

# **Sara Ann Lombardi, Ph.D.**

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## **EDUCATION**

### **Ph.D. in Marine, Estuarine, Environmental Sciences**

University of Maryland

Area of Specialization: **Ecology**

Dissertation: Comparative physiological ecology of the Eastern oyster, *Crassostrea virginica*, and the Asian oyster, *Crassostrea ariakensis*: An investigation into aerobic metabolism and hypoxic adaptations

May 2012

College Park, MD

### **B.S. (with distinction) in Biology and Marine Science**

Juniata College

Minor: **Education**

Senior thesis: Effect of fish predation on the ontogenetic metabolic scaling in the freshwater amphipod (*Gammarus minus*)

May 2007

Huntingdon, PA

## **PUBLICATIONS**

### **Peer Reviewed Articles/Book Chapters**

**Lombardi SA**, Hicks RE, Thompson K, Marbach-Ad G (in review) Are all hands-on activities equally effective? Effect of using plastic models, organ dissections, and virtual dissections on student learning and perceptions. *Advances in Physiology Education*

**Lombardi SA**, Chon GD, Lee J J-W, Lane HA, Paynter KT (in press) Comparing shell hardness and compressive strength of the Eastern oyster, *Crassostrea virginica*, and the Asian oyster, *Crassostrea ariakensis*. *Biological Bulletin*.

**Lombardi SA**, Harlan NP, Paynter KT (2013) Survival, acid-base balance, and gaping responses of the Asian oyster, *Crassostrea ariakensis*, and the Eastern oyster, *Crassostrea virginica*, during clamped emersion and hypoxic immersion. *Journal of Shellfish Research*. 32(2): 309-415

Glazier DS, Butler EM, **Lombardi SA**, Depolita TJ, Reese AJ, Satterthwaite EV (2011) Fish predators influence growth and ontogenetic scaling of metabolic rate with body mass in the freshwater amphipod *Gammarus minus*. *Ecological Monographs*. 81(4): 599-618

Reaka ML, **Lombardi SA** (2011) Hotspots on global coral reefs. Pp.471-501 in Zachos FE, Habel JC (eds.), *Biodiversity Hotspots*, Springer Pub, NY

Kulp RE, Politano V, Lane HA, **Lombardi SA**, Paynter KT (2011) Predation of juvenile *Crassostrea virginica* by mud crabs in the Chesapeake Bay: implications for restoration. *Journal of Shellfish Research*. 30(2): 261-266

## CONFERENCE AND INVITED PRESENTATIONS

**Lombardi SA**, Hicks RE, Marbach-Ad G, Thompson K. 2013. Are all hands-on activities equally effective? Effect of using plastic models, organ dissections, and virtual dissections on student learning and perceptions. National Association for Research in Science Teaching. Rio Grande, Puerto Rico. Oral presentation.

Classen S, **Lombardi SA**, Paynter KT, Hawes M. 2012. Investigation into the hypoxic tolerances and adaptations of the Hawaiian oyster, *Dendostrea sandvicensis*. National Shellfisheries Association. Seattle, WA. Oral presentation.

**Lombardi SA**, Hicks RE. 2011. Are all hands-on activities equally effective? Effect of using plastic models, organ dissections, and virtual dissections on student learning and perceptions. Bioscience Research Day. College Park, MD. Poster presentation.

**Lombardi SA**, Hicks RE, Thompson K, Marbach-Ad G. 2011. Are all hands-on activities equally effective? Effect of using plastic models, organ dissections, and virtual dissections on student learning and perceptions. Lilly Conference on College & University Teaching. Bethesda, MD. Poster presentation.

**Lombardi SA**, Paynter KT. Hemolymph pH after clamped emersion and hypoxic gaping response in the Eastern and Asian oyster. 2011. National Shellfisheries Association. Baltimore, MD. Oral presentation.

Chon G, **Lombardi SA**, Lee J-W, Lane HA, Lawn BR, Paynter KT. 2011. Cracking under pressure: Comparing shell strength of the Eastern oysters (*Crassostrea virginica*) and Asian oysters (*Crassostrea ariakensis*). National Shellfisheries Association. Baltimore, MD. Oral presentation.

**Lombardi SA**, Paynter KT. Differences in the gaping response and hemolymph pH of the Eastern oyster, *Crassostrea virginica*, and the Asian oyster, *Crassostrea ariakensis*, when exposed to hypoxic and anoxic environments. International Conference on Shellfish Restoration. Charleston, SC. Oral presentation.

**Lombardi SA**, Paynter KT. Effect of Hypoxia and Acidosis on Adductor Muscle Function in the Eastern Oyster, *Crassostrea virginica*, and the Asian oyster, *Crassostrea ariakensis*. 2010. World Aquaculture Society/National Shellfish Association/American Fisheries Society Meeting. San Diego, CA Oral presentation.

**Lombardi SA**, Paynter KT. Differences in the gaping response and hemolymph pH of the Eastern oyster, *Crassostrea virginica*, and the Asian oyster, *Crassostrea ariakensis*, when exposed to hypoxic environments. 2010. MEES Colloquium. Easton, MD. Invited speaker.

**Lombardi SA**, Paynter KT. Hemolymph pH of the Eastern oyster, *Crassostrea virginica*, and the Asian oyster, *Crassostrea ariakensis* after anoxic exposure. 2010. Graduate Research Interaction Day. College Park, MD. Oral Presentation.

**Lombardi SA**, Paynter KT. Aerobic respiratory differences between spat of the Eastern Oyster, *Crassostrea virginica*, and the Asian Oyster *Crassostrea ariakensis*. 2009. Benthic Ecology Meeting. Corpus Christie, TX. Poster presentation.

**Lombardi SA**, Butler EM, Glazier DS. Effect of fish predation on the ontogenetic metabolic scaling in the freshwater amphipod, *Gammarus minus*. 2007. Midwest Ecology and Evolution Conference. Kent, Ohio. Poster presentation.

**Lombardi SA**, Butler EM, Glazier DS. Effect of fish predation on the ontogenetic metabolic scaling in the freshwater amphipod, *Gammarus minus*. 2007. Juniata Research Symposium. Huntingdon, PA. Oral presentation.

**Lombardi SA**, Butler EM, Glazier DS. Effect of fish predation on the ontogenetic metabolic scaling in the freshwater amphipod, *Gammarus minus*. 2005. Ecological Society of America Mid-Atlantic Annual Meeting. Baltimore, MD. Poster presentation.

**Lombardi SA**, Butler EM, Glazier DS. Effect of fish predation on the ontogenetic metabolic scaling in the freshwater amphipod, *Gammarus minus*. 2005. Juniata Research Symposium. Huntingdon, PA. Poster presentation.

## **WORKSHOPS**

- 2011– GIS Workshop (3 Course Series). University of Maryland, College Park, MD
- 2010 – Feeding Ecology Methods Workshop. George Washington University. Washington, DC
- 2010, 2011– Innovations in Teaching and Learning. University of Maryland. College Park, MD
- 2007- 2011 – Multiple Center for Teaching Excellence’s Higher Education Workshops. University of Maryland. College Park, MD
- 2007-2011 Multiple Teaching and Learning Center Workshops. University of Maryland. College Park, MD

## **HONORS & FELLOWSHIPS**

- 2012 – Completed University of Maryland’s University Teaching and Learning Program
  - Training in the theory and practice of undergraduate education

- 2011 – Best Student Poster in Education and Curricular Innovation. University of Maryland’s Bioscience Day
- 2011 – University of Maryland’s Biology Travel Award Recipient (\$500)
- 2011 – Ann G. Wylie Dissertation Fellowship (\$10,800 plus tuition)
- 2011 – Graduate Student Summer Research Fellowship (\$5000)
- 2011 – Lilly Graduate Student Conference Travel Grant Recipient
- 2011 – Graduate Research Interaction Day 2<sup>nd</sup> Place for “Changing in our Physical Environment” oral presentation category (\$400)
- 2010 – University of Maryland’s Center for Teaching Excellence’s Distinguished Teaching Award
  - Based on professor nominations
- 2009 – Outstanding Biology Teaching Assistant Award. University of Maryland (\$200)
  - Based on student evaluations
- 2008 – USA Funds Access to Education Scholarship recipient (\$1,000)
- 2005 – William J. Von Liebig Research Award for Biology (\$100)
- 2003 – Girl Scout Gold and Silver Award Recipient
  - Created a summer camp for elementary school students promoting reading

## **WORK AND TEACHING EXPERIENCE**

**Environmental Science Professorial Lecturer and Laboratory Director** August 2013– present  
American University Washington, DC

- Teaching 100 & 200 level Environmental Science courses
- Teaching, overseeing, and designing curriculum for Environmental Science Laboratory courses
- Conducting interdisciplinary research
- Supervising graduate teaching and research assistants

**Post-Doctoral Research Associate** July 2012 – present  
University of Maryland College Park, MD

- Designing and conducting experiments, analyzing and presenting data, and preparing manuscripts for peer-reviewed publications related to oyster ecosystem services, hypoxia research, and restoration management
- Mentoring undergraduate research projects

**Graduate Research Assistant** June 2010 – December 2011  
University of Maryland College Park, MD

- Investigated the mass-specific metabolic rate of two species of oysters
- Investigated the role of hypoxia on the physiological responses (acid-base homeostasis, gaping response, and muscle physiology) on three species of oysters
- Performed laboratory and field work on oyster restoration monitoring and investigating factors influencing oyster restoration
- Proficiency in *Perkinsus marinus* (dermo disease) detection
- Assisted in multiple research projects aimed at improving oyster restoration in the Chesapeake Bay

**Invited Guest Lecturer** Summer 2010/Fall 2011  
University of Maryland College Park, MD

- Human Anatomy and Physiology and Principles of Biology II
- Introduction to Biology

**Human Anatomy and Physiology I & II Teaching Assistant** August 2007 – June 2010,  
& Summer 2012, 2013  
University of Maryland College Park, MD

- For eight semesters, I taught 1-2 laboratory sections which consisted of a one hour lesson followed by two hours of guided hands-on exploration using models, dissections, and clinical technology. Other responsibilities included creating and grading quizzes, lecture exams, and practical examinations.

**Human Anatomy and Physiology I & II Preparatory Teaching Assist.** January 2008 – June 2010  
University of Maryland College Park, MD

- Oversaw the day-to-day operations of 17-30 laboratory sections involving up to 650 students
  - Organized and prepared laboratory material, trained graduate and undergraduate teaching assistants, created practical examinations, handled student and teaching assistant concerns and conflicts

**Culture, Class, and Gender Teaching Assistant** Spring/Summer 2007  
Juniata College Huntingdon, PA

- Assisted in logistics associated with student travel and education in Tamil Nadu, India

**Aquatic Director** May 2006 – August 2006  
Maritime Aquarium Norwalk, CT

- Oversaw all water-related activities of the aquarium's summer camp (e.g. seine netting, canoeing, kayaking, sailing, swimming)
- Taught biology, marine science, and natural resource management courses

**Science Educator** Seasonally, May 2006- Spring 2007  
Maritime Aquarium Norwalk, CT

- Taught biology, marine science, and natural resource management courses to pre-school through adult learners

**Aquarist Intern** May-August, December 2004-2007  
Maritime Aquarium Norwalk, CT

- 500+ hours as an animal husbandry intern with a focus on sea turtle enrichment and jellyfish aquaculture
- Daily maintenance and care of exhibit animals
- Taught marine science and salt-water husbandry skills to local elementary school students

## ADVISING AND MENTORSHIP

### Health Professions Committee Member

University of Maryland

June 2013-present

College Park, MD

- Helping prepare students for medical, dentistry, and pharmacy school admissions by conducting mock-interviews and writing their committee letters

### Supervised Undergraduate and Graduate Research

University of Maryland

January 2010-present

College Park, MD

- Assisting multiple students in developing, conducting, analyzing, and presenting scientific research

American University

- Overseeing graduate student laboratory and field research projects

### International Teaching Fellow Mentor

University of Maryland

December 2010-June 2011

College Park, MD

- Mentored international graduate students on aspects of university teaching with the Center for Teaching Excellence

## INTERNATIONAL EDUCATION EXPERIENCES

- 2009 – Wetland Science and Management. University of Maryland and University of Hamburg. Hamburg, Germany
- 2007 – Teaching Assistant for Juniata College in Tamil Nadu, India
- 2006 – Marine Science semester with Foundation for Ecological Research Advocacy and Learning and Juniata College. Tamil Nadu, India
- 2006 – Environment and Society in Guatemala. Service learning trip with Juniata College. Huntingdon, PA

## PROFESSIONAL AFFILIATIONS, COMMITTEE WORK, AND CERTIFICATIONS

- Tribeta & Omicron Delta Kappa Honor Societies
- World Aquaculture Society
- National Shellfisheries Association
- Health Advisory Committee
- Marine, Estuarine, Environmental Sciences Program Committee Member
- Marine, Estuarine, Environmental Sciences Graduate Student Organization Representative
- Biological Sciences Graduate Student Council Representative
- University of Maryland's University Teaching and Learning Program Certification
- American Academy of Underwater Sciences (AAUS) Certified Scientific Diver
- Open Water Diver -- PADI
- American Canoe Association - Instructor Certification
- US Sailing - Class I Instructor Certification
- Personal Watercraft Operation
- First Aid/AED/CPR