gradient: comparative growth, survivorship, recruitment, and reproduction. *Hydrobiologia* 501(1): 149-166.
4. Runcie, J.W. and **J.E. Smith** (2003) Introduction to special issue: Nutrient dynamics in coastal ecosystems-linking physical and biological processes. *Journal of Marine Systems* 42(3-4): 81-82.
3. **Smith, J.E.**, C.L. Hunter and C.M. Smith (2002) Distribution and reproductive characteristics of nonindigenous and invasive marine algae in the Hawaiian Islands. *Pacific Science* 56(3): 299-315.
2. Vroom, P. S., **J.E. Smith** and C.M. Smith (2001) Observations of reproduction in *Rhipidosiphon javensis* (Halimedineae, Bryopsidales) in Hawai'i. *Phycologia* 40(1): 97-100.
1. **Smith, J.E.**, C.L. Hunter and C.M. Smith (2001) The effects of herbivory and nutrient enrichment on benthic community structure and development on a Hawaiian Reef. *Coral Reefs* 19: 332-342.

## **THESES & REPORTS**

- Smith, J.E. (2006) Algal blooms on Maui. A final report to the City and County of Maui and the Environmental Protection Agency. 75 pp.*
- Smith, J.E. (2003) Factors influencing the formation of algal blooms on tropical reefs with an emphasis on nutrients, herbivores and invasive species. Doctoral Dissertation, University of Hawai'i, Manoa, 425 pp.*
- Coles, S.L., R.C. DeFelice, **J.E. Smith**, D. Muir & L.G. Eldredge (1998) Determination of baseline conditions for introduced marine species in near shore waters of Kaho'olawe, Hawai'i. Bishop Museum Technical Report No. 14.*

## **GRANTS**

### **2019-2021 PRINCIPAL INVESTIGATOR**

*TIDES: Tribal Intertidal Digital Ecological Surveys, CA Ocean Protection Council, California Sea Grant  
\$250,000*

### **2019-2020 PRINCIPAL INVESTIGATOR**

*Assessment of growth optimization and chemical content of the red alga *Asparagopsis taxiformis* with application to methane mitigation in ruminant animals. ELM Innovations  
\$100,000*

### **2018-2019 PRINCIPAL INVESTIGATOR**

*Scripps Director's Office: Scripps Experimental Aquaculture—A pilot study to explore seaweed aquaculture for culinary purposes.  
\$20,000*



**2018-2020 PRINCIPAL INVESTIGATOR**

*The Spruance Foundation: Coral reef restoration on Caribbean reefs: using sea urchin density to control algal abundance prior to coral transplantation.*  
\$90,000

**2017-2019 PRINCIPAL INVESTIGATOR**

*The Earthwatch Institute: Investing the environmental and ecological impacts of seaweed farming in the tropics*  
\$350,00

**2016-2018 PRINCIPAL INVESTIGATOR**

*The National Fish and Wildlife Foundation:  
Identifying local drivers that influence coral bleaching, survivorship and recovery*  
\$38,000

**2016-2018 PRINCIPAL INVESTIGATOR**

*The National Fish and Wildlife Foundation:  
Developing Strategies for Reef Restoration on Palmyra Atoll following Invasion by the corallimorph *Rhodactis howesii**  
\$140,000

**2016-2018 CO-PRINCIPAL INVESTIGATOR**

*The Moore Family Foundation: Examining reef health and dynamics across the central Pacific: the 100 Island Challenge*  
\$750,000

**2016-2017 PRINCIPAL INVESTIGATOR**

*The San Diego Foundation, Blasker Environmental Grant: Rising Seas and the San Diego Intertidal: Utilizing Large Area Imaging for Mapping and Future Sea Level Rise Impact Evaluation*  
\$38,115

**2013-2018 PRINCIPAL INVESTIGATOR**

*National Science Foundation: Ocean Acidification: Collaborative Research: Quantifying the potential for biogeochemical feedbacks to create 'refugia' from ocean acidification on tropical coral reefs*  
\$750,000

**2012-2015 PRINCIPAL INVESTIGATOR**

*California Sea Grant: Response of calcified and fleshy macroalgae to warming and ocean acidification: from single species to community interactions*  
\$150,000

**2010-2014 PRINCIPAL INVESTIGATOR**

*The Gordon and Betty Moore Foundation: Understanding the effects of Ocean Acidification on near pristine coral reefs in the central Pacific, Palmyra Atoll*  
\$765,000

**2010-2012 CO-PI, PI'S: DR. STUART SANDIN AND RUSSELL BRAINARD**

*Comparative Analysis of Ecosystem Organization (CAMEO) Jointly Funded by the National Science Foundation (NSF) and NOAA*  
\$400,000

**2010-2013 PRINCIPAL INVESTIGATOR**

*Department of Education: Consortium for Higher Education for Marine Sciences from Brazil to San Diego*  
**\$78,000**

**2010-2013 PRINCIPAL INVESTIGATOR**

*The Moore Family Foundation: Understanding reef productivity across a gradient of natural and anthropogenic disturbances in the Line Islands*  
**\$180,000**

**2009-2011 PRINCIPAL INVESTIGATOR, CO-PI DR. JIM LEICHTER**

*National Science Foundation. Biological Oceanography. Collaborative Research: ETBC: The coupling between DOM, algae, and microbes on coral reef platforms*  
**\$710,000**

**2009-2013 PRINCIPAL INVESTIGATOR**

*Various private donors including the WWW Foundation, the Ellen Browning Scripps Foundation, the Scripps Family Foundation and the Nature Conservancy to study remote reefs of the central Pacific*  
**\$300,000**

**2005-2008 POSTDOCTORAL RESEARCH FELLOWSHIP**

*National Center for Ecological Analysis and Synthesis, UCSB funded by NSF*  
**\$45,000/yr**

**AWARDS  
& HONORS**

**2008-2012 HENRY L. & GRACE DOHERTY CAREER DEVELOPMENT AWARD**  
**\$100,000**

*Early career development award to foster a successful research program*

**2006 BEST PAPER FOR JUNIOR SCIENTISTS \$150**

*International Society for Reef Studies (ISRS) Conference, Bremen, Germany*

**2005-2008 POSTDOCTORAL FELLOWSHIP ~\$45,000/yr**

*National Center for Ecological Analysis and Synthesis, funded by NSF*

**2004 INVITED PARTICIPANT OF THE DIALOG SYMPOSIUM**

*Doctoral Initiatives for the Advancement of Limnology and Oceanography Graduates, Dauphin Island Sea Laboratory, AL, Organized by ASLO & AGU*

**2003 BEST PAPER IN CONSERVATION & ECOLOGY \$200**

*Mia Tegner Award, Western Society of Naturalists, Long Beach, CA*

**2003 COASTAL AMERICA PARTNERSHIP AWARD, NOAA**

*For development and implementation of a community-based management program for the control and removal of invasive algae from Hawai'i's reefs*

**2003 BEST PAPER AWARD \$1,000**

*Harold C. Bold Award, Phycological Society of America, OR*

**2002 ARCS AWARD \$5,000**

*Achievement Rewards for College Scientists for outstanding predoctoral research*

**2000 BEST PAPER AWARD \$1,000**

*Albert L. Tester Symposium, University of Hawai'i*

**1996-1997 SCHOLARSHIP \$600**

*Howard Hughes Medical Institute (HHMI)*

**1995-1997 PRESIDENTIAL SCHOLAR**

*Humboldt State University, Arcata, CA*

**TEACHING  
EXPERIENCE**

**2009-PRESENT SCRIPPS INSTITUTION OF OCEANOGRAPHY, UNIVERSITY OF  
CALIFORNIA, SAN DIEGO**

*SIO295S/295LS Introduction to Marine Biodiversity and Conservation & Global Change (16 unit summer course, I teach ~2 weeks and receive 2 units)*  
*MBC 258 Masters of Advanced Studies-Interdisciplinary Forum (1 unit)*  
*SIO 138 The Coral Reef Environment (4 units)*  
*SIO 278 Current Topics in Coral Reef Ecology (2 units)*  
*SIO 278 Current Topics in Marine Conservation Biology (2 units)*  
*SIO 183/283 Phycology: Biology & Ecology of Marine Plants (6 units)*  
*SIO 136 Marine Biology Field Methods (6 units)*  
*Guest Lectures in: Benthic Ecology, Biological Oceanography, Marine Organisms, Marine Biology*

**1998-2008 FACULTY MEMBER, LECTURER, UNIVERSITY OF HAWAI'I, HILO.**

*Faculty member, lecturer and scientific SCUBA diver in a team-taught intensive coral reef ecology field course (Quantitative Underwater Ecological Surveying Techniques); taught general coral reef ecology, phycology, experimental design, statistics; supervised and advised students in the classroom and in a field setting.*

**1997-1998 GRADUATE TEACHING ASSISTANT, UNIVERSITY OF HAWAI'I, MANOA**

*Biology 101: Introductory Biology, Botany 101: Introductory Botany, Botany 362: Plant Taxonomy and Systematics*

**INVITED  
SCHOLARLY  
TALKS**

2019 *IGNITE, UCSD Innovation Conference*  
2018 *Scripps Institution of Oceanography, Institutional Seminar*  
2018 *Global Climate Action Summit, San Francisco, CA*  
2018 *South by Southwest, Science and Technology, Austin, TX*  
2017 *Global Coral Reef Monitoring Network, Paris, France*  
2017 *Aquarium of the Pacific, Long Beach, CA*  
2017 *University of California Los Angeles, CA*  
2016 *International Coral Reef Symposium, Honolulu HI*  
2016 *AAAS Pacific Conference, Special Symposium on Ocean Acidification*  
2015 *The Royal Geographic Society, London, UK, Special Symposium-- Turning the tide: Coastal communities and conservation*  
2015 *University of Amsterdam, Netherlands Invited Seminar*  
2014 *Jeffrey B. Graham Perspectives on Ocean Sciences Lecture Series, Birch Aquarium, SIO*  
2013 *University of California, Santa Barbara*  
2013 *Florida International University*  
2012 *Georgia Tech: Teasley Symposium organized by Mark Hay*  
2012 *Moss Landing Marine Labs*  
2010 *San Diego State University, Biology*  
2010 *University of California, Los Angeles, Ecology, Evolution and Behavior*  
2010 *National Invasive Species Awareness Week, Washington DC*  
2009 *University of California, San Diego, Ecology, Behavior and Evolution*  
2008 *Scripps Institution of Oceanography, UCSD, Marine Ecology Seminar*  
2007 *Ecological Society of America, San Jose, CA*  
2007 *Society for Conservation Biology, Special Session on the Effects of Predator Removal on Ecosystem Structure and Function, South Africa*  
2007 *Biological Sciences Seminar Series, Humboldt State University*  
2007 *Scripps Institute of Oceanography, Marine Biology Seminar Series*

- 2006 *Coral Reef Discussion Group, San Diego State University*
- 2006 *Ecology, Evolution and Marine Biology Seminar, UC Santa Barbara*
- 2006 *John and Mary Louise Riley Seminar Series, Bodega Marine Lab, UC Davis*
- 2005 *National Center for Ecological Analysis and Synthesis, UC Santa Barbara*
- 2004 *Seminar Series, Department of Botany, University of Hawai'i*
- 2004 *Plenary Lecture co-authored with Britta Scheffelfke and Chad Hewitt, Invasive Seaweeds, International Seaweed Symposium, Bergen, Norway*
- 2004 *World Aquaculture Society, Honolulu, HI,*
- 2003 *Keynote Address for the University of Hawai'i Marine Option Program Graduation*
- 2003 *Hawai'i Aquatics Conference*
- 2002 *Coordinating Group on Alien Pest Species: Hawai'i State Capitol Auditorium, Honolulu, HI*
- 2002 *United States Aquatic Nuisance Species Task Force Meeting, Honolulu, HI*
- 2001 *Hawai'i Department of Land and Natural Resources, Honolulu, HI*

**CONTRIBUTED PAPERS AT SCIENTIFIC MEETINGS**

- 2018 *Western Society of Naturalists, 4 student talks*
- 2017 *European Coral Reef Symposium, Oxford (Carter, Cannon)*
- 2016 *International Coral Reef Symposium Honolulu, HI (Lab Presented >15 talks)*
- 2015 *Western Society of Naturalists*
- 2014 *Ocean Sciences (Price, Johnson, Brainard, Takeshita, Furby)*
- 2013 *Western Society of Naturalists (Gleason, Kram, Price, Harris, Lewis)*
- 2012 *International Coral Reef Symposium, Cairns, Australia (11 papers presented from my lab)*
- 2012 *Western Society of Naturalists, Monterey CA (8 papers presented by my lab)*
- 2009 *International Marine Conservation Congress, Washington DC*
- 2008 *International Coral Reef Symposium, FL*
- 2006 *Western Society of Naturalists, Tacoma, WA*
- 2006 *International Society for Reef Studies, Bremen, Germany*
- 2006 *American Society of Limnology & Oceanography Ocean Sciences Meeting, Honolulu, HI*
- 2005 *Western Society of Naturalists, Monterey, CA*
- 2004 *Western Society of Naturalists, Sonoma, CA*
- 2004 *DIALOG (Dissertation Initiatives for the Advancement of Limnology and Oceanography), Dauphin Island Sea Lab, AL*
- 2004 *13<sup>th</sup> International Aquatic Invasive Species Conference, Ireland*
- 2004 *10<sup>th</sup> International Coral Reef Symposium, Okinawa*
- 2003 *Western Society of Naturalists, Long Beach, CA*
- 2003 *Annual Meeting of the Phycological Society of America, Oregon*
- 2003 *3<sup>rd</sup> International Marine Bioinvasions Conference, Scripps Institution of Oceanography, La Jolla, CA*
- 2002 *American Society of Limnology & Oceanography Ocean Sciences Meeting, Honolulu, HI*
- 2001 *7<sup>th</sup> International Phycological Congress, Thessaloniki, Greece*
- 2001 *25<sup>th</sup> Annual Albert L. Tester Symposium. University of Hawai'i*
- 2001 *9<sup>th</sup> International Coral Reef Symposium, Bali, Indonesia*
- 1999 *International Conference on Scientific Aspects of Coral Reef Assessment, Monitoring, and Restoration: Ft. Lauderdale, FL*

**SERVICE**

**2018-PRESENT EDITOR**

*Journal of Phycology*

**2016-PRESENT ACADEMIC CHAIR MASTERS OF ADVANCED STUDIES PROGRAM**  
*Biodiversity and Conservation, Scripps Institution of Oceanography*

**2015-2017 ELECTED MEMBER, BOARD OF DIRECTORS**  
*American Academy of Underwater Sciences, Chair Scholarships Committee*

**2010-PRESENT ASSOCIATE EDITOR**  
*Proceedings of the Royal Society, Biology*

**2008-2010 BOARD MEMBER**  
*Society for Conservation Biology, Marine Section and co-organizer of the 1<sup>st</sup> International Marine Conservation Congress*

**2005-2008 NCEAS WORKING GROUP MEMBER**  
*Trophic Structure Across Systems. Principal Investigators: Dan Gruner, Helmut Hildebrand and Jon Shurin*

**2005-PRESENT MEMBER OF THE ICUN WORLD CONSERVATION UNION INVASIVE SPECIES SPECIALIST GROUP**

**2000-20013 PUBLIC EDUCATION & OUTREACH**  
*Led seminars and workshops for numerous venues including the Birch Aquarium, Scripps REU program, Sailor's for the Sea, the Pacific Voyagers, Hawai'i State Capitol & Legislature, Waikiki Aquarium, Northwestern Hawaiian Islands Education Center, Hawai'i Department of Land and Natural Resources, Hawai'i Environmental Protection Agency, the Coordinating Group on Alien Pests, Department of Agriculture, Hanauma Bay Educational Center, National Marine Sanctuary*

**PEER REVIEW**

**AD-HOC GRANT REVIEW:**  
*Environmental Protection Agency, Great Barrier Reef Marine Park Authority, National Oceanic and Atmospheric Administration, National Science Foundation, National Undersea Research Center*

**REVIEWED SCIENTIFIC PUBLICATIONS FOR:**  
*Proceedings of the National Academy of Sciences, PLoS ONE, Ecology Letters, Ecology, Trends in Ecology and Evolution, Limnology and Oceanography, Microbial Ecology, Aquatic Ecology, Marine Ecology, Journal of Phycology, Bulletin of Marine Science, Estuarine and Coastal Shelf Science, Coral Reefs, Hydrobiologia, Journal of Experimental Marine Biology and Ecology, Marine Biology, Marine Ecology Progress Series, Marine Pollution Bulletin, Aquatic Botany, Botanica Marina, Cryptogamie Algologie*

**STUDENT ADVISING**

**PRIMARY ADVISOR:**  
*Postdoctoral Scholars: Nichole Price, Andreas Haas, Emily Kelly, Ryota Nakijima*  
*PhD Students: Emily Kelly, Jill Harris, Levi Lewis, Maggie Johnson, Abigail Canon, Michael Fox, Amada Carter, Cailan Sugano, Adi Khen, Orion McCarthy*  
*Masters Students: Amanda Carter, Clinton Edwards, Susan Kram, Samantha Clements, Molly Gleason, Dan Conley, Laurence Romeo, Gideon Butler, Nicole Pederson, Corinne Amir, Brant Cheblowski, Madelin Anderson*

*Undergraduates: Mentored over 120 undergraduate volunteers and summer interns since 2008.*

## **REFERENCES**

- Dr. Celia Smith, Phone: (808) 956-6947 or (808) 227-1186, Email: celia@hawaii.edu, Professor, University of Hawai'i, Manoa, Department of Botany, 3190 Maile Way, Honolulu, HI 96822*
- Dr. Susan L. Williams, Phone: (707) 875-2211, Email: slwilliams@ucdavis.edu Director, Bodega Marine Laboratory, University of California at Davis, P.O. Box 247, Bodega Bay, CA 94923-0247*
- Dr. Forest Rohwer, Phone: (619) 594-1336, Email: forest@sunstroke.sdsu.edu, Associate Professor, San Diego State University, Department of Biology, 5500 Campanile Drive, San Diego, CA 92182-4614*
- Dr. Lawrence McCook, Email: Laurence.McCook@gbrmpa.gov.au Senior Manager, Great Barrier Reef Marine Park Authority Research and Monitoring Coordination, 2-68 Flinders Street, P.O. Box 1379, Townsville, Queensland 4810, Australia*

## **OTHER RELEVANT EXPERIENCE**

*2014-2015*

**Litigation Consultant**, Waste Management Hawaii and Waste Management, Inc., Waimanalo Gulch Sanitary Landfill, HI.  
*Served as expert witness for Waste Management of Hawaii, Inc. (Defendants) regarding health of coral reefs around a discharge point in criminal matter alleging violations of the Clean Water Act. Provided expertise on the potential and realized environmental impacts of a flood involving the sanitary landfill on the island of Oahu and the potential impacts to the offshore coral reefs.  
Result: Settlement was reached in favor of the Defendants and all felony counts were dropped.*

*2013-2015*

**Litigation Consultant**: Earthjustice, Honolulu, HI  
*-Served as an expert witness for several non-profit organizations including Surfrider Foundation (Plaintiffs) who sued the city and county of Maui in violations of the Clean Water Act in relation to municipal sewage discharge via underground injection wells on west Maui. I provided expertise on the potential and realized impacts of wastewater on the coral reef communities at Kahekili Beach that were in contact with injected wastewater that was emerging through the reef.  
Settlement reached, initiated by defendants.*