

Erin Murphy

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EDUCATION

Arizona State University – Ph.D. Candidate in Biology and Society, Expected May 2023, 4.0 GPA
Ph.D. Dissertation Co-Chairs: Dr. Leah Gerber & Dr. Beth Polidoro

University of Illinois Urbana-Champaign – M.Sc. Geology, May 2015, 4.0 GPA

M.Sc. Thesis Advisor: Dr. Bruce W. Fouke

Thesis: Quantitative tracking of the cellular and skeletal response of the coral *Orbicella annularis* to gradients in marine sewage pollution.

University of Illinois Urbana-Champaign – B.S. Integrative Biology, May 2013, 3.97 GPA

AWARDS & HONORS

- 2021 Arijit Guha Graduate Student Advocacy Award
- 2020 North American Congress for Conservation Biology Student Presentation Award Finalist
- 2015 Harriet Wallace Outstanding Female Graduate Student
- 2015 Outstanding Graduate Teaching Assistant Award
- 2013 Bronze Tablet Award (graduated in top 3% of college)
- 2013 Chancellor's Scholar Graduate
- 2013 James' Scholar Graduate

FUNDING

- 2021 ASU Graduate and Professional Student Association Publication Grant (\$900)
- 2019 ASU School of Life Sciences Travel Grant (\$400)
- 2019 ASU Graduate and Professional Student Association Travel Grant (\$950)
- 2014 Lerner Gray Memorial Fund, AMNH (\$1400)
- 2014 AAPG-GIA, Edward C. and Caroline Beaumont Named Grant (\$1500)
- 2014 Sohl Research Award, UIUC Geology Department (\$2,843)
- 2013 Graduate College travel grant (\$500)
- 2013 Evergreen Endowed Fellowship in Geology fund (\$20,000)

RESEARCH EXPERIENCE

Ph.D. research, Conservation Innovation Lab, ASU *2018 – Present*
Modelling the efficacy of marine plastic pollution interventions in the Philippines and Hawaii
Measuring the impacts of plastic pollution on marine ecosystems in the Philippines and Hawaii
Reviewing the social, ecological, and economic trade-offs of plastic pollution interventions
Developed a framework to standardize cost estimates for plastic pollution interventions

Research Assistant, Bayer and Center for Biodiversity Outcomes, ASU *2020 – 2021*
Evaluated how data resolution affects the outcomes of EPA's biological evaluations for pesticides
Reviewed EPA spatial methods for predicting ESA species and critical habitats risk to pesticides

Member of the Plastic Pollution Emission Working Group, SESYNC 2018 - 2020
Co-developed scenarios for possible future plastic emissions based on varying intervention efforts
Assisted with writing and editing of publications

Research Assistant, Center for Biodiversity Outcomes, ASU 2019
Evaluated fishery certification schemes for their effectiveness in protecting ecosystem services
Acted as interim project manager during hiring process and coordinated events for the center
Developed LOIs to fund the center's research objectives in fishery sustainability and plastic pollution
Planned events for CBO including workshops and lectures, and support center administration

ORISE Fellow, Office of Water Oceans Watersheds, EPA 2016 - 2018
Worked in the Ocean and Coastal Management Branch on the vessels team and the coral team
Evaluated vessel sewage effluent standards to provide recommendations for new federal standards
Researched coral sensitivity to turbidity to support Florida DEP in developing a new state standard
Developed and disseminated resources on federal regulations and BMPs for vessel sewage
Created communication materials to inform partners and citizens of EPA's role in coral conservation
Developed technical guidance for individuals doing ocean disposal under MPRSA

Research Assistant, Afterschool Alliance 2015 - 2016
Worked to increase access to high quality STEM education opportunities in afterschool nationally
Analyzed the results of a national survey to evaluate the state of computer science in afterschool
Led a mini-campaign promoting environmental education in afterschool stem education
Attended congressional briefings on behalf of the organization and blogged on presentations
Developed a searchable database containing the evaluations of afterschool programs

Master's Thesis Research, Dr. Bruce Fouke Lab, University of Illinois 2013 - 2015
Studied the impacts of human sewage pollution on *O. annularis* physiology and skeletal growth
Utilized SCUBA techniques for sampling *O. annularis* colonies along the southern coast of Curacao
Imaged biopsies utilizing various techniques including two-photon microscopy and BioCT imaging
Performed data analyses using AMIRA, IMARIS, and ImageJ
Drafted a final thesis in preparation for submission to a peer-reviewed scientific journal

TEACHING EXPERIENCE

Adjunct Faculty, Marine Biology, Estrella Mountain Community College Fall 2021
Teach Marine Biology online, facilitated through Canvas
Act as main contact for student concerns and grade all course material

Online Teaching Assistant, Environmental Ethics, Fall 2021
Grade student essays and assist with course development

Online Teaching Assistant, Why People Steal, Cheat and Lie, Summer 2021
Graded student essays and quizzes

Online Teaching Assistant, Why Sex, Arizona State University, Summer 2020

Graded student discussion boards and labs and aid with homework and exam preparation

Teaching Assistant, Bioethics, Arizona State University, Spring 2020

Led three weekly recitation sections and graded mini-projects, essays, and final exams

Guest lectured on the ethics of modern conservation practices

Teaching Assistant, Introductory Biology Lab, Arizona State University, Fall, 2018; 2019

Taught two lab sections introducing a broad range of topics within the biology field

Graded lab reports and presentations, and proctor exams

Teaching Assistant, History of the Earth System, University of Illinois, 2014-2015

Taught two lab sections introducing a broad range of topics within the field of geology

Developed and graded quizzes, exams, and laboratory exercises

Assisted with preparing for and teaching on a three-day educational trip to the Ozark Mountains

Teaching Assistant, Biocomplexity, University of Illinois, Fall, 2014

Guest lectured for three weeks in the professor's absence

Assisted in leading four-day field trip to Mammoth Hot Springs, Yellowstone

Mentored students in the development and completion of group research projects

PUBLICATIONS

Murphy, E. L., Iacona, G., Bernard, M., Barnes, M., McGivern, A., & Gerber, L. R. (2021) A decision framework for estimating the cost of marine plastic pollution interventions. *Conservation Biology*. <https://conbio.onlinelibrary.wiley.com/doi/10.1111/cobi.13827>

Murphy, E. L., Eikenberry, S., Iacona, G., Watson, G., & Gerber, L. R. (2021) The value of increased spatial resolution of pesticide usage data for assessing risk to endangered species. *Conservation Science and Practice*. <https://conbio.onlinelibrary.wiley.com/doi/epdf/10.1111/csp2.551>

Murphy, E. L., Bernard, M., Gerber, L. R., & K. Dooley. (2021) Evaluating the role of market-based instruments in protecting marine ecosystem services in wild-caught fisheries. *Ecosystem services*. <https://www.sciencedirect.com/science/article/pii/S2212041621001145>

Kittinger, J., Bernard, M., Finkbeiner, E., **Murphy, E.**, Obregon, P., Klinger, D. H., Schoon, M. L., Dooley, K. J., & Gerber, L. R. (2021) Integrating market incentives and governance improvements for sustainable ocean production at the ecosystem scale. *Conservation Science and Practice*. <https://conbio.onlinelibrary.wiley.com/doi/full/10.1111/csp2.386>

Murphy, E. L., Bernard, M., Helm, L., Hill, I & Tunas-Corzon, A. (2020) Policy Recommendations to reinvigorate recycling in Arizona. *The Journal of Science Policy & Governance*. https://www.sciencepolicyjournal.org/article_1038126_jspg170115.html

Borrelle, S. B., Ringma, J., Law, K. L., Mannahan, C. C., Lebreton, L., McGivern, A., **Murphy E.**, Jambeck, J., Leonard, G. H., Hilleary, M. A., Eriksen, M., Possingham, H. P., Gerber, L. R., Polidoro, B., Tahir, A., Bernard, M., De Frond, H., Mallos, N., Barnes, M., & Rockman C. M. (2020) Predicted growth in plastic waste exceeds efforts to mitigate marine plastic pollution. *Science*. <https://www.science.org/doi/abs/10.1126/science.aba3656>

Cramer, K. L., Bernard, M. L., Bernat, I., Gutierrez, L., **Murphy, E. L.**, Sangolquí, P, Surrey, K., Gerber, L. R. (In review). The present and future status of ecosystem services for coral reef. *Imperiled: the Encyclopedia of Conservation*.

Murphy, E. L., Fredette-Roman, C., Rochman, C., Gerber, L. R., Polidoro, B. (In prep) The vulnerability of marine biodiversity to macroplastics. *Trends in Ecology and Evolution*.

Helm, L., **Murphy, E. L.**, McGivern, A., Borrelle, S. B. (In prep) Impacts of plastic pollution mitigation strategies.

Cheng, S., **Murphy, E. L.**, Fegraus, E., Geren, S., Hsiao, S., and Ahumada, J. (In prep). Interactive Data visualization for Empowerment and Action (IDEA): a conceptual approach to bridge the knowledge-action boundary in conservation

U.S. EPA. Vessel Sewage in U.S. Waters: An Analysis of Current Regulations. Washington, DC. In review.

Plastic Pollution Emissions Working Group. Evaluating the impact of mitigation strategies for marine litter and microplastics to inform policy: A white paper. 2018.

https://docs.wixstatic.com/ugd/0e7900_c5645ab3497f489f92e7330f1fe48ce3.pdf

PRESENTATIONS

Murphy, E., Eikenberry, S., Iacona, G., Watson, G. The value of increased spatial resolution of pesticide usage data for assessing risk to endangered species. Society for Environmental Toxicology and Chemistry annual conference. Portland, OR. 2021.

Murphy, E. L., Bernard, M., Iacona, G., Borrelle, S. B., Barnes, M., McGivern, A., Emmanuel, J., Gerber, L. R. A decision framework for estimating the cost of marine plastic pollution intervention. SCB Emerging Issues in Conservation Seminar. Virtual. 2021.

Murphy, E., Bernard, M., Gerber, L., Dooley, K. Evaluating the role of market-based instruments in protecting marine ecosystem services in wild-caught fisheries. North American Congress for Conservation Biology. Denver, Colorado. 2020.

Barnes, M., Iacona, G., Bernard, M., Gerber, L., **Murphy, E.** Costs of mitigating marine plastic pollution: a decision support tool. International Congress for Conservation Biology., Kuala Lumpur, Malaysia. 2019.

Watts-Fitzgerald, K., **Murphy, E.** EPA's Vessel Sewage Program. SOBA Annual Conference. Anchorage, AK. 2017.

Grant, J., Braithwaite, M., Dvorak, M., **Murphy, E.** Juvenile Justice. 21st Century Community Learning Centers (21st CCLC) 2016 Summer Institute. Phoenix, AZ. 2016.

POSTERS

Murphy, E., Barnes, M., Iacona, G., Bernard, M., Gerber, L., McGivern, A., Borrelle, S. The cost of mitigating marine plastic pollution. Institute for Social Science Research. Tempe, AZ. 2020.

Murphy, E., Barnes, M., Iacona, G., Bernard, M., Gerber, L., McGivern, A., Borrelle, S. The cost of mitigating marine plastic pollution. Society for Environmental Toxicology and Chemistry annual conference. Toronto, Canada. 2019.

Murphy, E., Sivaguru, M., Fouke, F. W. Physiological Response of the Caribbean Coral *O. annularis* to Pollution Gradients. Midwest Geobiology Conference. 2014.

Murphy, E., M. Sivaguru, B. W. Fouke. Physiological Response of the Caribbean Coral *O. annularis* to Pollution Gradients. American Geophysical Union. 2014.

MEDIA

Murphy, E., Helm, L. 2021. Lawmakers raided funds meant for recycling, raising fees or scaling back programs. AZ Central.

Murphy, E., Bernard, M., Hill, I, Tunas-Corzon, A., Helm, L. 2020. Arizona should take steps to reinvigorate recycling. Arizona Capitol Times.

Nick Gervis. 2020. Study: Massive Global Effort Needed to Reduce Plastic Pollution By 2030. National Public Radio KJZZ.

Murphy, E. 2020. Life and Work with Erin Murphy. Voyage Phoenix.

LEADERSHIP AND SERVICE

- 2020 – 2021 Arizona Recycling Coalition
 - Executive Board Member 2021
 - Chair of the Policy Committee
- 2019 – 2021 Arizona Science and Policy Network
 - Executive Board Co-Chair 2021
 - Waste Management Committee Chair 2020
- 2021 Keep Tempe Beautiful
 - Executive Board Member
- 2020 – 2021 AZ Forward
 - Circular Economy Committee Member
- 2020 – 2021 The Circulate Initiative Impact Metrics Working Group
- 2019 – 2021 SOLS Graduate Student Sustainability Committee
 - President 2020 – 2022
 - Vice President 2019 – 2020
- 2019 – 2021 School of Life Sciences Executive Board
 - Sustainability Representative 2020 – 2022
 - Strategic Planning Committee Representative 2019 – 2020
- 2018 – 2020 Plastic Pollution Emissions Working Group
- 2018 – 2021 Ask a Biologist
- 2019 – 2020 Prison Biology Education Program
- 2018 – 2020 Arizona Women’s Climbing Coalition
 - Tempe Chapter Lead
- 2013 – 2015 School of Earth, Society, and the Environment (SESE) Research Review Committee

MENTORSHIP

- 2021 Kristin Deacon, Undergraduate student
Member of undergraduate thesis committee
- 2021 Cassidy Fredette-Roman, Masters student
Advise on Masters' thesis research
- 2021 Victoria Rader, Undergraduate student
Previously acted as Intern Manager for Senior project (BASIS HS)
- 2019 – 2021 Infynity Hill, Masters student
Advise on Masters' thesis research
- 2020 Emily Byrum, Undergraduate student
- 2020 Katelyn Velez, Undergraduate student

OUTREACH

- 2021 WE Empower UN SDG Challenge Judge
- 2021 ASU Sustainability Challenge Pitch Day Judge
- 2021 Guest speaker at California State University, Chico
- 2021 Guest speaker at Chaparral High School
- 2020 WE Empower UN SDG Challenge Judge
- 2020 Guest speaker at California State University, Chico
- 2019 ASU Open Door
- 2019 OdySEA Aquarium Conservation Expo
- 2016 Montgomery County Science Fair Judge
- 2015 Guest Lecturer, Field Expedition to Costa Rica, University of Illinois
- 2014 Graduate Mentor, Pollen Camp at the Institute for Genomic Biology, University of Illinois

EDITORIAL ACTIVITIES

- 2021 Peer Reviewer for Conservation Biology
- 2021 Peer Reviewer for the International Journal of the Commons
- 2020 Peer Reviewer for Plos One
- 2020 Peer Reviewer for the International Journal of the Commons