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**P. LAUREN SZATHMARY, M.S.**  
Ecologist

**Research Planning, Inc.**

Ms. Szathmary is an ecologist specializing in coastal and marine ecology, natural resource mapping, environmental incident response, human impacts on natural systems, and ecological effects of climate change. She also has expertise in data acquisition, management, and analysis. Ms. Szathmary's responsibilities at RPI include serving as lead biologist and data manager on several different types of projects. In her time at RPI, she has worked on 20 Environmental Sensitivity Index mapping projects and hundreds of natural resource data syntheses in support of Resources at Risk Analyses. She also serves as a member of the National Oceanic and Atmospheric Administration (NOAA) Scientific Support Team as a responder to oil/hazardous materials spills and hurricanes, and she worked with the NOAA Restoration Center on long-term restoration planning and Natural Resource Damage Assessment for the *Deepwater Horizon* oil spill. Over the course of her career, she has worked in the field and/or in stakeholder meetings at dozens of locations along the east, west, Gulf, and Great Lakes coasts of North America, throughout the Caribbean, and in Australia and New Zealand.

Prior to joining RPI, Ms. Szathmary was a staff researcher at the University of South Carolina, the University of Otago (New Zealand), and Brown University. Ms. Szathmary's graduate and post-graduate research focused on effects of climate change and other human impacts in coastal ecosystems, and she has authored and co-authored several technical publications based on her work in these areas.

## **EDUCATION**

Fulbright Fellow, University of Otago, Dunedin, New Zealand (2009)

Project: Shifts in sea urchin diet and urchin population grazing impacts on kelp along an environmental gradient

M.S., Biological Sciences, University of South Carolina, Columbia, SC (2006)

Thesis Title: Predicting direct and indirect effects of climate change on a predator-prey pair in the rocky intertidal ecosystem

B.S., Marine Science, University of South Carolina, Columbia, SC (2004)

Study abroad semester, James Cook University, Townsville, Australia

Magna Cum Laude and With Honors from the South Carolina Honors College

Honors Thesis: Constructing a heat budget model of *Pisaster ochraceus*

## **PROFESSIONAL EXPERIENCE**

2012 to Present: Ecologist, Research Planning, Inc., Columbia, SC

2010 to 2012: Graduate Researcher, Brown University, Providence, RI

2009: Fulbright Fellow and Visiting Researcher, University of Otago, Dunedin, New Zealand

2006 to 2008: Research Specialist, University of South Carolina, Columbia, SC

Ms. Szathmary's experience is outlined separately in six main areas:

- 1) Coastal and Offshore Resource Mapping
- 2) Environmental Incident Response
- 3) Natural Resource Restoration
- 4) Oil Spill Science
- 5) Ecological Modeling
- 6) Experimental Ecology



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## COASTAL AND OFFSHORE RESOURCE MAPPING

Environmental Sensitivity Index (ESI) Mapping: Ms. Szathmary has served as lead biologist on the following ESI projects used for coastal zone management, contingency planning, and hazardous material/natural disaster responses:

South Florida	2013
Texas, Upper Coast	2013
Louisiana	2013
Delaware, Pennsylvania, and New Jersey	2013
Outer Coast of Oregon and Washington	2014
Maryland and Virginia	2015
Southwest Florida	2016
Mackinac Straits	2019
St. Clair – Detroit River System	2019
East Florida	2020
St. Marys River	2021
St. Lawrence River	2021
Lake Erie	2022
Lake Ontario	2023
Offshore Gulf of Mexico	2023
Offshore Cook Inlet	2023
Offshore Beaufort Sea	2023
Offshore Chukchi Sea	2023
Cook Inlet	2023
Texas	2023

Her role as lead biologist on multiple ESI projects requires extensive correspondence with biological resource experts from several government, academic, tribal, and private agencies throughout the U.S. She has extensive experience in natural resources data collection, interpretation, and compilation using both quantitative data sources and participatory mapping techniques.

## ENVIRONMENTAL INCIDENT RESPONSE

Response: Ms. Szathmary is part of the Scientific Support Team to the U.S. Coast Guard provided by the National Oceanic and Atmospheric Administration (NOAA) for hurricane and oil and chemical spill response. She provided on-scene support to the Emergency Support Function (ESF) – 10 responses for Hurricanes Maria (Puerto Rico, 2017-2018, Environmental Unit Leader) and Florence (North Carolina, 2018, Environmental Unit Technical Specialist). In these roles, she coordinated the identification of potential pollution threats in the maritime environment, including sunken, sinking, or damaged vessels, and developed salvage plans to minimize additional impacts to sensitive habitats (i.e., mangroves, seagrass, coral reefs, marshes, oyster reefs) during the removal or mitigation process. She also conducted emergency consultations, including: USACE Section 404/10; ESA Section 7 with USFWS and NMFS Protected Species Division; NMFS Essential Fish Habitat; National Historic Preservation Act Section 106 consultation with PR SHPO and NC SHPO; and facilitated local consultations with Puerto Rico Department of Natural and Environmental Resources and North Carolina Department of Environmental Quality. Additionally, in 2021, Ms. Szathmary provided on-scene support as a Shoreline Cleanup Assessment Technique (SCAT) Team Member for the P00547 Pipeline Spill off Huntington Beach, CA. She has also written numerous resources at risk analyses for oil and chemical spill events, drills, and hurricanes.

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Training: Since 2022, Ms. Szathmary has been a lecturer and instructor for 3-day oil spill response classes. In this role, she leads classes of 30+ students from state, federal, and tribal agencies through lectures and exercises on oil spill science, SCAT methodology, ESI atlas usage, and considerations for protection of natural resources.

## **NATURAL RESOURCE RESTORATION**

Ms. Szathmary was part of the NOAA Restoration Center *Deepwater Horizon* Restoration Planning Team. She worked with federal, state, NGO, and academic scientists to develop long-term restoration plans to restore natural resources damaged by the *Deepwater Horizon* oil spill. She was a member of the mesophotic and deep benthic ecosystems sub-team, and her work with this group included organizing and leading sub-team meetings with all partners, researching restoration alternatives, synthesizing available data to scale restoration alternatives, and developing a database of Marine Protected Area (MPA) effectiveness primary literature and data to be used for a broad-scale meta-analysis. She also contributed to writing the Programmatic Damage Assessment and Restoration Plan (PDARP) and the Programmatic Environmental Impact Statement (PEIS) for the final settlement with BP.

Ms. Szathmary also serves as a reviewer of restoration projects for the U.S. Department of Treasury. She conducts best available science and environmental compliance reviews for proposals submitted for Direct Component RESTORE Act funding. Reviewed projects include coastal restoration of wetlands and upland areas and offshore coral reef restoration via artificial reef construction and coral outplanting.

## **OIL SPILL SCIENCE**

Ms. Szathmary worked with a team of RPI and outside experts under contract with the Bureau of Ocean Energy Management (BOEM) on two separate literature syntheses on oil spill impacts for large (>20,000 bbl) and median (500 – 20,000 bbl) oil spills. These syntheses examine the impacts of crude oil, condensate, and diesel spills on ecological systems and socio-economic resources. Ms. Szathmary was the technical lead and primary author for the compilation and synthesis of data and information on spill impacts to marine benthic communities, including shallow coral reefs, oyster reefs, mesophotic reefs, deep-sea coral, and shallow and deep soft-sediment communities. Information from published and grey literature, conference reports, and databases was included in the syntheses. These projects supported regulatory compliance for proposed actions in BOEM's 5-year EIS analysis and refined the currently available knowledge of long-term and cumulative impacts of spills important to decision-making.

## **ECOLOGICAL MODELING**

From 2004 – 2008, Ms. Szathmary worked as a researcher with a group at the University of South Carolina that used ecological modeling techniques to investigate the effects of climate change on rocky intertidal ecosystems. She developed and used computer models of animal body temperatures to understand how climate change affects organism physiology and species interactions. This project required the use of several U.S. government historical climate datasets and forecasts, computer modeling skills, and field validation of models. She also expanded the use of these models worldwide and managed a network of collaborators from 50 sites in 8 countries.

## **EXPERIMENTAL ECOLOGY**

Salt marsh resilience mechanisms after regional die-off: From 2010 – 2012, Ms. Szathmary worked as part of a group at Brown University that investigated salt marsh resilience and recovery from human-caused salt marsh die-off. Using field experiments, she tested hypotheses related to effects of predator depletion, consumer population dynamics, and plant facilitation to understand the specific mechanisms of salt marsh resilience in the face of a range of human impacts.

Effects of climate change on salt marsh habitats: From 2010 – 2012, Ms. Szathmary designed, managed, and executed an integrative research project to examine the effects of climate change in U.S. east coast salt marsh ecosystems. She devised and executed a large-scale field experiment to test the effects of elevated air temperature and/or drought on vegetation in multiple salt marsh habitats in southern U.S. salt marshes. Ms. Szathmary also used field experiments to investigate the potential for recovery of salt marsh habitats in New England following an extreme climate event.

## RELEVANT SKILLS AND CERTIFICATIONS

*Software* – R, ArcGIS, Microsoft Office Suite, EndNote

*Hardware* – Experience using RTK GPS networks and equipment

*Certifications* – PADI Divemaster with Nitrox and dry suit certifications, 24-hour HAZWOPER, Basic CPR/first aid, PADI Emergency Oxygen Provider, Canadian Red Cross Boating Safety Program Pleasure Craft Operator

## AWARDS, GRANTS, AND FELLOWSHIPS

Brown University Environmental Change Initiative Quick Start Grant (2012)

Fulbright Graduate Student Fellowship for research and study in New Zealand (2009)

Bamfield Marine Sciences Centre Graduate Research Scholarship (2004)

Phi Beta Kappa membership (2004)

Traci Heincelman Memorial Scholarship, Marine Science Program, University of South Carolina (2004)

College of Science and Mathematics Scholarship, University of South Carolina (2003, 2004)

Outstanding Undergraduate in Marine Science Award, University of South Carolina (2002, 2003)

Howard Hughes Undergraduate Research Fellowship (2002)

National Science Foundation Research Experiences for Undergraduates Internship (2002)

University Scholars Scholarship, University of South Carolina (2000 – 2004)

South Carolina LIFE Scholarship (2000 – 2004)

## PUBLICATIONS

**L. Szathmary** and S. Zengel. 2021. Marine benthic communities. In J. Michel (ed.), Oil spill effects literature study of spills of 500–20,000 barrels of crude oil, condensate, or diesel (pp. 32-45). Anchorage, AK: US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2021-048.

**L. Szathmary** and S. Zengel. 2021. Marine benthic communities. In J. Michel (ed.), Oil spill effects literature study of spills of greater than 20,000 barrels of crude oil, condensate, or diesel (pp. 44-72). US Department of the Interior, Bureau of Ocean Energy Management, Sterling, VA. OCS Study BOEM 2020-058.

Petersen, J., D. Nelson, T. Marcella, J. Michel, M. Atkinson, M. White, C. Boring, **L. Szathmary**, J. Weaver. 2019. Environmental Sensitivity Index Guidelines, Version 4.0. NOAA Technical Memorandum NOS OR&R 52.

Helmuth, B., F. Choi, A. Matzelle, J. Torossian, S. Morello, K. A. S. Mislán, L. Yamane, D. Strickland, **P. L. Szathmary**, and 39 others. 2016. Long-term, high frequency in situ measurements of intertidal mussel bed temperatures using biomimetic sensors. *Scientific Data*, 3, Article number 160087, doi:10.1038/sdata.2016.87

Article covered in *The New York Times*, 10/17/2016,

<http://www.nytimes.com/2016/10/18/science/robotic-mussels-climate-change.html>;

*Science Daily*, 10/17/2016, <https://www.sciencedaily.com/releases/2016/10/161017150400.htm>

- Altieri, A. H., M. D. Bertness, T. C. Coverdale, E. E. Axelman, N. C. Herrmann, and **P. L. Szathmary**. 2013. Feedbacks underlie the resilience of salt marshes and rapid reversal of consumer driven die-off. *Ecology*. 94: 1647-1657.
- Szathmary, P. L.**, B. Helmuth, and D. S. Wethey. 2009. Climate change in the rocky intertidal zone: predicting and measuring the body temperature of an intertidal keystone predator. *Marine Ecology Progress Series* 374: 43-56.
- B. R. Broitman, **P. L. Szathmary**, K. A. S. Mislán, C. A. Blanchette, and B. Helmuth. 2009. Predator-prey interactions under climate change: the importance of habitat vs. body temperature. *Oikos* 118: 219-224.
- Szathmary, L.** and B. Helmuth. 2007. Temperature change. In: *Encyclopedia of Tidepools and Rocky Shores*, eds. M. Denny and S. Gaines. University of California Press.

## SELECTED PRESENTATIONS

- P. L. Szathmary**, A. H. Altieri, T. C. Coverdale, M. D. Bertness. 2011. Potential mechanisms of recovery from die-off in Cape Cod salt marshes. Benthic Ecology Meeting, Mobile, AL.
- Helmuth, B., D. S. Wethey, S. Pincebourde, K. A. Smith, **P. L. Szathmary**, S. A. Woodin, T. J. Hilbish, and V. Lakshmi. 2008. Ecological forecasting and hindcasting in the rocky intertidal zone: where and when do we worry about weather? Society of Experimental Biology, Symposium: "Climate change: from genes to ecosystems", Marseilles, France.
- Helmuth, B., D. S. Wethey, **P. L. Szathmary**, K. A. Smith, V. Lakshmi, and T. J. Hilbish. 2008. From MODIS to mussels: ecological forecasting of coastal ecosystem responses to climate change. American Society of Limnology and Oceanography, Orlando, FL.
- Szathmary, L.**, K. A. Smith, D. S. Wethey, L. Brin, and B. Helmuth. 2007. Ecological forecasting in the intertidal zone: accuracy of mussel temperature predictions. Western Society of Naturalists Meeting, Ventura, CA.
- Helmuth, B., K. A. Smith, **L. Szathmary**, D. S. Wethey, S. Pincebourde, F. Lima, V. Lakshmi, J. Hilbish, and S. A. Woodin. 2007. Ecological forecasting of coastal ecosystems: triaging the train wreck of climate change. Climate Information: Responding to Users' Needs, University of Maryland, College Park, MD. (poster)
- Helmuth, B., **L. Szathmary**, J. Hilbish, and D. S. Wethey. 2007. Whether to worry about weather: understanding the climate of body temperature in the intertidal zone. Estuarine Research Federation, Symposium: "Evaluating climate records to understand causes and effects of climate variability in coastal systems," Providence, RI.
- Szathmary, L.**, K. A. Smith, B. Helmuth, and D. S. Wethey. 2006. Heating it up in the intertidal: using reanalyzed data in biophysical models to investigate climate-influenced species interactions. Joint Workshop on NASA Biodiversity, Terrestrial Ecology and Related Applied Sciences, Adelphi, MD. (poster)
- B. Helmuth, D. S. Wethey, V. Lakshmi, T. J. Hilbish, **L. Szathmary**, K. A. Smith, and C. Purvis. 2006. Ecological forecasting in the intertidal zone: how can remote sensing tell us where and when to look for the consequences of climate change? Joint Workshop on NASA Biodiversity, Terrestrial Ecology and Related Applied Sciences, Adelphi, MD.
- Szathmary, L.**, B. Helmuth, and D. S. Wethey. 2006. Modeling body temperature in the intertidal: effects of climate on a keystone predator (*Pisaster ochraceus*). Benthic Ecology Meeting, Quebec City, Canada.