Timothy Mitchell Shank

Associate Scientist with Tenure

Biology Department
MS 33 2-34 Redfield
Woods Hole Oceanographic Institution
Woods Hole, MA 02543 USA
www.whoi.edu/science/B/people/tshank/

Tel. 508-289-3392
Fax. 508-457-2134
tshank@whoi.edu

EDUCATION

Rutgers, The State University of New Jersey	Marine Ecology and Evolution	Ph.D. 1998
University of North Carolina at Chapel Hill	Biology (German language minor)	B.A. 1988
Goethe Institute of Boppard, West Germany	German	GLS 1985

APPOINTMENTS

2012- present	Associate Scientist with Tenure, Biology Department, Woods Hole Oceanographic Institution
2006- 2012	Associate Scientist, Biology Department, Woods Hole Oceanographic Institution
2002-2006	Assistant Scientist, Biology Department, Woods Hole Oceanographic Institution
1999-2001	Postdoctoral Scholar, Woods Hole Oceanographic Institution
1998-1999	Postdoctoral Fellow, Institute of Marine and Coastal Sciences, Rutgers University
1992-1998	Graduate/Research Assistant, Dept. of Ecology and Evolution, Rutgers University

HONORS

Devonshire Foundation Postdoctoral Scholarship (1999-2001)
New species of chemosynthetic calanoid copepod named *Grievella shanki* (Ferrari & Markhaseva 2000)
NOAA OceanAGE Award: Ocean Careers to Inspire Another Generation of Explorers (2005)
Deep-Ocean Exploration Institute Fellow, Woods Hole Oceanographic Institution (2007 to 2011)
National Oceanographic Partnership Program's Annual "Excellence in Partnering Award" (2012)

PUBLICATIONS

* indicates Shank laboratory students and postdocs
\# indicates students mentored in the Shank laboratory

1. Ardron, J.A., M.R. Clark, A.J. Penney, T.F. Hourigan, A.A. Rowden, P.K. Dunstan, L.E. Watling, **T.M. Shank**, D.M. Tracey, M.R. Dunn, S.J. Parker. A Systematic Approach towards the Identification and Protection of Vulnerable Marine Ecosystems. Marine Policy special issue (*submitted*).
2. Hsing, Pen-Yuan. Bo Fu, E.A. Larcom, S.P. Berlet, **T.M. Shank**, A.F. Govindarajan*, A.J. Lukasiewicz, P.M. Dixon, C.R. Fisher. Lasting impact of the Deepwater Horizon oil spill to a deep Gulf of Mexico coral community. *Elementa* (*in press*).
3. Stocks, K., N. Jacobson-Stout and **T.M. Shank**. Information management strategies for deep-sea biological research. In: *Biological Sampling in the Deep Sea*. Eds. M. Clark and M. Consalvey. Wiley-Blackwell, Oxford (*in press*).
4. **Shank, T.M.** Seamount genetics: enabling the understanding of biodiversity, connectivity, evolution, and endemism. In: *Deep-sea cobalt-rich ferromanganese crust deposits and distribution patterns of seamount fauna* (*in press*).
5. Reitzel, A.M., S. Herrera*, M.J. Layden, M.Q. Martindale, and **T.M. Shank** (2013) Going where traditional markers have not gone before: utility of and promise for RAD-sequencing in marine invertebrate phylogeography and population genomics. *Molecular Ecology* (doi: 10.1111/mec.12228).

6. *Herrera, S., **T.M. Shank**, and J.A. Sánchez (2012) Spatial and temporal patterns of genetic variation in the widespread antitropical deep-sea coral *Paragorgia arborea*. *Molecular Ecology (*doi: 10.1111/mec.12074*)*.
7. **Shank, T.M**., E. T. Baker, R.W. Embley, S. Hammond, J.F. Holden, S. White, S.L. Walker, M. Calderón, S. Herrera, T.J. Lin, C. Munro, T. Heyl, L.C. Stewart, M. Malik, E. Lobecker, and J. Potter (2012) Exploration of the deepwater Galápagos Region. *Oceanography* 25(1), p. 50-51.
8. *Bors, E.K., A.A. Rowden, E.W. Maas, M. Clark, and **T.M. Shank** (2012) Patterns of genetic connectivity in the deep-water New Zealand region: implications for management of benthic ecosystems. *PLoS One* 7(11): e49474. doi:10.1371/journal.pone.0049474*)*.
9. Pontbriand, C.W., S.A. Soule, R.A. Sohn, S.E. Humphris, C. Kunz, H. Singh, Ko-ichi Nakamura, M. Jakobssen, and **T.M. Shank** (2012) Effusive and explosive volcanism on the ultraslow-spreading Gakkel Ridge, 85°E. *Geochemistry, Geophysics, and Geosystems* 13, Q10005, doi:10.1029/2012GC004187.
10. White, H.K., P. Yuan Hsing, W. Cho*, **T.M. Shank**, E. Cordes, A.M. Quattrini, R. K. Nelson, R. Camilli, A. Demopoulos, C.R. German, J.M. Brooks, H.H. Roberts, W. Shedd, C.M. Reddy, and C.R. Fisher (2012) Reply to Boehm and Carragher: Multiple lines of evidence link deep-water coral damage to Deepwater Horizon oil spill. www.pnas.org/cgi/doi/10.1073/pnas.1210413109.
11. White, H.K., P. Yuan Hsing, W. Cho*, **T.M. Shank**, E. Cordes, A.M. Quattrini, R. K. Nelson, R. Camilli, A. Demopoulos, C.R. German, J.M. Brooks, H.H. Roberts, W. Shedd, C.M. Reddy, and C.R. Fisher (2012) Impact of the Deepwater Horizon oil spill on a deep-water coral community in the Gulf of Mexico (2012) *Proceedings of the National Academy of Sciences* (*Special Feature*). doi: 10.1073/pnas.1118029109.
12. Fornari, D.J., K.L. Von Damm, J.G. Bryce, J.P. Cowen, V. Ferrini, A. Fundis, M.D. Lilley, G.W. Luther III, L.S. Mullineaux, M.R. Perfit, M.F. Meana-Prado, K.H. Rubin, W.E. Seyfried Jr., **T.M. Shank**, S.A. Soule, M. Tolstoy, and S.M. White (2012) The East Pacific Rise between 9°N and 10°N: Twenty-five years of integrated, multidisciplinary oceanic spreading center studies. *Oceanography* 25(1):18–43.
13. Luther, G.W. III, A. Gartman, M. Yücel, A.S. Madison, T.S. Moore, H.A. Nees, D.B. Nuzzio, A. Sen, R.A. Lutz, **T.M. Shank**, and C.R. Fisher (2012) Chemistry, temperature, and faunal distributions at diffuse-flow hydrothermal vents: Comparison of two geologically distinct ridge systems. *Oceanography* 25(1):234–245.
14. Rogers, A.D., P. A. Tyler, D.P. Connelly, J. T. Copley, R. James, R. D. Larter, K. Linse, R. A. Mills, A. Naveira-Garabato, R.D. Pancost, D.A. Pearce, N.V.C. Polunin, **T.M. Shank**, C. R. German, B. Alker, A. Aquilina, S. A. Bennett, A. Clarke, R.J.J. Dinley, A.G.C. Graham, D.R.H. Green, J.A. Hawkes, L. Hepburn, A. Hilario, V.A.I. Huvenne, L. Marsh, E. Ramirez-Llodra, W.D.K. Reid, C.N. Roterman, C.J. Sweeting, S. Thatje, K. Zwirglmaier (2012) The discovery of deep-sea hydrothermal vent communities in the Southern Ocean and implications for biogeography. *PLoS Biology 10(1)*: e1001234. doi:10.1371/journal.pbio.1001234.
15. Van Dover, C.L., C.R. Smith, J. Ardron, D. Dunn, K. Gjerde, L. Levin, S. Arnaud-Haond, Y. Beaudoin, J. Bezaury, G. Boland, D. Billett, M. Carr, G. Cherkashov, A. Cook, F. DeLeo, C.R. Fisher, L. Godet, P. Halpin, M. Lodge, L. Menot, K. Miller, L. Naudts, C. Nugent, L. Pendleton, S. Plouviez, A.A. Rowden, R.S. Santos, **T.M. Shank**, S. Smith, C. Tao, A. Tawake, A. Thurnherr and T. Treude (2012) Designating networks of chemosynthetic ecosystem reserves in the deep sea. *Marine Policy* 36: 378-381).
16. Resing, J.A., R. Embley, K.H. Rubin, J. Lupton, E. Baker, T. Baumberger, N.J. Buck, D. Butterfield, D. Caress, D. Clague, J. Cowen, R. Davis, R. Dziak, J. Huber, N. Keller, M.D. Lilley, S. Merle, P. Michael, A-L Reysenbach, **T.M. Shank**, A. Soule, H. Thomas, and S. Walker (2012) An active submarine boninite eruption at West Mata Volcano in the NE Lau Basin. *Nature Geoscience* 4:799-806.
17. Van Dover C.L., C.R Smith CR, J. Ardron, S. Arnaud, Y. Beaudoin, J. Bezaury, G. Boland, D. Billett, M. Carr G. Cherkashov, A. Cook, F. DeLeo, D. Dunn, C.R. Fisher, L. Godet, K. Gjerde, P. Halpin, L. Levin, M. Lodge, L. Menot, K. Miller, D. Milton, L. Naudts, C. Nugent, L. Pendleton, S. Plouviez, A. Rowden, R. Santos, **T.M. Shank**, S. Smith, C. Tao, A. Tawake, A. Thurnherr, T. Treude (2012) Environmental management of deep-sea chemosynthetic ecosystems: Justification of and considerations for a spatially-based approach. Kingston, Jamaica: International Seabed Authority (Technical Study: #9).
18. Bettencourt, R., R. Pinheiro, C. Egas, P. Gomes, M. Afonso, **T.M. Shank** and R. Serrão Santos (2010) Sequencing and analysis of the gill tissue transcriptome from the deep-sea hydrothermal vent mussel *Bathymodiolus azoricus* using 454 GSFlx. *BMC Genomics* 11:559.

19. Baker, M.C., E. Ramirez-Llodra, P.A. Tyler, C.R. German, L. Levin, A. Rowden, A. Metaxas, E. Cordes, R. Santos, C. Van Dover, **T.M. Shank**, C. Young, N. Dubilier and A. Boetius (2010) Biogeography, ecology and vulnerability of chemosynthetic ecosystems in the deep sea. In: *Life in the World's Oceans: Diversity, Distribution, and Abundance* (A. McIntyre, ed.) pp.161-182.

20. **Shank, T.M.** (2010) Seamounts: deep-ocean laboratories of faunal connectivity, evolution, and endemism. *Oceanography* 23:108–122.

21. Clark, M.R., A.A. Rowden, T. Schlacher, A. Williams, M. Consalvey, K.I. Stocks, A.D. Rogers, T.D. O'Hara, M. White, **T.M. Shank** and J.M. Hall-Spencer (2010) The ecology of seamounts: structure, function, and human impacts. *Annual Review of Marine Science* 2:253-278.

22. #Adams, D.K., S.W. Mills, **T.M. Shank** and L.S. Mullineaux (2010) Expanding dispersal studies at hydrothermal vents through species identification of cryptic larval forms. *Marine Biology* 157:1049-1062.

23. Kelley, D. and **T.M. Shank** (2010) Hydrothermal Systems: A Decade of Discovery in Slow-Spreading Environments. *In: Diversity of Hydrothermal Systems on Slow-Spreading Ocean Ridges*. AGU Monograph 188. P. Rona, B. Murton, eds. pp. 369-407.

24. *Cho, W. and **T.M. Shank** (2010) Incongruent patterns of genetic connectivity among four ophiuroid species on North Atlantic Seamounts. *Marine Ecology* 31:121-143.

25. Plouviez, S., **T.M. Shank**, B Faure, C. Daguin-Thiebaut, F. Viard, F.H. Lallier and D. Jollivet (2009) Comparative phylogeography among hydrothermal vent species along the East Pacific Rise reveals vicariant processes and population expansion in the South. *Molecular Ecology* 18: 3903-3917.

26. #Moore, T.S., **T.M. Shank**, D.B. Nuzzio and G.W. Luther III (2009) Time-series chemical and temperature habitat characterization of diffuse flow hydrothermal sites at 9°50'N East Pacific Rise. *Deep-Sea Research* 56:1616-1621.

27. #Nees, H.A., R.A. Lutz, **T.M. Shank** and G.W. Luther III (2009) Pre- & post-eruption diffuse flow variability among tubeworm habitats at 9°50'N on the East Pacific Rise. *Deep-Sea Research* 56:1607-1615.

28. Sohn, R.A., C. Willis, S. Humphris, **T.M. Shank**, H. Singh, H.N. Edmonds, C. Kunz, U. Hedman, E. Helmke, M. Jakuba, B. Liljebladh, J. Linder, C. Murphy, K. Nakamura, T. Sato, V. Schlindwein, C. Stranne, M. Tausenfreund, L. Upchurch, P. Winsor, M. Jakobsson and A. Soule (2008) Explosive volcanism on the ultraslow-spreading Gakkel ridge, Arctic Ocean. *Nature* 453:1236-1238.

29. #Jennings, R.M., **T.M. Shank**, L.S. Mullineaux and K.M. Halanych (2008) Assessment of the Cape Cod phylogeographic break using the bamboo worm *Clymenella torquata* reveals the role of regional water masses in dispersal. *Journal of Heredity* 100:86-96.

30. German, C.R., S.A. Bennett, D.P. Connelly, A.J. Evans, B.J. Murton, L.M. Parson, R.D. Prien, E. Ramirez-Llodra, M. Jakuba, **T.M. Shank** and D.R. Yoerger (2008) Hydrothermal activity on the southern Mid-Atlantic Ridge: tectonically- and volcanically-controlled venting at 4-5°S. *Earth and Planetary Science Letters* 273 (3-4):332-344.

31. Fusaro*, A.J., A.R. Baco*, G. Gerlach and **T.M. Shank** (2008) Development and characterization of 12 microsatellite markers from the deep-sea hydrothermal vent siboglinid *Riftia pachyptila*. *Molecular Ecology Notes* 8:132-134.

32. Luther III, G.W., B. Glazer, M. Shufen, R.E. Trouwborst, T.S. Moore, C. Kraiya, T. Waite, G. Druschel, B. Sundby, M. Taillefert, D.B. Nuzzio and **T.M. Shank** (2008) Use of voltammetric solid-state (micro)electrodes for studying biogeochemical processes: laboratory measurements to real-time measurements with an *in situ* electrochemical analyzer (ISEA). *Marine Chemistry* 108:221–235.

33. Lutz, R.A., **T.M. Shank**, G.W. Luther III, C. Vetriani, M. Tolstoy, D.B. Nuzzio, T.S. Moore, F. Waldhauser, M. Crespo-Medina, A. Chatziefthimou, E.R. Annis and A.J. Reed (2008) Interrelationships between fluid chemistry, temperature, and seismic activity and biological community structure at a deep-sea hydrothermal vent along the East Pacific Rise. *Journal of Shellfish Research,* Special Volume 27:177-190.

34. #Nees, H.A., T. Moore, K.M. Mullaugh, R.R. Holyoke, C.P. Jansen, S. Ma, E. Metzger, T.J. Waite, M. Yucel, R.A. Lutz, **T.M. Shank**, C. Vetriani, D.B. Nuzzio and G.W. Luther III (2008) Hydrothermal vent mussel habitat chemistry, pre- and post-eruption at 9°50' North on the East Pacific Rise (2008) *Journal of Shellfish Research,* Special Volume 27:169-176.

35. German, C.R., D.R. Yoerger, M. Jakuba and **T.M. Shank**, C.H. Langmuir and K. Nakamura (2008) Hydrothermal exploration with the Autonomous Benthic Explorer. *Deep-Sea Research*, 55:203–219.

36. Love, B.A., J.A. Resing, J.P. Cowen, J.E. Lupton, D.J. Fornari, **T.M. Shank**, M.D. Lilley and D. Biller (2008) Methane, Manganese, and Methane Isotopic Composition in Hydrothermal Plumes Following Volcanic Eruptions on the East Pacific Rise Near 9º50'N. *Geochemistry, Geophysics, and Geosystems* 9, Q06T01, doi:10.1029/2008GC002104.

37. Ferrini, V.L., D.J. Fornari, **T.M. Shank**, J.C. Kinsey, M.A. Tivey, S.A. Soule, S.M. Carbotte, L.L. Whitcomb, D. Yoerger and J. Howland (2007) Submeter bathymetric mapping of volcanic and hydrothermal features on the East Pacific Rise crest at 9°50′N. *Geochemistry, Geophysics, and Geosystems* 8, Q01006, doi:10.1029/2006GC001333.

38. Cowen, J.P., D.J. Fornari, **T.M. Shank**, B. Love, B. Glazer, A.H. Treuch, R.C. Holmes, S.A. Soule, E.T. Baker, M. Tolstoy and K.R. Pomraning (2007) Volcanic eruptions on the East Pacific Rise near 9°50'N. *EOS, Transactions of the American Geophysical Union* 88:81-83.

39. **Shank, T.M.** and K.M. Halanych (2007) Toward a mechanistic understanding of larval dispersal: insights from genomic fingerprinting of deep-sea hydrothermal vent populations. *Marine Ecology* 28:25-35.

40. Ramirez-Llodra, E., **T.M. Shank** and C.R. German (2007) Biodiversity and biogeography of hydrothermal vent species: thirty years of discovery and investigations. *Oceanography* 20:30-41.

41. Yoerger, D.R, A.M. Bradley, M. Jakuba, C.R. German, **T.M. Shank** and M. Tivey (2007) Autonomous and remotely-operated vehicle technology for hydrothermal vent discovery, exploration, and sampling. *Oceanography* 20(1):152-161.

42. *Waller, R.G., J. Adkins, L. Robinson and **T.M. Shank** (2007) Ancient DNA techniques and their utility in deep-water coral research. *Bulletin of Marine Science, Special Volume on Deep-Water Corals* 81(2):351-359.

43. *Waller, R., L. Watling, P. Auster and **T.M. Shank** (2007) Fisheries impacts on the Corner Rise Seamounts. *Journal of the Marine Biological Association of the UK* 87:1075-1076.

44. Hasse, K.M., S. Petersen, A. Koschinsky, R. Seifert, C.W. Devey, N. Dubilier, S. Fretzdorff, D. Garbe-Schönberg, C. R. German, O. Giere, R. Keir, J. Kuever, K.S. Lackschewitz, J. Mawick, H. Marbler, B. Melchert, C. Mertens, C. Ostertag-Henning, J. Paulick, M. Perner, M. Peters, S. Sander, O. Schmale, **T.M. Shank**, J. Stecher, U. Stöber, J. Srauss, J. Süling, M. Walter, M. Warmuth, S. Weber, U. Westernströer, D. Yoerger and F. Zielinski (2007) Young volcanism and related hydrothermal activity at 5°S on the slow-spreading southern Mid-Atlantic Ridge. *Geochemistry, Geophysics, and Geosystems* 8(11): Q11002, doi:10.1029/2006GC001509.

45. Pester, N.J., D.A. Butterfield, D.I. Foustoukos, K.K. Roe, K. Ding, **T.M. Shank** and W.E. Seyfried, Jr. (2007) The chemistry of diffuse-flow vent fluids on the Galápagos Rift (86°W): temporal variability and subseafloor phase equilibria controls. In: *Magma to Microbe: Modeling Hydrothermal Processes at Ocean Spreading Centers,* AGU Geophysical Monograph Series 178:123-144.

46. Scheirer, D.S., **T.M. Shank** and D.J. Fornari (2006) Temperature Variations at diffuse and focused flow hydrothermal vent sites along the northern East Pacific Rise. *Geochemistry, Geophysics, and Geosystems* 7(3): Q03002, doi:10.1029/2005GC001094.

47. *Baco-Taylor, A.R., M. Clark and **T.M. Shank** (2006) Isolation and characterization of microsatellite markers for the precious coral, *Corallium lauuense*. *Molecular Ecology Notes* 6:147-149.

48. Tolstoy, M., J.P. Cowen, E.T. Baker, D.J. Fornari, K.H. Rubin, **T.M. Shank**, F. Waldhauser, D.R. Bohnenstiehl, D.W. Forsyth, R.C. Holmes, B. Love, M.R. Perfit, R.T. Weekly, S.A. Soule, and B. Glazer (2006) A seafloor spreading event captured by seismometers: forecasting and characterizing an eruption. *Science* 314:1920-1922.

49. DeChaine, E.G., **T.M. Shank** and C.M. Cavanaugh (2006) Off-axis symbiosis found: characterization and biogeography of bacterial symbionts of *Bathymodiolus* mussels from Lost City hydrothermal vents. *Environmental Microbiology* 8(11):1902-1912.

50. Kelley, D.S., J. Karson, G.L. Früh-Green, D. Yoerger, **T.M. Shank**, D.A. Butterfield, J. Hayes, M.O. Schrenk, E. Olson, G. Proskurowski, M. Jakuba, A. Bradley, B. Larson, K. Ludwig, D. Glickson, K. Buckman*, A. Bradley, K. Roe, M.J. Elend, A. Delacour, S. Bernasconi, M.D. Lilley, J.A. Baross, R. Summons, S. Sylva (2005) A serpentinite-hosted ecosystem: the Lost City Hydrothermal Field. *Science* 307:1428-1434.

51. Martin, J. and **T.M. Shank** (2005) A new species of the shrimp genus *Chorocaris* (Decapoda, Caridea, Alvinocarididae) from hydrothermal vents in the Eastern Pacific Ocean. *Proceedings of the Biological Society of Washington* 116:158-167.

52. *Baco-Taylor, A.R. and **T.M. Shank** (2005) Population genetic structure of the Hawaiian Precious Coral *Corallium lauuense* using microsatellites. In: *Cold-water Corals and Ecosystems*. A. Freiwald & J.M. Roberts (eds). Springer, Heidelberg pp. 663-678.

53. Komai, T., **T.M. Shank** and C.L. Van Dover (2005) A new species of *Alvinocaris* (Crustacea: Decapoda: Caridea: Alvinocarididae) and new record of *A. muricola* from methane seeps on the Blake Ridge Diapir, Northwestern Atlantic. *Zootaxa* 1019:27-42.

54. Carbotte, S., R. Arko, D. Chayes, W. Haxby, K. Lehnert, S. O'Hara, W. Ryan, T. Shipley, L. Gahagan, K. Johnson and **T.M. Shank** (2004) New integrated data management system for Ridge2000 and MARGINS research. *EOS, Transactions of the American Geophysical Union* 82:425-433.

55. Fornari, D., M. Tivey, H. Schouten, M. Perfit, K.L. Von Damm, D. Yoerger, A. Bradley, M. Edwards, R. Haymon, **T.M. Shank**, D. Scheirer and P. Johnson (2004) Submarine lava flow emplacement processes at the East Pacific Rise 9° 50'N: implications for hydrothermal fluid circulation and biological community structure in the upper ocean crust. *AGU Geophysical Monograph Series* 148, 311pp.

56. **Shank, T.M.** and J. Martin (2003) A new caridean shrimp of the family Alvinocarididae from thermal vents at the Menez Gwen site on the Mid-Atlantic Ridge. *Proceedings of the Biological Society of Washington* 116(1):277-292.

57. Van Dover, C., P. Aharon, J.M. Bernhard, M. Doerries, W. Flickinger, W. Gilhooly, K. Knick, S. Macko, S. Rapoport, C. Ruppel, J. Salerno, R. Seitz, B.K. Sen Gupta, **T.M. Shank**, M. Turnipseed, R. Vrijenhoek and E. Watkins (2003) Blake Ridge methane seeps: characterization of a soft-sediment, chemosynthethically based ecosystem. *Deep-Sea Research* 50:281-300.

58. Tunnicliffe, V., J. Baross, A.V. Gebruk, O. Giere, A. Koschinsky, A. Reysenbach, **T.M. Shank** and M. Summit (2003) Interactions between biotic processes at vents and physical, chemical, and geological conditions. In: *Energy and Mass Flux Through the Biological Component of Hydrothermal Vent System*. V. Tunnicliffe and C. German (eds), Dahlem University Press. pp 251-270.

59. Von Damm, K.L., M.D. Lilley, W.C. Shanks III, M. Brockington, A.M. Bray, K.M. O'Grady, E. Olson, A. Graham, G. Proskurowski, **T.M. Shank**, R. Collier, J. Cowen, R. Haymon, M.K. Tivey, D. Fornari, K. Nakamura, E. McLaughlin-West, J. Kaye, J. Sarrazin and B. Cushman (2003) Extraordinary phase separation and segregation in vent fluids from the southern East Pacific Rise. *Earth and Planetary Science Letters* 206:365-378.

60. **Shank, T.M**., D. Fornari and D. Yoerger et al. (2003) Deep submergence synergy - *Alvin* and *ABE* explore the Galápagos Rift at 86°W. *EOS*, *Transactions of the American Geophysical Union* 84:425-433.

61. Lutz, R.A., **T.M. Shank**, P. Rona, A. Reed, W. Lange, S. Low and E. Kristof (2002) Recent advances in imaging deep-sea hydrothermal vents. *Cahiers de Biologie Marine* 43:267-269.

62. Van Dover, C.L., S. E. Humphris, D. Fornari, C.M. Cavanaugh, R. Collier, S.K. Goffredi, J. Hashimoto, M.D. Lilley, A.L. Reysenbach, **T.M. Shank**, K. L. Von Damm, A. Banta, R. M. Gallant, D. Gotz, D. Green, J. Hall, T. L. Harmer, L. A. Hurtado, P. Johnson, Z. P. McKiness, C. Meredith, E. Olson, I. L. Pan, M. Turnipseed, Y. Won, C. R. Young III, R. C. Vrijenhoek. (2001) Biogeography and ecological setting of Indian Ocean hydrothermal vents. *Science* 294:818-823.

63. Luther, G.W., T. Rozan, M. Taillefert, D. Nuzzio, C. DiMeo, **T.M. Shank**, R.A. Lutz and S.C. Cary (2001) Chemical speciation drives hydrothermal vent ecology. *Nature* 410:813-815.

64. **Shank**, **T.M.** and A.G. Humes (2001) Siphonostomatoid copepods from hydrothermal vents at the Southern East Pacific Rise. *Proceedings of the Biological Society of Washington* 114:12-16.

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66. Sheader, M., C.L. Van Dover and **T.M. Shank** (2000) Structure and function of *Halice hesmonectes* (Amphipoda: Pardaliscidae) swarms from hydrothermal vents in the eastern Pacific. *Marine Biology* 5:901-911.

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68. **Shank, T.M.,** M.B. Black, K. Halanych, R.A. Lutz and R.C. Vrijenhoek (1999) Miocene radiation of deep-sea hydrothermal vent shrimp (Caridea: Bresiliidae): evidence from mitochondrial cytochrome oxidase subunit I. *Molecular Phylogenetics and Evolution* 13(2):244-254.

69. Lutz, R.A., D. Desbruyères, **T.M. Shank** and R.C. Vrijenhoek (1998) A deep-sea hydrothermal vent community dominated by stauromedusae. *Deep-Sea Research* 45:329-334.

70. Feldman, R.A., **T.M. Shank,** A.R. Baco*, R.C. Vrijenhoek and C.R. Smith (1998) Vestimentiferan on a whalefall. *Biological Bulletin* 194:116-119.

71. Fornari, D.J., **T.M. Shank,** K.L. Von Damm, T.K.P. Gregg, M.D. Lilley, G. Levai, A. Bray, R. Haymon, M. Perfit and R.A. Lutz (1998) Time-series temperature measurements at high-temperature hydrothermal vents, East Pacific Rise 9 °49'-51'N: monitoring a crustal cracking event. *Earth and Planetary Science Letters* 160:419-431.

72. **Shank, T.M.**, Lutz, R.A. and R.C. Vrijenhoek (1998) Molecular systematics of shrimp (Decapoda: Bresiliidae) from deep-sea hydrothermal vents: enigmatic "small orange" shrimp from the Mid-Atlantic Ridge are juvenile *Rimicaris exoculata*. *Molecular Marine Biology and Biotechnology* 7:88-96.

73. **Shank, T.M.**, D.J. Fornari, K.L. Von Damm, M.D. Lilley, R.M. Haymon and R.A. Lutz (1998) Temporal and spatial patterns of biological community development at nascent deep-sea hydrothermal vents along the East Pacific Rise. *Deep-Sea Research* 45:465-515.

74. Vrijenhoek, R.C., **T.M. Shank** and R.A. Lutz (1998) Gene flow and modes of dispersal in deep-Sea hydrothermal vent animals. *Cahiers de Biologie Marine* 39:363-366.

75. Cary, S.C., **Shank, T.M.** and J. Stein (1998) Worms bask in extreme temperatures. *Nature* 391:545-546.

76. Chadwick, W.W., R.W. Embley and **T.M. Shank** (1998) The 1996 Gorda Ridge eruption: geologic mapping, sidescan sonar, and seabeam comparison results. *Deep-Sea Research* 45:2547-2569.

77. Lutz, R.A., **T.M. Shank**, D.J. Fornari, R.M. Haymon, M.D. Lilley, K.L. Von Damm and D. Desbruyères (1994) Rapid growth at deep-sea vents. *Nature* 371:663-664.

78. Gallagher, J., George, M., Kohan, M. Thompson, C. and **T.M. Shank** (1993) Detection and comparison of DNA adducts after *in vitro* and *in vivo* diesel emission exposures. *Environmental Health Perspectives* 99:225-228.

79. Ashby, J., P.A. Lefevre, T.M. **Shank**, J. Lewtas and J.E. Gallagher (1991) Relative sensitivity of ^{32}P-postlabeling of DNA and the autoradiographic UDS assay in the liver of mice exposed to 2-acetylaminofluorene (2AAF). *Mutation Research* 252:259-268.

80. Gallagher, J.E., T.M. **Shank,** J. Lewtas, P.A. Lefevre and J. Ashby (1991) Relative sensitivity of ^{32}P-postlabeling of DNA and the autoradiographic UDS assay in the liver of rats exposed to 2-acetylaminofluorene (2AAF). *Mutation Research* 252:247-257.

EDITED VOLUMES

Butterfield, D., J. Resing, K. Rubin and **T.M. Shank**, eds. (2010) *Geochemistry, Geophysics, and Geosystems*. Theme: Assessing Magmatic, Neovolcanic, Hydrothermal, and Biological Processes along Intra-Oceanic Arcs and Back-Arcs.

Staudigal, H., A. Koppers, W. Lavelle, T. Pitcher and **T.M. Shank**, eds. (2010) Mountains in the Sea. *Oceanography* 23.

Lutz, R.A. and **T.M. Shank**, eds. (2009) *Deep Sea Research II*. Edited journal volume. Marine Benthic Ecology and Biodiversity: A Symposium Honoring J. Frederick Grassle. Special Issue 56(19-20):1569-1892.

BOOKS

Karson, J., D. Fornari, D. Kelley, M. Perfit and **T.M. Shank**. *A Global Atlas of Mid-Ocean Ridges* (commissioned in 2011 for 10 chapters detailing the global geological and biological diversity of mid-ocean ridges).

BOOK REVIEWS

The Silent Deep; The Discovery, Ecology, and Conservation of the Deep Sea. Tony Koslow. *Oceanography* 23:228-229.

POPULAR PUBLICATIONS

1. **Shank, T.M**., E. Baker, R. Embley, S. Hammond, J.F. Holden, S. White, S.L. Walker, M. Calderon, S. Herrera*, T.J. Lin, C. Munro, T. Heyl*, L.C. Stewart, M, Malik, M. Lobecker, and J. Potter (2012): Exploration of the deepwater Galapagos region. *Oceanography*, 25(1), Suppl. 50-51.
2. **Shank, T.M.**, S. *Herrera, W. *Cho, C. Roman, K. Croff Bell (2011) Exploration of the Anaximander Mud Volcanoes. *Oceanography* (*New Frontiers in Ocean Exploration*) 24:27-30.
3. Mayer, L., K.L. Croff Bell, R. Ballard, S. Nicolaides, K. Konnaris, J. Hall, G. Tibor, J.A. Austin Jr. and **T.M. Shank** (2011) Discovery of sinkholes and seeps on Eratosthenes Seamount. *Oceanography* (*New Frontiers in Ocean Exploration*) 24:18-20.
4. **Shank, T.M.** (2010) New England and Corner Rise Seamounts. *Oceanography* 23:104-105.
5. Staudigel, H, A.P. Koppers, J.W. Lavelle and **T.M. Shank** (2010) Seamount Sciences: Quo Vadis? *Oceanography* 23:212-213.
6. Staudigel H, A.P. Koppers, J.W. Lavelle and **T.M. Shank** (2010) Defining the word "Seamount" *Oceanography* 23:20-21.
7. Fornari, D.J. and **T.M. Shank** (2009) The Red Sea. In: *Ocean: An illustrated atlas*. Earle, S.E. and L. Glover, eds. National Geographic Press, Washington, D.C., 320 pp.
8. *Waller, R. and **T.M. Shank** (2006) What other tales can coral skeletons tell? Scientists strive to get into the genes of fossil corals to extract their evolutionary history. *Oceanus*. 45:1-4.
9. **Shank, T.M.** (2004) The Evolutionary Puzzle of Seafloor Life. *Oceanus* 42(2):78-85.
10. Lutz, R.A**, T.M. Shank** and R. Evans (2001) Life after death in the deep sea. *American Scientist* 89(5):422-431.

NON-REFERED PUBLICATIONS AND REPORTS

1. RIDGE Workshop: Results of Field Studies Along the East Pacific Rise, 9-10°N. September 24-26, 1998, Santa Barbara, California. (1998)
2. Real-time, long-term ecological studies in the deep ocean, report of working group for deep-sea ecological studies for NEPTUNE; K.L. Smith, JP. Barry Jr., S.E. Beaulieu, I.G. Priede, B.H. Robison, **T.M. Shank**, W.W. Wakefield (2001)
3. Deep Submersibles and Potential Marine Geological, Biological, and Geochemical Research; scientific justification for the need for a greater depth-capability in occupied submersibles, Deep submergence Science Committee of UNOLS. (2002)

4. Being There - The Continuing Need for Human Presence in the Deep Ocean for Scientific Research and Discovery, P. Fryer and the Deep submergence Science Committee of UNOLS. (2002)
5. What are the compelling science questions that require access to waters from 4500m to 6500m, from 6500m to full ocean depth? Deep Submergence Science Committee of UNOLS. (2003)
6. Overview of Potential Marine Research Objectives Related to Submergence Assets in Depths of 4500m to Full Ocean Depth, Deep submergence Science Committee of UNOLS for the National Academy of Sciences. (2003)
7. Deep Submergence Biological Science: Enabling Technologies, Current Limitations, and Future Needs. National Academy of Sciences: Future of US Deep Submergence Science National Academy Report (provided editorial comments). (2004)
8. Instrumentation for Arctic Ocean Exploration: Technology for Accessing the Water Column and Seafloor Workshop Report. (2004)
9. Ridge 2000 Progress and Planning Workshop Report for the mid-term review of the Ridge 2000 program. (2005)
10. Ridge 2000 Integrated Study Site (ISS) at the East Pacific Rise (EPR) Workshop: Ridge 2000 Science and Implementation Plan. (2006)
11. Deep-sea Geo-referenced Video Mosaics. Y. Rzhanov, L. Mayer, **T.M. Shank**, S.E. Beaulieu, S.A. Soule and D.J. Fornari. IEEE Oceans Conference. Proceedings. pp. 1-6. (2006)
12. Cobalt-crusts and the Diversity and Distribution Patterns of Seamount Fauna: International Seabed Authority Workshop Report. (2007)
13. Trans-Atlantic Coral Ecosystems (TRACES) Science Plan (2009)
14. Field Trials of the *Nereus* Hybrid Underwater Robotic Vehicle in the Challenger Deep of the Mariana Trench (2009) Bowen, A., D.R. Yoerger, C. Taylor, R. McCabe, J. Howland, D. Gomez-Ibanez, J.C. Kinsey, M. Heintz, G. McDonald, D.B. Peters, J. Bailey, E. Bors, **T.M. Shank**, L.L. Whitcomb, S.C. Martin, S.E. Webster, M.V. Jakuba, B. Fletcher, C. Young, J. Buescher, P. Fryer and S. Hulme. *Underwater Technology* 28:79-92.
15. Navigation of UNOLS National Deep Submergence Facility (NDSF) Vehicles: Status Report and Guidelines for Data Acquisition (2010).
16. NOAA State of Deep Corals 2013; Population Connectivity of Deep-sea Corals. Morrison, C., A.B. Taylor, M. Nizinski, D.K. Coykendall, A. Demopoulos, W. Cho, and **T.M. Shank**. (2013).

ACADEMIC SERVICE

Woods Hole Oceanographic Institution

Deep-Submergence Science Advisory Committee, Woods Hole Oceanographic Institution	2003 to present
Hiring Committee Biology Department, Woods Hole Oceanographic Institution	2008 to present
Marine Operations Committee, Woods Hole Oceanographic Institution	2009 to present
Ad hoc proposal review committee for Deep Ocean Exploration Institute, WHOI	2002 to 2012
Advisory Board to the Deep-Ocean Exploration Institute, Woods Hole Oceanographic Institution	2007 to 2011
Science Executive Committee, Woods Hole Oceanographic Institution	2009 to 2012
Biology Departmental Seminar Series coordinator	2001 to 2003
Work and Family Life Committee, Woods Hole Oceanographic Institution	2002 to 2004

National

NOAA Ocean Exploration Advisory Working Group	2010 to present
Ocean Exploration Trust Nautilus Advisory Board	2009 to present
Panel of Experts, Gulf Oil Spill Trustees workshop, St. Petersburg, FL (invited)	2011
Gulf of Mexico Information Transfer Meeting, Bureau of Ocean Energy Management, Regulation, & Enforcement, New Orleans, LA (invited)	2011
Gulf of Mexico Coral Ecosystems Workshop, National Conservation Training Center, WV (invited)	2010
Seamount Biogeosciences Network Workshop (co-convenor) La Jolla, CA	2010
RIDGE 2000 Program Steering Committee	2009 to 2011
Seamount Biogeosciences Network Workshop (co-convenor) La Jolla, CA	2009

Integrated Studies Oversight Committee for the East Pacific Rise (Ridge2000 Program) 2008 to 2011
NSF Marine Data Management Workshop, Lamont Doherty Earth Observatory, Palasaides, NY 2006
AUVSA Conference (WHOI; conference on AUVs) (co-convener), Woods Hole, MA 2006
Seamounts BioGeosciences Network Meeting, San Diego, CA (invited speaker) 2006
RIDGE2000 Community Progress and Planning Workshop (rapporteur). Vancouver, BC 2005
The Next Generation of *In-Situ* Sensors in the Ocean (rapporteur) Woods Hole, MA 2004
Marine Operations Committee, Woods Hole Oceanographic Institution 2003 to present
GCG Genetic Analysis Software Workshop (organizer) Woods Hole, MA 2003
Census of Marine Life, Seamount Ecosystems Workshop (invited co-organizer). Newport, OR 2003
Invited Panelist, National Academy of Sciences, Future of US Deep-Submergence Committee 2003
Invited Panelist, RIDGE 2000 Integrated Studies Workshop. Long Beach, CA 2002
RIDGE2000 Integrated Studies Workshop (panelist). Long Beach, CA 2002
American Geophysical Union, Fall Meeting (session chair). San Francisco, CA 2002
Dahlem Conference, Energy & Mass Flux In Hydrothermal Vent Systems. Berlin, Germany (invited) 2002
United States Deep Submergence Science Committee, UNOLS (ex-officio 2004) 2001 to present
Committee for the Marine Biological Laboratory Workshop on Molecular Evolution 2001 to 2005
RIDGE2000 Exploratory Studies Workshop (co-convener). Nashville, TN 2001
Workshop on Molecular Evolution (group leader), MBL. Woods Hole, MA 1995
Co-founder/convener Annual Rutgers-Princeton Ecology and Evolution Symposium. Princeton, NJ 1994

International

Invited delegate to "Think Tank" workshop on 'Deep-Sea Coral Research to Enhance Conservation" 2011
Auckland, New Zealand
International Network for Scientific Investigations of Deep-Sea Ecosystems (*INDEEP*) Committees
INDEEP Population Connectivity Working Group 2011 to present
INDEEP Anthropogenic Impacts and Social Policy Working Group 2011 to present
Conservation of Deep-Sea Chemosynthetic Ecosystems: Justification of and Considerations for a 2010
Spatially-Based Approach. Dinard, France (invited)
Contributor to the Encyclopedia of Life Project 2009 to present
Created barcoding data exchange portal for seamount fauna (www.sba.whoi.edu) 2010
Joint Commission on Science and Technology workshop, Wellington, NZ (invited delegate) 2010
NOAA INDEX advisory and planning workshop for the 2010 field program, Honolulu, HI (invited) 2010
NOAA INDEX advisory and planning workshop for the Okeanos Explorer, Jakarta, Indonesia 2009
Co-convener of special session, Deep-Sea Hydrothermal Systems: New Knowledge from 2010
New Discoveries and New Technology, Fall AGU
Co-convener of special session dedicated to Integrated Studies at Oceanic Spreading Centers: 2010
Linking Spreading Center Processes Across Disciplinary Boundaries
NOAA Ocean Exploration Indonesia Exploration Partnership Advisory Group (INDEX) 2009 to present
Trans-Atlantic Coral Ecosystem Study (TRACES) Pubilc Forum (convenor) Woods Hole, MA 2009
Co-convener of special session, RIDGE2000 Integrated Studies, Fall AGU 2009
Co-convener of special session, Submarine Volcanic Eruptions: Studies of Geological, Chemical,
and Biological Processes, Fall AGU 2009
Co-organizer of Seamounts BioGeosciences Network Workshop 2009
Co-organizer of Trans-Atlantic Coral Ecosystem Study (TRACES) Workshop 2009
Co-convener of special session, the Biodiversity of Chemosynthetic and Seamount Ecosystems, 2009
World Conference on Marine Biodiversity, Valencia, Spain
Ocean X Prize Scientific Advisory and Governing Boards 2008
NOAA Ocean Exploration Advisory Working Group (OEAWG) 2008 to present
Trans-Atlantic Coral Ecosystem Study (TRACES) Workshop, Wilmington, NC (section leader) 2008
InterRidge Theoretical Institute on Biogeochemical Interactions on Mid-Ocean Ridges (invited speaker) 2007
International Data Standardization Workshop for the Census of Marine life for Seamounts (invited) 2007
Co-convener of special session on Inter-disciplinary Seamount Research, Fall AGU 2007
Co-organizer special session on Seamounts European Marine Biology Symposium, Austria 2005
Co-convener of taxonomy and genetics in the 3rd International Deep-Sea Corals Symposium 2004
Barcoding of Life Committee for the Census of Marine Life, Liaison Seamount Ecosystems 2003 to 2010
Steering Committee, Census of Marine Life, Seamount Ecosystems (CenSeam) 2003 to 2010

Steering Committee, Census of Marine Life, Chemosynthetic Ecosystems	2002 to 2010
Steering Committee, InterRidge Hydrothermal Vent Biology Working Group	2002 to 2007
Co-organizer for the Arctic Technology Workshop. Monterey, CA	2002
Developed web biological database of the Guaymas Basin hydrothermal vent region	2001

Reviewed manuscripts for: *Biological Bulletin*, *Cahiers de Biologie Marine, Conservation Genetics, Deep-Sea Research, Hydrobiologia, Journal of the Marine Biological Association of the United Kingdom, Limnology and Oceanography, Limnology and Oceanography Methods, Marine Biology, Marine Biological Research, Marine Ecological Progress Series, Molecular Biology and Evolution*, *PLoS One, Proceedings of the Biological Society of Washington, Science, Systematic Biology, The Journal of Heredity, Zoological Science, Symbiosis*.

Reviewed proposals for: *NSF Biological Oceanography, NSF Population Dynamics, the Natural Environment Research Council (UK), European Research Council, National Fund for Scientific & Technological Development (Chile), International Census of Marine Life Program*

INVITED SEMINARS AND PRESENTATIONS

2000

- RIDGE 2000 Exploratory Studies Workshop, Nashville, TN (April)
- Ocean Science Writing Fellowship Program, Woods Hole, MA (July)
- NIEHS Microarray Center, Research Triangle Park, NC (September)
- RIDGE 2000 Integrated Studies Workshop, Dekalb, IL (October)
- Graduate College of Marine Studies, University of Delaware, Lewes, DE (November)

2001

- Dahlem Conference (Energy & Mass Transfer in Marine Hydrothermal Systems) Germany (October)
- Second International Deep-Sea Hydrothermal Vent Symposium, Brest, France (October)
- Ocean Science Writing Fellowship Program (September)
- Boston University Marine Program (March)
- RIDGE2000 Exploratory Studies Workshop (February)
- Woods Hole Oceanographic Institution (January)

2002

- Darwin Station, Puerto Ayora, Isla Santa Cruz, Galápagos Islands (June)
- Presentation to Congressional Committees in Washington, DC for a 6500m replacement Alvin (July)
- Workshop to Promote the Development of Instrumentation for Arctic Ocean Exploration (October)
- Deep Submergence Science Committee (December)

2003

- Census of Marine Life for Chemosynthetic Communities Workshop (January)
- Smithsonian Institution Lecture Series (February)
- Southampton Oceanography Centre (March)
- Annual seminar to Ocean Science Writing Fellowship Program (April)
- National Academy of Sciences, Future of US Deep-Submergence Committee (June)
- Census of Marine Life for Seamounts (inaugural meeting) (August)
- New England Molecular Evolutionary Biologists Meeting (November)

2004

- American Society of Limnology and Oceanography (NOAA Ocean Explorers award) (January)
- University of Rhode Island Biology Department (November)
- Deep Submergence Science Committee Meeting (May and December)

2005

- University of Rhode Island Graduate School of Oceanography (February)
- Tufts University Biology Department (February)
- Coalition for National Science Funding's Annual Symposium (April)
- Woods Hole Oceanographic Institution's 75th Anniversary Science Symposium (September)

- RIDGE2000 Community Progress and Planning Workshop (October)
- International Deep-Sea Coral Symposium, Miami FL (November)

2006
- Tropical Marine Science Institute of the National University of Singapore (January)
- New England Aquarium, Boston, MA (March)
- Ridge2000 Integrated Study Site (ISS) at the East Pacific Rise Workshop, Palasides NY (March)
- Cobalt-crusts and the Diversity and Distribution Patterns of Seamount Fauna, Jamaica (March)
- Biogeography and Diversity of Chemosynthetic Ecosystems Meeting, Barcelona, Spain (April)
- Autonomous Underwater Vehicle (AUVSA) Symposium (WHOI; conference on AUVs)(co-convener), Woods Hole, MA (June)
- Special session on mid-ocean ridge eruptions, AGU, San Francisco, CA (December)

2007
- NOAA Office of Ocean Exploration Census of Marine Life Seminar Series (April)
- International Data Standardization Workshop for Census of Marine life for Seamounts, UK (May)
- InterRidge Theoretical Institute, "Biogeochemical interactions at hydrothermal vents" (September)
- Deep Submergence Science Meeting, San Francisco, CA (December)
- Special session on Arctic studies in the International Polar Year, AGU, San Fran., CA (December)

2008
- Seamount Workshop, Bedford Institute of Oceanography, Dartmouth, NS (January)
- TRACES (Trans-Atlantic Coral Ecosystem Study) Workshop North America (March)
- Department of Marine Sciences, University of Connecticut (October)
- World Conference on Marine Biodiversity, Valencia, Spain (November)
- International Deep-Sea Coral Symposium, Wellington, NZ (December)(keynote)

2009
- Seamounts09 BioGeosciences Network Workshop, Scripps Institute of Oceanography (March)(keynote)
- At sea Education: Inter-Disciplinary Oceanography Course (course led by U. Washington) (March)
- DNA Barcoding of Marine Biodiversity and MarBOL Workshop (April; declined)
- Ridge 2000 Integrated Synthesis Workshop (October)
- AGU Fall meeting: Submarine Volcanic Eruptions: Studies of Geological, Chemical, and Biological Processes (December)

2010
- United States – New Zealand Joint Commission on Science and Technology, Wellington, NZ (January)
- Gulf of Mexico Coral Ecosystems Studies, MMS/USGS/NOAA Shepherdstown, WV (February)
- At Sea Education: Marine Biology & Evolution Course (at sea course led by Scripps) (March)
- Ocean Science Writing Fellowship Program (September)

2011
- Integrated Laboratory Systems, Inc., Research Triangle Park, NC (January)
- Deep-Water Coral BOEMRE Information Data Transfer Meeting, New Orleans, LA (March)
- Agency for the Assessment and Application of Technology, Jakarta, Indonesia (April)
- At Sea Education: Marine Ecology of the Gulf of Mexico (at sea course) (May)

2012
- Genetics of coral ecosystem taxonomy and connectivity: status, gaps, and priorities. US-NZ Joint Commission Think Tank on Deep-Sea Coral Ecosystems (Jan)
- Results of NOAA OER exploration: 2010-2012. American Society of Limnology and Oceanography Meeting, invited Town Hall presentation (February)
- Biodiversity in coral ecosystems from the deep Gulf of Mexico: potential impact of the Gulf oil spill on deep-sea coral ecosystems. Massachusetts College of Liberal Arts (April)
- Biodiversity in coral ecosystems from the deep Gulf of Mexico: coral symbiont relationships and genetic connectivity. International Deep-Sea Coral Symposium (April)
- Vent and Seamount Recovery and Resilience to Disturbance, Deep-Sea Biology Symposium (Dec)

2013

- The Trench Frontier: Science and Technology: A New Era in Deep-Ocean Research, Explorers Club (April)
- Seamounts: Deep-Sea Ecosystems and Conservation, WHOI/MIT Joint Program lecture (April)
- Ocean Exploration for Scientific Research, Aquarium of the Pacific (May)
- Ecology and Evolution in the Deep Sea, WHOI Journalist Fellows Workshop (July)
- Deep-Ocean Trenches: the New Frontier, Deep Ocean Exploration Trenches Public Event (August)
- Maximizing Telepresence Technology for Deep-Ocean Science, OCEANS 2013 Town Hall (September)

SELECT INVITED† AND PRESENTED ABSTRACTS

2001 (4 of 8)

Extensive Genetic structure of hydrothermal vent populations: recent results via genomic fingerprinting. **T.M. Shank** and K.M. Halanych. Larvae At Ridge Vents (LARVE) Results Symposium. Salt Lake City, UT.

Using more rapidly evolving markers to study phylogeographic patters in Atlantic vent shrimp. **T.M. Shank** and K.M. Halanych. Larvae At Ridge Vents (LARVE) Results Symposium. Salt Lake City, UT.

Colonization and succession at deep-sea hydrothermal vents. Lutz, R.A and **T.M. Shank.** Larvae At Ridge Vents (LARVE) Results Symposium. Salt Lake City, UT.

Biology of newly-discovered "AHA" hydrothermal vent fields near 1° 44'N on the East Pacific Rise axis. **T.M. Shank**, Fornari et al. American Geophysical Union, Fall Meeting. San Francisco, CA.

2002 (4 of 15)

Time-series studies of the biological, geological, and geochemical processes at the Rosebud and Calyfield hydrothermal vent fields at 86°W and 89.5°W on the Galápagos Rift. **T.M. Shank**, S. Hammond, D.J. Fornari, et al. American Geophysical Union, Fall meeting. San Francisco, CA. †

Time-series studies of faunal colonization and microhabitat structure at diffuse-flow hydrothermal vent sites near 9°50'N, East Pacific Rise. **T.M. Shank**, D.J. Fornari, D. Scheirer. RIDGE2000 Integrated Studies Workshop. Nashville, TN.

Distribution and fatty acid composition of non-vent-endemic echinoderms at 9°N East Pacific Rise – implications for export of chemosynthetically derived organic matter to the deep sea benthos. C.A. Allen, R.A. Lutz, **T.M. Shank**. RIDGE 2000 Integrated Studies Workshop, Nashville, TN.

Evolution of chemosynthetic fauna. **T.M. Shank**. Darwin Research Station, Port Ayora, Galápagos†

2003 (4 of 10)

Genetic structure of nascent biological communities from the Galápagos Rift vent fields. **T.M. Shank**, Deep-Sea Biology Symposium. Coos Bay, OR.

Submersible research in extreme environments using a novel light-tethered hybrid Remotely Operated Vehicle. A. Bowen, P. Fryer, **T.M. Shank** and M. Edwards. American Geophysical Union, Fall Meeting. San Francisco, CA.

Evolutionary relationships of Lost City and Mid-Atlantic Ridge vent fauna. **T.M. Shank**. Biology Department Seminar. Woods Hole. MA. †

Time-series exploration and biological, geological, and geochemical characterization of the Rosebud and Calyfield hydrothermal vent fields at 86°W and 89.5°W on the Galápagos Rift. **T.M. Shank**, S. Hammond, D.J. Fornari, R. Waller*, K. Ding, W. Seyfried, D. Butterfield, M. D. Lilley and M. Perfit. American Geophysical Union, Fall Meeting. San Francisco, CA.

2004 (6 of 10)

RIDGE 2000 Integrated Studies: Patterns of hydrothermal ecosystem variation within Lau Basin. **T.M. Shank**, D.R. Yoerger, A. Bradley, D.J. Fornari Eos Trans. American Geophysical Union, 85(47).

Macrofaunal characterization of peridotite-hosted ecosystems associated with the Lost City hydrothermal field. K.L. Buckman* and **T.M. Shank**. Ridge2000 Mid-Atlantic Ridge Workshop. Providence, RI.

Hydrothermal vent-endemic shrimp episymbiont diversity and distribution on the Mid-Atlantic and Central Indian Ridges. A.J. Fusaro*, Z.P. McKiness, C.M. Cavanaugh and **T.M. Shank**. Ridge2000 Mid-Atlantic Ridge Workshop. Providence, RI.

Geographic and temporal genetic structure within *Rimicaris exoculata* along the Northern Mid-Atlantic Ridge. D. Poehls and **T.M. Shank**. Ridge2000 Mid-Atlantic Ridge Workshop. Providence, RI.

Hydrothermal ecosystems on the Southern Mid-Atlantic Ridge. **T.M. Shank**. Ridge2000 Mid-Atlantic Ridge Workshop. Providence, RI.

Exploring temporal and spatial patterns of community biodiversity in hydrothermal vent systems with recent results from at 86°W and 89.5°W on the Galápagos Rift. **T.M. Shank** and A. L. Reysenbach. American Society of Limnology and Oceanography, Ocean Sciences Meeting. Honolulu, HI. †

2005 (9 of 15)

Development of an in-situ electrochemical analyzer (ISEA) for deep-sea hydrothermal vent work T.S. Moore, T. Waite, T. Kraiya, J. Tsang, C. Janzen, G. Luther, D. Nuzio, B. Glazer and **T.M. Shank.** American Society of Limnology and Oceanography, Aquatic Sciences Meeting. Honolulu, HI.

Multi-scale, multimodal AUV surveys for hydrothermal vent localization. M. Jakuba, D. Yoerger, A. Bradley, C. German, C. Langmuir and **T.M. Shank.** Unmanned Untethered Submersible Technology Conference. Durham, NH.

Autonomous near-bottom photo surveys of hydrothermal vent sites. D. Yoerger, A. Bradley, M. Jakuba, **T.M. Shank**, C. German and C. Langmuir. Unmanned Untethered Submersible Technology Conference. Durham, NH.

High-resolution sonar surveying at the R2K Integrated Studies Sites: Techniques and strategies for improved microbathymetric mapping. V.L. Ferrini, D. Fornari, **T.M. Shank**, D. Kelley and M.K. Tivey. RIDGE 2000 Community Progress and Planning Workshop. Vancouver, BC.

Navigation of UNOLS national Deep Submergence Facility (NDSF) vehicles: Status report and guidelines for data acquisition. V.L. Ferrini, L. Whitcomb, J. Howland, D. Fornari, S. Carbotte, D. Kelley, **T.M. Shank** and M. Tivey. RIDGE 2000 Community Progress and Planning Workshop. Vancouver, BC.

Hydrothermal exploration by robot: Novel use of the ABE autonomous underwater vehicle and in-situ sensors to locate new hydrothermal vents in the Pacific and Atlantic. C. German, D. Yoerger, M. Jakuba, A. Bradley, **T.M. Shank**, D. Connelly, R. Prien, L. Parson, C. Langmuir and K. Nakamura. RIDGE 2000 Community Progress and Planning Workshop. Vancouver, BC.

Automated generation of geo-referenced mosaics from video data collected by deep-submergence vehicles: Preliminary results. S.A. Soule, Y. Rhzanov, S. Beaulieu, **T.M. Shank**, D. Fornari, L. Mayer, RIDGE 2000 Community Progress and Planning Workshop. Vancouver, BC.

Time-series electrochemical analysis from the 9°N EPR vent sites. T.S. Moore, T. Waite, B. Glazer, D. Nuzzio, **T.M. Shank** and G. Luther. RIDGE 2000 Community Progress and Planning Workshop. Vancouver, BC.

Integrative approaches to understanding the interaction of fluid chemistry and microbial biofilms on larval settlement on the East Pacific Rise. **T.M. Shank**, S. Beaulieu, G. Luther, W. Seyfried, K. Ding, C. Vetriani, S. Sievert and R.A. Lutz. RIDGE 2000 Community Progress and Planning Workshop. Vancouver, BC. †

2006 (10 of 31)

Composition of microbial communities associated with the tubeworm *Riftia pachyptila* on the Galápagos Rift. N. Ward, T. Schneider, K. Penn and **T.M. Shank**. American Society of Limnology and Oceanography, Ocean Sciences Meeting. Honolulu, HI.

Toward a mechanistic understanding of larval dispersal: Insights from genomic fingerprinting of deep-sea hydrothermal vent populations. **T.M. Shank**. American Society of Limnology and Oceanography, Ocean Sciences Meeting. Honolulu, HI.

Preliminary characterization of vent sites and evolutionary relationships of vent fauna on the Southern Atlantic Ridge. **T.M. Shank** Biogeography and Diversity of Chemosynthetic Ecosystems Meeting, Barcelona, Spain†

Seamount Genetics: Enabling the understanding of biodiversity, connectivity, evolution, and endemism. **T.M. Shank**, Cobalt-crusts and the Diversity and Distribution Patterns of Seamount Fauna Meeting, International Seabed Authority, Jamaica. †

An introduction to questions and approaches in deep-sea coral genetics. **T.M. Shank** International Deep-Sea Corals Symposium, Miami, Florida. †

Initial biological, chemical, and geological observations after the 2005-6 volcanic eruption on the East Pacific Rise. **T.M. Shank**, B. Govenar*, K. Buckman*, D.J. Fornari, S.A. Soule, G.W. Luther III, R.A. Lutz, C. Vetriani, M. Tolstoy, J.P. Cowen, K.L. Von Damm. AGU Fall Meeting.

New frontiers in arctic exploration: Autonomous location and sampling of hydrothermal vents under the ice at Earth's slowest spreading ridge (IPY Project 173). Edmonds, H.N., R. Reves-Sohn, H. Singh, **T.M. Shank**, S. Humphris, J. Seewald, D. Akin, W. Bach, Y. Nogi, R. Pedersen (2006) Fall Meeting of the American Geophysical Union, San Francisco, CA.

Autonomous Underwater Vehicle (AUV) and towed-vehicle technologies for under-ice hydrothermal vent studies at the Gakkel Ridge. Singh, H., D. Akin, R. Reves-Sohn, S. Humphris, **T.M. Shank** and H. Edmonds. Fall Meeting of the American Geophysical Union, San Francisco, CA.

Forecasting and characterizing the recent eruption at 9°50'N on the East Pacific Rise using ocean bottom seismometers. M. Tolstoy, J.P. Cowen, E. Baker, D.J. Fornari, K.H. Rubin, **T.M. Shank,** F. Waldhauser, D.R. Bohnenstiehl, D. Forsyth, R.C. Holmes, B. Love, M.R. Perfit and R.T. Weekly (2006) Fall Meeting of the American Geophysical Union, San Francisco, CA.

Anthropogenic impacts on the Corner Rise Seamounts, NW Atlantic. R.G. Waller*, L. Watling, P. Auster and **T.M. Shank** (2006) Fall Meeting of the American Geophysical Union, San Francisco, CA.

2007 (4 of 17)

The chemistry of diffuse-flow vent on the Galápagos Rift (86°W): Temporal variability and subseafloor phase equilibria controls. N.J. Pester, D.A. Butterfield, D.I. Foustoukos, K.K. Roe, K. Ding, **T.M. Shank** and W.E. Seyfried, Jr. Goldschmidt Conference (Geochimica et Cosmochimica Acta 71(15S) pp.A780).

Succession: ecological processes structuring vent communities over time. **T.M. Shank**, InterRidge Theoretical Institute. Woods Hole, MA, September. †

Global data standardization on seamounts. **T.M. Shank** International Data Standardization Workshop for the Census of Marine life for Seamounts, CenSeam Workshop, Devon UK. †

A Global Census of Marine Life on Seamounts: developing a global baseline and synthesis of seamount biodiversity for scientific understanding and the management and conservation of seamount resources. **T.M. Shank** NOAA Office of Exploration, Silver Spring, MD. †

2008 (5 of 10)

Interaction of fluid chemistry and microbial biofilms on larval settlement at hydrothermal vetns on the East Pacific Rise and the Galápagos Rift. **T.M. Shank** Ocean Sciences Meeting, Orlando FL.

Spatial and temporal genetic connectivity of a deep-sea hydrothermal vent siboglinid tubeworm, *Riftia pachyptila*. A. Fusaro* and **T.M. Shank** Ocean Sciences Meeting, Orlando, FL.

Exploring mechanisms of species coexistence through molecular identification of gut contents in hydrothermal vent gastropods. B. Govenar* and **T.M. Shank**, Ocean Sciences Meeting, Orlando, FL.

Genetic Connectivity of Cold-Water Coral Associates Inhabiting Seamounts of the North Atlantic. **T.M. Shank**, International Deep-Water Coral Symposium, Wellington, NZ. †

Bacterial diets of primary consumers at hydrothermal vents. B. Govenar* and **T.M. Shank**, Fall AGU, San Francisco, CA.

2009 (5 of 8)

Connectivity and conservation of Atlantic cold-water coral ecosystems. **T.M. Shank**, Trans-Atlantic Coral Ecosystem Study (TRACES) Pubilc Forum. Woods Hole, MA. †

Seamount Laboratories – Understanding Connectivity, Evolution, and Endemism. **T.M. Shank,** SBN Seamounts 09 Workshop, Scripps Institute of Oceanography, La Jolla, CA. †

Abiotic and biotic controls on biological community structure on mid-ocean ridges- integrated datasets linked in time and space. **T.M. Shank**, RIDGE2000 Integration Meeting, St. Louis, Mo. †

Cold-Water Corals: WHOI: Challenging early paradigms and informing conservation. **T.M. Shank**, WHOI Trustees meeting, Woods Hole, MA. †

Impacts of volcanic eruptions and disturbances on biological communities. **T.M. Shank**, Fall AGU, San Francisco, CA. †

2010 (6 of 10)

Connectivity of cold-water coral ecosystems. **T.M. Shank**, United States – New Zealand Joint Commission on Science and Technology, Wellington, NZ. †

Combined stable isotope analysis and molecular identification of gut contents reveal different sources of local primary production at hydrothermal vents. B. Govenar* and **T.M. Shank**, AGU Ocean Sciences Meeting, Portland, OR.

Genetic connectivity of the cold-water coral-dependent deep-sea polychaete *Gorgoniapolynoe caeciliae* among North Atlantic seamounts. E.K. Bors* and **T.M. Shank**, AGU Ocean Sciences Meeting, Portland, OR.

Methodological advances in ancient DNA techniques for cold-water corals: utility for phylogenetic studies. R. Waller*, C. Matheson, M. Taviani, **T.M. Shank**, J. Adkins, L. Robinson. Deep-Sea Biology Symposium, Raykjavik, Iceland.

Octocorals and their associated fauna- distribution and biogeography. **T.M. Shank**, Workshop on Gulf of Mexico Coral Ecosystems Studies MMS/USGS/NOAA Shepherdstown, WV. †

Connectivity and conservation of deep-sea chemosynthetic ecosystems. **T.M. Shank**, Workshop on

Conservation of Deep-Sea Chemosynthetic Ecosystems Justification of and Considerations for a Spatially Based Approach. Dinard, France. †

2011 (7 of 7)

Deep-water communities of the Gulf of Mexico and impacts of the Deepwater Horizon "Oil Spill". **T.M. Shank**, Integrated Laboratory Systems, Inc., Research Triangle Park, NC. †

Lophelia II: Coral Associates of the Gulf of Mexico. **T.M. Shank** and W. *Cho, BOEMRE Information Transfer Meeting, New Orleans, LA. †

Deep-Ocean Technology for Research and Exploration. **T.M. Shank**, Agency for the Assessment and Application of Technology, Jakarta, Indonesia. †

Deep-Sea Biology of the Gulf of Mexico and the Impacts of the Deepwater Horizon "Oil Spill". **T.M. Shank**, Clarke Middle School, Lexington, MA. †

Assessing the potential impact of the Gulf oil spill on deep-sea coral ecosystems. **T.M. Shank**, Woods Hole Oceanographic Institution, Woods Hole, MA. †

Status of our understanding of hard-bottom coral associate species in deep water. **T.M. Shank**, National Resource Damage Assessment Panel of Experts Meeting, St. Petersburg, FL. †

Assessing the potential impact of the Gulf oil spill on deep-sea coral ecosystems. **T.M. Shank**, Massachusetts Marine Educators Association. †

2012 (3 of 6)

Genetics of coral ecosystem taxonomy and connectivity: status, gaps, and priorities. **T.M. Shank**, US-NZ Joint Commission Think Tank on Deep-Sea Coral Ecosystem †

Results of NOAA OER exploration: 2010-2012. T.M. Shank, American Society of Limnology and Oceanography Meeting, invited Town Hall presentation †

Biodiversity in coral ecosystems from the deep Gulf of Mexico: potential impact of the Gulf oil spill on deep-sea coral ecosystems. **T.M. Shank**, Massachusetts College of Liberal Arts †

2013 (2 of 6)

Biodiversity in coral ecosystems from the deep Gulf of Mexico: coral- symbiont relationships and genetic connectivity. **T.M. Shank**, W. Cho, S. Herrera, T. Heyl, C. Munro, E. Cordes, A. Quattrini, P-Y. Hsing, A. Demopolous, and C. Fisher. American Society of Limnology and Oceanography.

Govindarajan AF, Manganini S, German CR, and **T.M. Shank**. Effects of the Deepwater Horizon oil spill on biogenic fluxes and larval recruitment. American Society of Limnology and Oceanography.

No two canyons are alike: differences in diverse faunal and habitat assemblages among northeast Atlantic submarine canyons. **T.M. Shank**, T. Heyl, B.P. Kinlan, and M.S. Nizinski. Submitted. American Society of Limnology and Oceanography.

RESEARCH EXPEDITIONS

More than 45 scientific expeditions (9 as Chief or Co-chief Scientist) to deep-sea hydrothermal vents, hydrocarbon seeps, continental slopes, and seamounts in the Arctic Ocean, Eastern Pacific, Northern Atlantic, Sea of Cortez, Northeast Pacific, Southeast Pacific, and Central Indian Ocean, including more than 50 submersible dives, 70 remotely-operated vehicle days, and 55 autonomous underwater vehicle dives.

1993	*R/V Atlantis* & *Alvin*	9-10°N, East Pacific Rise	Ch. Sci. R. Lutz
1994	*R/V Atlantis* & *Alvin*	Juan de Fuca; Explorer Ridge	Ch. Sci. R. Lutz and J. Childress
	R/V Atlantis & *Alvin*	9-10°N, East Pacific Rise	Ch. Sci. R. Lutz
	R/V Atlantis & *Alvin*	9-10°N, East Pacific Rise	Ch. Sci. K. Von Damm & M. Lilley
1995	*R/V Atlantis* & *Alvin*	9-10°N, East Pacific Rise	Ch. Sci. R. Lutz
1996	*R/V Knorr* & *ROV Jason*, *Argo II*	37°N Mid-Atlantic Ridge	Ch. Sci. D. Fornari and S. Humphris
	R/V Wecoma	42°N, Northern Gorda Ridge	Ch. Sci. R. Embley and J. Cowen
1997	*R/V Atlantis* & *Alvin*	37°N-14°N, Mid-Atlantic Ridge	Ch. Sci. R. C. Vrijenhoek & R. Lutz
	R/V Atlantis & *Alvin*	9-10°N, East Pacific Rise	Ch. Sci. R. Lutz
1998	*R/V Atlantis* & *Alvin*	17- 22°S, East Pacific Rise	Ch. Sci. K. Von Damm & M. Lilley
1999	*R/V Atlantis* & *Alvin*	9-10°N, East Pacific Rise	Ch. Sci. C. Cary
2000	*R/V Atlantis* & *Alvin*	Guaymas Basin	Ch. Sci. S. C. Cary
	R/V Atlantis & *Alvin*	9-10°N, East Pacific Rise	Ch. Sci. R. Lutz

2001	*R/V Knorr & ROV Jason, Argo II*	Central Indian Ridge	Ch. Sci. C. Van Dover
2002	*R/V Atlantis & Alvin, AUV ABE*	Galápagos Rift	Ch. Sci**. T.M. Shank**
	R/V Atlantis & AUV ABE	21°N, East Pacific Rise	Ch. Sci. K. Von Damm
2003	*R/V Atlantis & Alvin*	9-10°N, 13°N East Pacific Rise	Ch. Sci. C. Cary
	R/V Atlantis & Alvin, AUV ABE	New England Seamounts	Ch. Sci. J. Adkins
	R/V Atlantis & Alvin, AUV ABE	Lost City Vent Field, MAR	Ch. Sci. D. Kelley and J. Karson
2004	*R/V Atlantis & Alvin*	9-10°N, East Pacific Rise	Ch. Sci. K. Von Damm
	R/V Atlantis & Alvin	9-10°N, East Pacific Rise	Ch. Sci. R. Lutz
	R/V Kilo Moana & AUV ABE	Lau Basin, Western Pacific	Ch. Sci. C. Langmuir
2005	*RRS Charles Darwin & AUV ABE*	Equatorial Southern Atlantic Ridge	Ch. Sci. C. German and **T.M. Shank**
	R/V Atlantis & Alvin	9-10°N, 13°N East Pacific Rise	Ch. Sci. C. Vetriani and **T.M. Shank**
	R/V Atlantis & Alvin	Galápagos Rift	Ch. Sci. **T.M. Shank**
	R/V Ron Brown & ROV Hercules	Lost City Hydrothermal Field	Ch. Sci. R. Ballard and D. Kelley
	R/V Ron Brown & ROV Hercules	New England/Corner Seamounts	Ch. Sci. L. Watling and **T.M. Shank**
2006	*R/V New Horizon & TowCam*	9-10°N, EPR Rapid Response	Ch. Sci. J. Cowen
	R/V Atlantis & Alvin	9-10°N, EPR Rapid Response	Ch. Sci. K. Von Damm
	R/V Atlantis & Alvin, TowCam	9-10°N, East Pacific Rise	Ch. Sci. K. Von Damm
2007	*R/V Atlantis & Alvin*	9-10°N, East Pacific Rise	Ch. Sci. **T.M. Shank**
	Icebreaker Oden	Mosby Seamount, Arctic Ocean	Ch. Sci. H. Singh
	Icebreaker Oden	Gakkel Ridge, Arctic Ocean	Ch. Sci. R. Sohn
	R/V Kilo Moana & HROV Nereus	O'ahu Coast, Hawaii	Ch. Sci. A. Bowen
2009	*R/V Thompson & TowCam*	Kermadec Ridge	Ch. Sci. Rick Keil
	R/V Thompson & Jason II	Event Response E. Lau Basin	Ch. Sci. Joseph Resing
	R/V Kilo Moana & HROV Nereus	Mariana Seamounts and Trench	Ch. Sci. A. Bowen
	R/V Ron Brown & Jason II	Gulf of Mexico	Ch. Sci. C. Fisher
2010	*R/V Melville & ABE*	Chile Triple Junction	Ch. Sci. A. Thurber
	R/V Okeanos Explorer & Lil Herc	Indonesia, Sulawesi Sea	Ch. Sci. **T.M. Shank**
	E/V Nautilus & ROV Hercules	Anaximander Seamounts, Med.	Lead Shore Sci. **T.M. Shank**
	R/V Ron Brown & Jason II	Gulf of Mexico	Ch. Sci. E. Cordes/C. Fisher
	R/V Atlantis & Alvin	Gulf of Mexico	Ch. Sci. C. Fisher
2011	*R/V Tangaroa & Sentry, TowCam*	Kermadec Seamounts	Ch. Sci. C. de Ronde
	R/V McArthur & Sentry, TowCam	Gulf of Mexico	Ch. Sci. **T.M. Shank**
	R/V Okeanos Explorer, L. Herc	Galápagos Rift	Lead Sci. **T.M. Shank**
	M/V H. Chouest & ROV UHD-34	Gulf of Mexico	Ch. Sci. C. Fisher
2012	*R/V Okeanos Explorer* & Lil Herc	Gulf of Mexico	Lead Sci. **T.M. Shank**
	R/V Melville & Sentry	Chile Triple Junction	Ch. Sci. D. Blackman
	R/V Bigelow & TowCam	North Atlantic Canyons	Ch. Sci. M. Nizinski
	R/V Revelle & ROV Quest 4000	Mata Seamount Region	Ch. Sci. J. Resing
2013	*R/V Bigelow & TowCam*	North Atlantic Canyons	Ch. Sci. M. Nizinski
	R/V Okeanos Explorer & ROV D2	North Atlantic Canyons	Lead Shore Sci. **T.M. Shank**
	R/V Okeanos Explorer & ROV D2	North Atlantic Canyons	Lead Sci. A. Demopoulus

ACADEMIC TEACHING

Biological Oceanography — Fall 2001
MIT/WHOI graduate course 7.47, Guest Lecturer

Marine Invertebrate Zoology — Spring 2002
MIT/WHOI graduate course 7.435, Guest Lecturer

Molecular Biological Oceanography: Genomic Approaches in Marine Science — Spring 2003
MIT/WHOI graduate course 7.437, Co-Instructor

Applied Marine Population Genetics — Spring 2004
MIT/WHOI graduate course 7.531, Instructor

Inter-Disciplinary Oceanography — Spring 2008
Univ. of Washington at sea graduate course, Project advisor and Lecturer
Biological Oceanography — Spring 2010
Scripps Institution of Oceanography at sea graduate course, Lecturer
Deep-Sea Ecosystems and Conservation, WHOI/MIT Joint Program lecture — Spring 2013

ACADEMIC ADVISING AND MENTORING

Undergraduate and High School students

Sarah Ann Bennett	Hathaway Brown High School, Bowling Green, OH
Eleanor Bors	Oberlin College, Oberlin, OH
Sara L'Heureux	University of Delaware, Lewes, DE
Genna Laurino	Georgian Court College, Lakewood, NJ
Corey Oberlander	Falmouth High School, Falmouth, MA
Carl Spielvogel	Clarke Middle School, Lexington, MA
Alexander Sull	Brown University, Providence, RI
John Swartz	University of Pittsburgh, PA
Elizabeth Sibert	University of California at Santa Barbara, CA
Catriona Munro	University College of London, UK
Will Hallisey	Greenwich High School, CT
Kerry McCullough	University of Oregon, OR
Kerry Williams	Allegheny College, PA
Luke McCartin	Bishop Stang High School, MA
Anabel Martinez Lyons	College of London, UK
Taylor Sehein	Northeastern University, MA

Graduate Students
Primary Advisor

Abigail Fusaro	Ph.D. student (2002- 2008) WHOI/MIT Joint Program
Walter Cho	Ph.D. student (2002- 2008) WHOI/MIT Joint Program
Kate Buckman	Ph.D. student (2003- 2009) WHOI/MIT Joint Program
Santiago Herrera	Ph.D. student (2009- present) WHOI/MIT Joint Program
Eleanor Bors	Ph.D. student (2010- present) WHOI/MIT Joint Program

Committee Member

Diane Adams	Ph.D. student (2001- 2007) WHOI/MIT Joint Program
Andrew Reed	Ph.D. student (2001- 2008) Rutgers University
Robert Jennings	Ph.D. student (2002- 2005) WHOI/MIT Joint Program
Thomas Moore	Ph.D. student (2003- 2009) University of Delaware
Andrea Quattrini	Ph.D. student (2010- present) Temple University

Advisor, The Joint Universities Summer Teaching Laboratory (JUSTL) Program

Kiyu Ming	Ph.D. student (2008) The Chinese University of Hong Kong
Sharon Wu Tsu Huen	Ph.D. student (2009) The Chinese University of Hong Kong
Stella Chan Sze Wai	Ph.D. student (2011) The Chinese University of Hong Kong

Post-doctorates

Dr. Amy Baco-Taylor	Post-doctoral Scholar (2002-2004), Visiting Investigator (2004- 2007)
Dr. Rhian Waller	Post-doctoral Investigator/Fellow (2004- 2007)
Dr. Breea Govenar	Post-doctoral Investigator/Fellow (2005- 2010)
Dr. Kate Buckman	Post-doctoral Investigator (2009- 2010)
Dr. Walter Cho	Post-doctoral Investigator (2008- 2012)
Dr. Martha Hauff	Post-doctoral Investigator (2012- 2013)

Guest Investigators

Dr. Jess Adkins	California Institute of Technology, CA
Dr. Scott France	College of Charleston, SC

Dr. Jon Moore	Florida Atlantic University, FL
Dr. Daniel Scheirer	US Geological Survey, CA
Dr. Thomas Shirley	University of Alaska, Fairbanks, AK
Dr. Marco Taviani	Instituto di Scienze Marine, Bologna, Italy

HIGHLIGHTED OUTREACH

2001 Consultant, the Center of Science and Industry (COSI) and the Simex Corporation, the BBH's Extreme Deep Museum Exhibit.

2002 Galápagos research featured in a National Geographic Television 6 part series
Research education on more than 30 cruises featured as NOAA, NSF, SEAS, FLEXE and GLOBE signature cruises for education and outreach (to present)
Research featured in "Wild Moments" (children's television program)
Research featured in Discover magazine (Sept); National Public Radio's weekend edition
Consultant to the American Museum of Natural History's Deep-Sea Exhibit.
Co-developed high-school and undergraduate educational CD on the 25th Anniversary of the Discovery of Hydrothermal Vents
Co-developed web-based biological learning module for Dive and Discover web portal

2003 Co-editor, children's book: "*Journey to Undersea Gardens*", Celebration Press; popular description of scientific results from the Galápagos Rift 2002 expedition
Developed educational curricula for "Learning Ocean Science through Ocean Exploration" (in collaboration with Paul Keener-Chavis and NOAA; Community Ecology and Sampling)
Participated in Extreme 2003 interactive education web portal with the Univ. of Delaware
Coordinated GCG Genetic Analysis Workshop in Woods Hole
Designed biological education curricula for NOAA classroom outreach program
Research featured in Science (v296:p1965), Harvard Magazine, New York Times, Astrobiology Web, and Korean Broadcasting Ocean Series television program
NOAA, NSF, and WHOI expedition web portals with daily cruise/research updates; and featured in several television programs for the Discovery Channel, BBC, Korean Broadcasting Ocean Series, National Geographic and USA network.
Lost City hydrothermal vent research featured on University of Washington & NSF web portals

2004 Created web-based survey, "Survey of Future Needs and Upgrades for Deep Submergence Biological Research" to obtain input and feedback from the science community on the future needs for biological research (for the new Alvin submersible and Jason II overhaul in 2005) (http://www.surveymonkey.com/MySurveys.asp?Rnd=0.4924977).
Annual elementary and middle school presentations (e.g., science classes at Clarke Middle School, Lexington MA and Falmouth MA as well as hosting these classes with education modules at WHOI)
Co-developed and implemented the SEAS (RIDGE2000 education) Program; (proposal reviewer; conducted student seafloor experiments with interactive internet and classroom visits).

2005 Participated in inaugural launching of the Census of Marine Life for Chemosynthetic Ecosystems expeditionary web portal
Implemented the SEAS (RIDGE2000 education) Program (proposal reviewer; conducted student experiments on the seafloor with interactive internet and classroom visits)
Spotlighted SEAS Program scientist for 2005
Operated Dive and Discover education web portal for "Return to Galápagos Rift" expedition
Research featured in Marine Scientist journal (European)
Research featured in first NOAA OE "telepresence" technology expedition to Lost City

2006 Participated in inaugural launching of RIDGE2000 "Classroom to Sea" web-based curriculum
Developed Podcast for the Deep-Ocean Exploration Institute at WHOI
NOAA, NSF, and WHOI expedition web portals with daily cruise/research updates
NOAA workshop presentations to marine educators at the New England Aquarium
Science consultant to Jeopardy (game show) program

2007 Continued annual elementary and middle school presentations (8 in 2007)
Designed hands on curricula between students and scientists as part of the "From Local to Extreme Environments" (FLEXE), a GLOBE (Global Learning and Observations to Benefit

the Environment: connecting the next generation of scientists) Program for the study of the deep ocean.

Research featured in more than 15 major print, web, and television news and science outlets, including Science, Nature News, NPR, and BBC News.

2008 Developed genetic educational modules for understanding basics of DNA and the application to understanding the evolution of adaptations in the deep sea (invited from NOAA).

Hosted elementary and Middle School classrooms for hands on laboratory experience

Co-developed educational web portal featuring 30 years of discoveries in hydrothermal vent systems for the 30th Anniversary of the Discovery of Hydrothermal Vents

Researched featured in "Oceans: What Lies Beneath" (BBC Radio series)

2009 Co-convened Seamounts 09 Workshop, Exploration, Biogeosciences, and Fisheries (Scripps)

Gakkel and Astrobiology research program on PBS's Nova Science Now TV and web programs

Marianas Research program featured in international broadcast of "Dive to the Bottom of the World" the Science Channel/Discovery Channel

Marianas research program featured in more 30 major print, web, and television outlets

Hydrothermal vent research program featured in national NHK broadcast in Japan Ocean Geographic Article

Panel member for Press Conference on the discovery of West Mata erupting volcano, Fall AGU

Creatures of the Abyss (Bishop museum exhibit contributor, featuring interviews)

Researched featured: "How the Earth was Made: Deepest Places on Earth" (History Channel)

2010 Co-edited a Special Issue volume on Seamounts in the Journal of *Oceanography*

Panel member for Press Conference on the 50th Anniversary of Trieste, National Press Club, DC

Research featured in more than 15 major print, web, and television news and science outlets, including several features in The Economist, Nature News, NSF and NOAA media press

2011 Research featured in more than 30 major print, web, and television news and science outlets, focused on chemosynthetic ecosystems, trench biology, and the Gulf of Mexico oil spill response, deep-water findings and impacts.

2012 Research featured in more than 35 major print, web, and television news and science outlets, including *Nature* and *Science* (Hadal Ecosystems Studies and Hydrothermal Vent Metapopulation Dynamics) (Research featured in National Geographic film "Alien Deep").

2013 Research featured in more than 40 major print, web, and television/radio news and science outlets, including Scientific American, Wall Street Journal, NPR, *Nature* and *Science* (Hadal Ecosystems Studies Program and seamount ecosystem dynamics and conservation). Research featured in dedicated exhibit at the Ocean Hall Smithsonian Institution National Museum of Natural History – "Ocean as a Lab".