

Mindy Lou Richlen

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Education

B.S. Biology, Virginia Polytechnic Institute and State University, 1993
M.S. Environmental Science, American University, 2001
Ph.D. Biology, Boston University, 2008. Advisor: Dr. Phillip Lobel
Dissertation Title: The Ecology and Phylogeography of Ciguatera on Coral Reefs

Professional Experience

2015-present Research Specialist, Woods Hole Oceanographic Institution (WHOI)
2010-2015 Research Associate III, WHOI
2007-2010 Postdoctoral Investigator, WHOI. Advisor: Dr. Donald Anderson
2005-2006 Research Assistant, Marine Biological Laboratory
2002-2005 Graduate Research Assistant, Boston University Marine Program
1998-2002 Policy Analyst, ADI Technology Corp., Arlington, VA
1997-1998 Policy Analyst, Designers & Planners, Inc., Arlington, VA

Awards

2006 American Institute of Biological Sciences Emerging Public Policy Leader Award, Honorable Mention
2006 Palmer-McLeod Fellowship, Boston University
2005 Arthur G. Humes Alumni Award, Boston University

Research Interests

Ecology and molecular biology of phytoplankton taxa responsible for harmful algal blooms, particularly questions regarding the determinants of bloom structure and the biogeography of species and strains.

Professional Activities

- Associate Director, Cooperative Institute for the North Atlantic Region (CINAR)
- U.S. National HAB Committee, Ex Officio member
- Editorial Advisory Board, Harmful Algae
- Reviewer for NOAA ECOHAB program; manuscript reviews for Aquatic Microbial Ecology, Desalination and Water Treatment, Journal of Applied Phycology, Journal of Biogeography, Journal of Biological Research, Journal of Phycology, Journal of Proteomics, PLoS One, Harmful Algae, Hydrobiologia, Marine Ecology Progress Series, Marine Ecology Resources,

Marine Genomics, Molecular and Cellular Proteomics, Oceanologia, Polar Biology, Toxicon, Toxins.

- Session Chair, Sixth Symposium on Harmful Algae in the U.S., Austin, TX, 2011

Participation in Education

- Thesis committee member: Lacey Rains (FGCU, M.S. awarded 2015)
- Thesis committee member: Chris Loeffler (UVI, M.S. awarded 2011)
- Co-mentor: Yixiao Xu (guest student, Nanjing University, P.R. China, Ph.D. awarded 2013)
- Guest lecturer, Sea Education Association (2008-2010)
- Guest lecturer, Boston University (2010)
- Guest lecturer, University of the Virgin Islands (2009)
- Graduate Teaching Fellow, Boston University Marine Program: Tropical Biology field course, Wee Wee Caye, Belize (2004, 2006); Tropical Biology field course, St. John, USVI (2005); Ichthyology course, laboratory and lecture; 2004

Supervision

2013-present Taylor Sehein, Research Assistant

2008-2013 Northeastern University undergraduate co-op interns, (13)

2008-2009 NOAA Hollings Scholars (2)

Cruise Participation/Field Experience

2012 Oceanographic cruise, ARCHEMHAB expedition: Greenland to Iceland (Jul 23-Aug 9) aboard RV Maria S. Merian

2011 Marakei, Kiribati: Field sampling for benthic dinoflagellates

2007, 2010 St. Thomas, USVI: Field sampling for benthic dinoflagellates

2003 Johnston Atoll, Pacific Ocean: SCUBA-based sampling for benthic dinoflagellates

Peer-reviewed Publications

Richlen, M.L., Barber, P.H. (2005) A technique for the rapid extraction of microalgal DNA from single live and preserved cells. *Molecular ecology notes* 5: 688-691.

Richlen, M.L., Morton, S.L., Barber, P.H., Lobel, P.S. (2008) Phylogeography, morphological variation and taxonomy of the toxic dinoflagellate *Gambierdiscus toxicus* (Dinophyceae). *Harmful Algae* 7 (5): 614-629.

McCauley, L.A.R., Erdner, D.L., Nagai, S., **Richlen, M.L.**, Anderson, D.M. (2009) Biogeographic analysis of the globally distributed harmful algal bloom species *Alexandrium minutum* (Dinophyceae) based on rRNA gene sequences and microsatellite markers. *Journal of Phycology* 45 (2): 454-463.

Richlen, M.L., Morton, S.L., Jamali, E.A., Rajan, A., Anderson, D.M. (2010) The catastrophic 2008 – 2009 red tide in the Arabian Gulf region, with observations on the identification and phylogeny of the fish-killing dinoflagellate *Cochlodinium polykrikoides*. *Harmful Algae* 9: 163-172.

- Erdner, D.L., **Richlen, M.L.**, McCauley, L.A.R, Anderson, D.M. (2011) Intrapopulation Diversity and Dynamics of a Widespread Bloom of the Toxic Dinoflagellate *Alexandrium fundyense*. PLoS ONE 6(7): e22965. doi:10.1371/journal.pone.0022965.
- Richlen, M.L.**, Lobel, P.S. (2011) Effects of depth, habitat, and water motion on the abundance and distribution of ciguatera dinoflagellates at Johnston Atoll, Pacific Ocean. Marine Ecology Progress Series. 421: 51-66.
- Richlen, M.L.**, Erdner, D.L., McCauley, L.A.R., Libera, K., Anderson, D.M. (2012) Extensive genetic diversity and rapid population differentiation during blooms of *Alexandrium fundyense* (Dinophyceae) in the Nauset Marsh System, Cape Cod, MA, USA. Ecology and Evolution, 2(10), 2588-2599. DOI - 10.1002/ece3.373.
- Xu, Y., **Richlen, M. L.**, Morton, S. L., Mak, Y. L., Chan, L. L., Tekiau, A., Anderson, D. M. (2014) Distribution, abundance, and diversity of *Gambierdiscus* spp. from a ciguatera-endemic area in Marakei, Republic of Kiribati. Harmful Algae, 34: 56-68.
- Fernandes, L.F., Hubbard, K.A., **Richlen, M.L.**, Smith, J., Bates, S.S., Ehrman, J., Léger, C., Mafrá Jr, L.L., Kulis, D., Quilliam, M., Libera, K., McCauley, L., Anderson, D.M. (2014) Diversity and toxicity of the diatom *Pseudo-nitzschia* Peragallo in the Gulf of Maine, Northwestern Atlantic Ocean. Deep Sea Research Part II: Topical Studies in Oceanography, 103: 139-162.
- Anderson, D.M., Couture, D.A., Kleindinst, J.L., Keafer, B.A., McGillicuddy, D.J., Martin, J.L., **Richlen, M.L.**, Hickey, J.M., Solow, A.R. (2014) Understanding interannual, decadal level variability in paralytic shellfish poisoning toxicity in the Gulf of Maine: the HAB Index. Deep Sea Research Part II: Topical Studies in Oceanography, 103: 264-276.
- Tong, M., Smith, J., **Richlen, M.L.**, Steidinger, K., Kulis, D., Fux, E., Anderson, D.M. (2015) Characterization and comparison of toxin-producing isolates of *Dinophysis acuminata* from New England and Canada. Journal of Phycology, 51:66-81.
- Parsons, M.L., **Richlen, M.L.** An Overview of Ciguatera Fish Poisoning in the Bahamas. Accepted for publication in the Proceedings of the 15th Symposium on the Natural History of the Bahamas.
- Loeffler, C.R., **Richlen, M.L.**, Brandt, M.E., Smith, T.S. (2015) In situ effects of grazing, nutrients, and depth on the ciguatera-causing dinoflagellate *Gambierdiscus* in the U.S. Virgin Islands. Marine Ecology Progress Series, 531:91-104. doi: 10.3354/meps11310.
- Sehein, T.R., **Richlen, M.L.**, Nagai, S., Yasuike, M., Nakamura, Y. Characterization of 17 new microsatellite markers for the dinoflagellate *Alexandrium fundyense* (Dinophyceae), a harmful algal bloom species. Accepted for publication by Journal of Applied Phycology.

Other Publications

- Richlen, M.L.**, Parsons, M., Anderson, D.M. (2012) Ecology and impacts of ciguatera on coral reef ecosystems. In: Advances in Environmental Research, V. 26, pp. 41-76 Nova publishing.

Oral Presentations

- Richlen, M.L.**, Lyu, Y., Smith, J., Cembella, A., Anderson, D.M. "Cyst distribution, viability, and growth characteristics of *Alexandrium tamarense* from Arctic waters", *Oral Presentation at the International Conference on Harmful Algae, Wellington, New Zealand, October 2014.*

- Richlen, M.L.**, Crespo, B.G., Adams, J., Keafer, B., Erdner, D.L., Anderson, D.M. "Population structure and genetic dynamics of toxic *Alexandrium fundyense* (Dinophyceae) blooms in coastal embayments", *Oral Presentation at the Seventh Symposium on Harmful Algae in the U.S., Sarasota, FL, October 2013.*
- Richlen, M.L.** "Ecology and diversity of *Gambierdiscus*: Towards an integrated study of Ciguatera Fish Poisoning", *Invited talk, SKLMP-MEL Joint Symposium, Shenzhen, China, January 2013.*
- Morris, J.G., Smith, T., **Richlen, M.L.**, Robertson, A., Radke, E., Roberts, S., Grattan, L., Anderson, D.M. Ciguatera in St. Thomas, USVI. *Invited talk (speaker panel), University of the Virgin Islands, September 2012.*
- Richlen, M.L.** Population dynamics, diversity, and physiology of ciguatera associated dinoflagellates from St. Thomas, U.S. Virgin Islands. *Invited talk, Dauphin Island Sea Lab, Dauphin Island, AL, February 2012.*
- Richlen, M.L.**, Smith, T., Robertson, A., Xu, Y., Kulis, D., Flores Quintana, H.A., Garcia, A.C., Hooe-Rollman, J.I., Anderson, D.M. Population dynamics, diversity, and physiology of ciguatera associated dinoflagellates from St. Thomas, U.S. Virgin Islands. *Oral Presentation at the Sixth Symposium on Harmful Algae in the U.S., Austin, TX, November 2011.*
- Richlen, M.L.**, Erdner, D., McCauley, L., Libera, K., Anderson, D.M. Extensive genetic diversity and rapid population succession during blooms of *Alexandrium fundyense* (Dinophyceae) in an isolated salt pond on Cape Cod, MA, USA. *Oral Presentation at the American Society of Limnology and Oceanography, San Juan, Puerto Rico, February 2011*
- Richlen, M.L.** Impact of Climate on Dinoflagellates and Ciguatera Fish Poisoning. *Invited talk at the University of the Virgin Islands, St. Thomas, USVI, December 2010.*
- Richlen, M.L.**, Erdner, D., McCauley, L., Libera, K., Anderson, D.M. Extensive genetic diversity and rapid population succession during blooms of *Alexandrium fundyense* (Dinophyceae) in an isolated salt pond on Cape Cod, MA, USA. *Oral Presentation at the International Conference on Harmful Algae, Crete, Greece, November 2010.*
- Fernandes, L.F., **Richlen, M.L.**, Kulis, D., Erdner, D.L., Bates, S.S., Ehrman, J., McCauley, L.A.R., Libera, K., Liang, J., Anderson, D.M. Taxonomy, toxicity and distribution of *Pseudo-nitzschia* diatoms in the Gulf of Maine: Characterizing an emerging threat in the region. *Oral Presentation at the Fifth Symposium on Harmful Algae in the U.S., Ocean Shores, WA, November 2009.*
- Richlen, M.L.** Examining the determinants of ciguatera fish toxicity: Ecology and biodiversity of benthic dinoflagellates, phylogeography of *Gambierdiscus toxicus* and herbivore digestive mechanisms. *Invited talk at WHOI, Woods Hole, MA, June 2009.*
- Richlen, M.L.** Causes and Impacts of Ciguatera Fish Poisoning. *Invited talk for the WHOI Science Made Public lecture series, Woods Hole, MA, August 2008.*
- Richlen, M.L.**, Morton, S.L., Barber, P.H., Lobel, P.S. Phylogeography, morphological variation, and taxonomy of the toxic dinoflagellate *Gambierdiscus toxicus* (Dinophyceae). *Oral Presentation at the Phycological Society of America annual meeting, Providence, RI, August 2007.*
- Richlen, M.L.** The continuing enigma of ciguatera: progress? *Invited talk at the Marine Biological Laboratory (MBL), Woods Hole, MA, 2006.*
- Richlen, M.L.** & Barber, P.H. Genetic variation in *Gambierdiscus toxicus*. *Oral presentation at*

the 44th annual meeting of the Northeast Algal Society, Rockport, ME, 2005.

Richlen, M.L. Evaluating the determinants of ciguatera fish toxicity: ecological and molecular research. *Invited talk at the MBL, Woods Hole, MA, 2005.*

Professional Affiliations

- International Society for the Study of Harmful Algae (ISSHA)
- American Association for the Advancement of Science (AAAS)
- Sigma Xi, the Scientific Research Society
- American Society of Limnology and Oceanography

Additional Skills and Courses

- *Workshop on Molecular Evolution*, Marine Biological Laboratory, Woods Hole. Jul 24-Aug 2, 2011
- *Strategies and Techniques for Analyzing Microbial Populations*, Marine Biological Laboratory, Woods Hole. Aug 3-10, 2011
- *Proteomics*, Cold Spring Harbor Laboratory, NY, Jul 22-Aug 4, 2010
- PADI advanced SCUBA diver certification