# JAY J. LUNDEN

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## EDUCATION

**2013** **Ph.D. in Biology**, Department of Biology, Temple University, Philadelphia, PA
"Ocean acidification and the cold-water coral *Lophelia pertusa* in the Gulf of Mexico."

**2007** **B.S. in Biology**, *cum laude*, Temple University, Philadelphia, PA
Minor: Political Science

## PROFESSIONAL EXPERIENCE

**2017-present** **Visiting Assistant Professor**, Department of Biology, Haverford College.

**2015-present** **Adjunct Faculty**, Department of Biology, Temple University

**2016-2017** **Assistant Professor**, Department of Biological Sciences, Lock Haven University of Pennsylvania.

**2015-2016** **Postdoctoral Research Associate**, Darling Marine Center, University of Maine.
Advisor: Rhian Waller

**2013-2015** **Postdoctoral Scholar**, Department of Ecology, Evolution, and Marine Biology, University of California, Santa Barbara. Advisor: Gretchen Hofmann

**2008-2013** **Graduate Research Assistant**, Department of Biology, Temple University.
Advisor: Erik Cordes

**2007-2012** **Graduate Teaching Assistant**, Department of Biology, Temple University.
Experimental Marine Biology, Intro to Biology I, General Biology I & II, Human Biology

## FELLOWSHIPS AND AWARDS

**2018** **Faculty Travel Award**, Haverford College Koshland Integrated Science Center (KINSC)

**2012** **Student Travel Award**, DEep Submergence Science Committee (DESSC)

**2012** **Student Travel Award**, Department of Biology, Temple University

**2011** **Excellence in Partnership Award**, National Oceanographic Partnership Program (NOPP), awarded to the members of the Lophelia II team

**2011** **Student Travel Award**, Association for the Sciences of Limnology and Oceanography (ASLO)

**2011** **Student Travel Award**, Department of Biology, Temple University

**2010** **Nathan D. Apple Scholarship for Distinction in Biology**, Temple University

**2010** **Student Travel Award**, Census of Marine Life Continental Margin Ecosystems (COMARGE)

**2008-2010** **National Science Foundation Bridge to the Doctorate Fellowship**

**2008** **Nathan D. Apple Scholarship for Distinction in Biology**, Temple University

**2005-2007** **Dean's List**, College of Science & Technology, Temple University

**2003-2007** **Temple Scholar Award**, Temple University

## RESEARCH FUNDING

**2017-2022** **Bureau of Ocean Energy Management & NOAA**, "Deep-water Atlantic Habitats II: Continued Atlantic Research and Exploration in Deepwater Ecosystems with Focus on Coral, Canyon, and Seep Communities." Senior Personnel.

**2014** **NOAA Channel Islands National Marine Sanctuary**, "Co-locating sensors with biology: Assessing environmental variability among natural populations of planktonic calcifiers in the Channel Islands National Marine Sanctuary." Lead PI.

**2011** **Society of Integrative and Comparative Biology**, Grant-in-Aid of Research, "Gene expression in cold-water corals under acidified conditions." Lead PI.

## PUBLICATIONS

6. Kelley, A.L. & **J.J. Lunden**. (2017) Meta-analysis identifies metabolic sensitivities to ocean acidification. *AIMS Environmental Science* 4:709-729. Doi:10.3934/environsci.2017.5.709
5. Kurman, M.*, C.E. Gómez, S.E. Georgian, **J.J. Lunden**, & E.E. Cordes. (2017) Intra-specific variation reveals potential for adaptation to ocean acidification in a cold-water coral from the Gulf of Mexico. *Front. Mar. Sci.* 4:11. Doi:10.3389/fmars.2017.00111
4. Georgian, S.E., D.M. DeLeo, A. Durkin, C. Gomez, M. Kurman*, **J.J. Lunden**, & E.E. Cordes. (2016). Oceanographic patterns and carbonate chemistry in the vicinity of cold–water coral reefs in the Gulf of Mexico: implications for resilience in a changing ocean. *Limnol. Oceanogr.* 61: 648-665. Doi:10.1002/lno10242
3. **Lunden, J.J.**, C.G. McNicholl*, C.R. Sears*, C.L. Morrison, & E.E. Cordes. (2014b). Acute survivorship of the deep-sea coral *Lophelia pertusa* from the Gulf of Mexico under acidification, warming, and deoxygenation. *Front. Mar. Sci.* 1:78. doi: 10.3389/fmars.2014.00078
2. **Lunden, J.J.**, J.M. Turner*, C.G. McNicholl*, C.K. Glynn*, & E.E. Cordes. (2014a). Design, development, and implementation of recirculating aquaria for maintenance and experimentation of deep-sea corals and associated fauna. *Limnol. Oceanogr.: Methods*. 12:363-372.
1. **Lunden, J.J.**, S.E. Georgian, & E.E. Cordes. (2013). Aragonite saturation states at cold-water coral reefs structured by *Lophelia pertusa* in the Northern Gulf of Mexico. *Limnol. Oceanogr*. 58:354-362.

** indicates undergraduate co-author*

## MANUSCRIPTS IN PROGRESS

Auscavitch S., **J.J. Lunden**, A.M. Quattrini, A.W.J. Demopoulos, & E.E. Cordes. Local oceanography influences the distribution, diversity, and phylogenetic community structure of deep-sea corals on seamounts in the Anegada Passage. **In prep** for *PeerJ* (October 2018 submission).

## BOOK CHAPTER

Orejas, C., M. Taviani, S. Ambroso, V. Andreou, M. Bilan, M. Bo, S. Brooke, P. Buhl-Mortensen, E.E. Cordes, C. Dominguez-Carrio, C. Ferrier-Pages, A. Godinho, A. Gori, J. Grinyo, C. Gutierrez-Zarate, S. Hennige, C. Jimenez, A.I. Larsson, **J.J. Lunden**, C. Maier, S. Maier, J. Movilla, F. Murray, E. Peru, A. Purser, M. Rakka, S. Reynaud, J.M. Roberts, P. Siles, S.M. Stromberg, L. Thomsen, D. van Oevelen, A. Veiga, & M. Carreiro-Silva. Cold-water corals in aquaria: advances and challenges. A focus on the Mediterranean. In: Orejas, C., Jimenez C. (eds.). Mediterranean Cold-Water Corals: Past, Present and Future. Springer. **In press**.

## PRESENTATIONS OF RESEARCH

**2016** 6th International Symposium on Deep Sea Corals; Boston, MA; **Oral**.
**2014** Gordon Research Conference: Ocean Global Change Biology; Waterville Valley, NH; **Poster**.
**2014** ASLO Ocean Sciences Meeting; Honolulu, HI; **Poster**.
**2012** 5th International Symposium on Deep Sea Corals; Amsterdam, Netherlands; **Oral**.
**2011** Bureau of Ocean Energy Management, Regulation, and Enforcement Information Transfer Meeting; New Orleans, LA; **Invited oral**.
**2011** ASLO Aquatic Sciences Meeting; San Juan, PR; **Oral**.
**2010** 2nd Graduate Fellows Research Symposium; Temple University, Philadelphia, PA; **Oral**.
**2010** 12th International Deep Sea Biology Symposium; Reykjavik, Iceland. **Poster**.
**2010** ASLO Ocean Sciences Meeting; Portland, OR. **Poster**.
**2009** 1st Graduate Fellows Research Symposium; Temple University, Philadelphia, PA; **Oral**.

## INVITED PRESENTATIONS

**2017** Global Change Biology and Marine Invertebrates: From the Bottom of the Ocean to the Bottom of the World. Department of Biology, Moravian College. 7 Feb.
**2017** From Ocean Depths to Antarctic Ice: Animals in the Anthropocene. Department of Biology, Lock Haven University. 3 Feb.
**2016** Introduction to Animal Diversity: Perspectives from the Bottom of the Ocean to the Bottom of the World. Department of Biology, Lock Haven University. 23 Feb.
**2013** Ocean acidification and the cold-water coral *Lophelia pertusa* in the Gulf of Mexico. Hofmann Lab group, Department of Ecology, Evolution, and Marine Biology, University of California Santa Barbara. 31 May.
**2011** Ocean acidification and the cold-water coral *Lophelia pertusa* in the Gulf of Mexico. Marine Biology Group, Department of Biology, Penn State University. 16 Sept.

## RESEARCH CRUISES

**2018** BOEM/NOAA-OER DEEPSEARCH, N. Atlantic Ocean, R/V *Atlantis*, DSV *Alvin*, 14 days, 1 submersible dive. Chief Scientist: Erik Cordes.
**2015** NSF United States Antarctic Program: Cold corals in hot water, Drake Passage/Western Antarctic Peninsula, ARSV *Lawrence M. Gould*, 10 days.
**2014** **Chief Scientist**, NOAA Channel Islands Research Cruise for Acidification Studies (CIRCAS), Santa Barbara Channel, R/V *Shearwater*, 4 days.
**2014** NSF Ocean Acidification: *Acid Horizon*, Gulf of Mexico, R/V *Atlantis*, DSV *Alvin*, AUV *Sentry*, 16 days, 3 submersible dives. Chief Scientist: Erik Cordes.
**2012** SOI Deep Coral Shakedown, Gulf of Mexico, R/V *Falkor*, ROV *Global Explorer*, 12 days. Chief Scientist: Peter Etnoyer.
**2012** **Chief Scientist**, BOEM/NOAA-OER Lophelia II, Gulf of Mexico, R/V *Brooks McCall*, ROV *Kraken2*, 10 days.
**2011** E/V *Nautilus* Exploration Program, North Atlantic Ocean, E/V *Nautilus*, ROV *Hercules*, 12 days. Chief Scientist: Jeff Karson.

**2010** BOEM/NOAA-OER Lophelia II, Gulf of Mexico, NOAA Ship *Ronald H. Brown*, ROV *Jason II*, 21 days. Chief Scientists: Erik Cordes & Chuck Fisher.

**2009** NSF Symbiosis, Gulf of Mexico, R/V *Seward Johnson*, HOV *Johnson SeaLink*, 5 days, 1 submersible dive. Chief Scientist: Ken Halanych.

**2009** BOEM/NOAA-OER Lophelia II, Gulf of Mexico, NOAA Ship *Ronald H. Brown*, ROV *Jason II*, 18 days. Chief Scientists: Chuck Fisher & Erik Cordes.

**2009** BOEM/NOAA-OER Lophelia II, Gulf of Mexico, R/V *Brooks McCall*, AUV *Sentry*, 14 days. Chief Scientist: Ian MacDonald.

**2008** BOEM/NOAA-OER Lophelia II, Gulf of Mexico, NOAA Ship *Nancy Foster*, ROV *SeaEye Falcon DR*, 12 days. Chief Scientist: Erik Cordes.

## FIELD EXPERIENCE

**2015** **Cold corals in hot water: responses of Antarctic coral larvae to ocean change**, United States Antarctic Program, B-248-P, Palmer Station, Antarctica (17 Oct. – 31 Dec.)

**2014** **Linking pH variability to zooplankton physiological performance**, United States Antarctic Program, B-134-M, McMurdo Station, Antarctica (27 Sep. - 19 Dec.)

**2013-2015** **Management of pH sensor network**, Santa Barbara Coastal LTER, Santa Barbara Channel, Santa Barbara, CA

## TEACHING EXPERIENCE

***University Courses***

**2017-present** **Instructor**, Haverford College
Perspectives in Biology (BIOL H129), Cell Structure & Function (BIOL 200), Invertebrate Cell Biology (BIOL 304), Molecular Microbiology (BIOL 310)

**2017-present** **Instructor**, Temple University
Experimental Marine Biology (BIOL 3244)

**2016-2017** **Instructor**, Lock Haven University
Zoology (BIOL 240) lecture & lab, Basic Biology (BIOL 101) lab, Principles of Biology (BIOL 106/107) lab

**2015** **Guest Lecturer**, University of Maine
School of Marine Science Freshmen Orientation Week
Lecture: "Introduction to Deep-Sea Biology"

**2015** **Instructor**, Temple University
Introduction to Biology (BIOL 1111) Skills for Organization and Analytical Reasoning

**2014** **Co-Instructor**, University of California, Santa Barbara
Field Studies in Marine Ecophysiology (EEMB 165)

**2012** **Guest Lecturer**, Haverford College (15 Mar.)
Lab in Chemical Structure and Reactivity (CHEMH302B01)
Lecture: "Cold-Water Corals in the Gulf of Mexico and Beyond"

**2011** **Guest Lecturer**, University of Pennsylvania (26 Oct.)
Global Climate Change (ENVS 204)
Lecture: "Carbonate Chemistry, Ocean Acidification & Physiological Impacts of OA"

**2011** **Guest Lecturer**, Temple University (multiple dates)
Experimental Marine Biology (BIOL 3196)
Lectures: "Ocean Acidification"; "Community Ecology"; "Reproduction"

**2007-2012** **Teaching Assistant**, Biology Department, Temple University

***Undergraduate Research Mentoring***

**Temple University (9):** Jeffrey Turner (2008-2009), Bonnie Evans (2009), Sabatino Campellone (2010), Natasha Remon (2011), Salma el-Ashry (2011), Chris Sears (2011-2012), Conall McNicholl (2011-2013), Chloe Glynn (2012-2013), Holly Fowle (2012-2013)
**University of California, Santa Barbara (1):** Mark Bitter (2014-2015)
**University of Maine (2):** Maggie Halfman (2015), Augustus Pendleton (2016)
**Lock Haven University of Pennsylvania (1):** Sarah Sette (2017)
**Haverford College (8):** Abigail Mumme-Monheit (2017-present), Laura Donahue (2018-present), Jake Ephron (2018-present), Paige Powell (2018-present), Hanae Togami (2018-present), Rod Beale (2017-2018), Rina Rosnow (2017-2018)

## WORKSHOPS

**2018** Polar Science Literacy & Communication, Portland OR (11 Feb.)
**2015** Ocean acidification principal investigators (OAPI) meeting, Woods Hole, MA (9-11 Jun.)
**2014** **Invited participant**, Telepresence-enabled exploration of the Eastern Pacific Ocean, Ocean Exploration Trust, San Francisco, CA (11-13 Dec.)
**2014** **Invited participant**, Best practices for pH sensors, Scripps Institution of Oceanography, San Diego, CA (4-8 Aug.)
**2014** NOAA Effective practices for communicating ocean acidification, Honolulu, HI (26 Feb.)
**2012** DEep Submergence Science Committee (DESSC) early career scientist workshop, San Francisco, CA. (1-2 Dec.)
**2010** MMS/NOAA-OER/USGS Deep-sea coral workshop, Shepherdstown, WV. (17-18 Feb.)

## PROFESSIONAL SERVICE

**2018** **Technical Review Panel**, Mid-Atlantic Sea Grant/NOAA Ocean Acidification Graduate Fellowship Program
**2013-present** **Article Reviewer** for *Biogeosciences; Proc. R. Soc. B.*; *Environ. Sci. Technol.; Deep-Sea Research Pt. I*; *Deep-Sea Research Pt. II* (2)*; J. Exp. Mar. Biol.*, *Progress in Oceanography*
**2011-2013** **Vice President & Faculty Liaison**, Biology Graduate Student Society, Temple University
**2010-2011** **Co-founder and Treasurer**, Biology Graduate Student Society, Temple University
**2006-2007** **Student Ambassador**, College of Science & Technology, Temple University
**2006-2007** **President**, Biology Society, Temple University
**2005-2006** **Public Relations Director**, Biology Society, Temple University

## OUTREACH, COMMUNITY SERVICE & INFORMAL PUBLIC EDUCATION

**2017-present** **Buddy Program volunteer**, Action Wellness, Philadelphia, PA
**2017** **Faculty discussant**, Haverford College Biology Film Series – *Chasing Coral*
**2016-2017** **Executive committee member,** SafeZone, Lock Haven University, Lock Haven, PA
**2015** **Presenter**, Penrose Elementary School Career Day, Philadelphia, PA
**2012-2014** **Supporting role, *Acid Horizon***, ocean acidification documentary, www.acidhorizon.com
**2012** **Composition of website content for NOAA Ocean Explorer**, "Lophelia II 2012: Deepwater Platform Corals." Mission plan, background essay, daily log, and mission summary

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| **2011-2012** | **Curriculum design and review for ocean acidification and coral lesson plans**, NSF Ridge 2000 |
| **2010** | **Composition of website content for NOAA Ocean Explorer**, "Lophelia II 2010: Oil Seeps and Deep Reefs." Background essay. |
| **2009** | **Composition of website content for NOAA Ocean Explorer**, "Lophelia II 2009: Deepwater Coral Expedition: Reefs, Rigs, and Wrecks." Background essay and daily log. |
| **2008-2010** | **Science instructor**, Exxon Mobil Bernard Harris Summer Science Camp; Ambler, PA |
| **2008** | **Composition of website content for NOAA Ocean Explorer**, "Lophelia II 2008: Deepwater Coral Expedition: Reefs, Rigs, and Wrecks." Daily log. |

## MEDIA COVERAGE OF RESEARCH

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| **2014** | "Underwater Meadows Might Serve as Antacid for Acid Seas"; **NPR Morning Edition**, originally aired 15 July. http://www.npr.org/2014/07/15/330440072/underwater-meadows-might-serve-as-antacid-for-acid-seas |

## FIELD COURSES

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| **2009** | **Tropical Marine Biology**, Marine Tropical Research and Education Center, Ambergris Caye, Belize. Instructor: Robert W. Sanders |

## PROFESSIONAL SOCIETY MEMBERSHIPS

Society for Integrative and Comparative Biology (SICB)
Association of the Sciences for Limnology and Oceanography (ASLO)

## PROFESSIONAL REFERENCES

Dr. Erik Cordes, Ph.D. Advisor
Associate Professor & Vice Chair, Department of Biology
Temple University
ecordes@temple.edu
215-204-8876

Dr. Rhian Waller, Postdoctoral Advisor
Associate Professor, School of Marine Sciences
University of Maine
rhian.waller@maine.edu
207-563-8310

Dr. Helen White
Associate Professor, Departments of Chemistry and Environmental Studies
Director, Koshland Integrated Natural Science Center
Haverford College
hwhite@haverford.edu
610-896-1000

Other references available upon request.