

SAMANTHA N. ATHEY

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RESEARCH INTERESTS

My principal research interests revolve around plastic marine debris as a vector for toxic compounds in marine and freshwater environments, the factors affecting the generation of microplastic, and the chemical analysis of microplastic-associated persistent organic pollutants. See my research page at www.samanthanathey.com for more information.

EDUCATION



DOCTOR OF PHILOSOPHY IN EARTH SCIENCES

Faculty of Arts and Sciences, Department of Earth Sciences
University of Toronto, Toronto, Ontario, Canada

Thesis title: Microfibers as conduits for chemicals to move from the indoor to outdoor environment: sources, sinks and solutions



MASTER OF SCIENCE IN MARINE SCIENCE

College of Arts and Sciences, Department of Biology and Marine Biology
University of North Carolina Wilmington, Wilmington, NC

Thesis title: Trophic transfer of microplastics and an associated legacy pollutant from microzooplankton to their predators

2016

BACHELOR OF SCIENCE HONORS IN MARINE BIOLOGY

College of Arts and Sciences, Department of Biology and Marine Biology
University of North Carolina Wilmington, Wilmington, NC

Thesis title: Marine plastics as a source of harmful contaminants in loggerhead sea turtles (*Caretta caretta*)
UNEP Massive Open Online Course (MOOC) on Marine Litter - Expert Certification (2015)

PROFESSIONAL ACTIVITIES

Current Memberships

Society of Ecotoxicology and Chemistry (SETAC)
International Association of Great Lakes Research (IAGLR)
American Geophysical Union (AGU) - Ocean Sciences

Academic Involvement

2014-2016 – President, UNC-Wilmington Plastic Ocean Project Chapter
2015-2016 – Student Committee Member, UNCW Sustainable Student Organizations Committee
2016-2018 – Director of Chapters & Ambassadors, Plastic Ocean Project
2018-2019 – Student Representative, SETAC
2018-2019 – Rockfest Student Seminar Series Organizer, Association of Graduate Students in Earth Sciences (AGESS)
2018-present – Social Media Coordinator, UofT Trash Team (Rochman Lab)
2019-present – Graduate Student Health & Wellness Coordinator, AGESS
2019-present – Vice President, AGESS

Reviewer Services

Environmental Science & Technology (x2)

TEACHING EXPERIENCE

University Courses

2015 – Lecture teaching assistant, one term *Biology for Non-Majors* (UNC- Wilmington)
2016 – Course development/Lecture teaching assistant, two terms *Cell Biology* (University of North Carolina Wilmington).
2016 – Guest lecturer, *Cell Biology* (UNC- Wilmington), lectures on photosynthesis, cellular respiration and Mendelian genetics.
Professor: Dr. Stephan Woditschka
2017 – Lab tutorials, two terms *Cell Biology* (UNC-Wilmington)
2017 – Guest lecturer *Cell Biology* (UNC-Wilmington), lecture on cancer biology. Professor: Dr. Joseph Covi
2018 – Guest lecturer *Introduction to Environmental Science* (Cape Fear Community College), lecture on plastic pollution and sustainability. Professor: Abigail Perry Spangel
2018 – Marking teaching assistant, one term *Confronting Global Change* (University of Toronto)
2018 – Guest lecturer *Biology* (Ryerson University), lecture on plastic pollution: sources, solutions and impacts on aquatic

- ecosystems. Professor: Dr. Maria Arts
- 2019 – Guest lecturer *Ecosystems and the Human Footprint* (University of Toronto) lecture on stream ecology and chemical pollution. Professor: Dr. Chelsea Rochman
- 2019 – Guest lecturer *Biology* (Ryerson University), lecture on plastic pollution: sources, solutions and impacts on aquatic ecosystems. Professor: Dr. Maria Arts
- 2019 – Invited speaker, Plastic free workshop. Microfiber pollution: Sources and solutions. Georgian Bay Forever and Plastic Free Parry Sound.

Student Mentoring

I have assisted in the guidance of the following undergraduate students, as they conducted independent research projects (*) and gained experience with research techniques in the lab (+):

Emma Martin*, Katy Nickel*, Brooke Faulkner*, Elizabeth Chason+, Rebekah James+

Other Teaching Experience

2014-2018 – Marine Science Instructor, UNC-Wilmington Youth Programs MarineQuest

2017-2018 – Education Volunteer, North Carolina Aquarium at Fort Fisher

PUBLICATIONS

Athey, S., Alotra, S., Gordon, C., Echevarria, Andrady, A., M., Monteleone, B., Seaton, S., Taylor, A., and Brander, S. The trophic transfer of microplastics from microzooplankton to larval fish. (IN REVIEW). *Limnology and Oceanography Letters*.

Rochman, C. M., Brookson, C., Bikker, J., Djuric, N., Earn, A., Bucci, K., **Athey, S. N.**, Huntington, A., McIlwraith, H., Munno, K., De Frond, H., Kolomijeca, A., Erdle, L., Grbic, J., Bayoumi, M., Borrelle, S. B., Wu, T., Santoro, S., Werbowski, L. M., Zhu, X., Giles, R. K., Hamilton, B. M., Thaysen, C., Kaura, A., Klasios, N., Ead, L., Kim, J., Sherlock, C., Ho, A., and Hunga, C. 2019. Rethinking microplastics as a diverse contaminant suite. *Environmental Toxicology and Chemistry* 38(4), 703-711.

Adams, J. K., **Athey, S. N.**, Erdle, L., Jantunen, L. M., Helm, P. A., Rochman, C.M., Finkelstein, S. A., and M.L. Diamond. (IN PREP). The environmental footprint of microfibers from blue jeans.

RESEARCH EXPERIENCE

Skills

Multiple extraction techniques for semivolatile compounds in various mediums, extraction of semivolatile compounds in tissue samples, operation/data analysis for GC/MS, Raman, and FT-IR, rearing of microzooplankton and larval fish, microscopy (polarizing light, confocal, brightfield), microplastic extraction from water and biological samples.

Research Experience

2013 – Work study lab assistant. The changing amount of precipitation of terrestrial origin in Wilmington, North Carolina. Supervised by Dr. Joan Willey.

2014 – Intern/Research assistant, South African Shark Conservancy.

2014 – Undergraduate research assistant. Supervised by Dr. Pamela Seaton.

2015 – Undergraduate honors research student. Marine plastics as a source of harmful contaminants in loggerhead sea turtles (*Caretta caretta*). Supervised by Dr. Pamela Seaton.

2016 – MSc research. Trophic transfer of microplastics and an associated legacy pollutant from microzooplankton to their predators. Supervised by Dr. Susanne Brander and Dr. Alison Taylor.

2017 – Research assistant. Microplastic ingestion by the black sea bass, *Centropristis striata*: An assessment of potential impacts on health of an Atlantic commercial fish species. Supervised by Dr. Susanne Brander.

2018 – PhD research. Microfibers as conduits for chemicals to move from the indoor to outdoor environment: sources, sinks and solutions. Supervised by Dr. Miriam Diamond and Dr. Chelsea Rochman.

PRESENTATIONS

2014 – **Athey, S.** and Willey, J. The changing amount of precipitation of terrestrial origin in Wilmington, North Carolina [Talk]. Center for Undergraduate Research Symposium, Wilmington, NC. **Won undergraduate research distinction.**

2016 – **Athey S.**, Mead, R., Seaton, P. Marine plastics as a source of harmful contaminants in loggerhead sea turtles

- (*Caretta caretta*). Oceans Sciences Meeting [Poster], New Orleans, LA.
- 2017 – **Athey, S.** Hope for Hatteras: How to kick-start a movement to protect the ocean [**Keynote Address**]. Youth Ocean Conservation Summit, Pine Knoll Shores, NC.
- 2016 – **Athey, S.**, Albotra, S., Gordon, C., Echevarria, Andrady, A., M., Monteleone, B., Seaton, S., Taylor, A., and Brander, S. Trophic transfer of microplastics and an associated legacy pollutant from microzooplankton to their predators [Talk]. Annual Meeting of the SETAC Carolina Chapter, Charleston, NC.
- 2017 – **Athey, S.**, Albotra, S., Gordon, C., Echevarria, Andrady, A., M., Monteleone, B., Seaton, S., Taylor, A., and Brander, S. Trophic transfer of microplastics and an associated legacy pollutant from microzooplankton to their predators [Poster]. SETAC North America, Minneapolis, MN. **Won student travel award.**
- 2018 – **Athey, S.**, Albotra, S., Gordon, C., Echevarria, Andrady, A., M., Monteleone, B., Seaton, S., Taylor, A., and Brander, S. Trophic transfer of microplastics and an associated legacy pollutant from microzooplankton to their predators [Talk]. SETAC North America, Sacramento, CA. **Won student travel award.**
- 2018 – **Athey, S.**, Albotra, S., Gordon, C., Echevarria, Andrady, A., M., Monteleone, B., Seaton, S., Taylor, A., and Brander, S. Trophic transfer of microplastics and an associated legacy pollutant from microzooplankton to their predators [Poster]. 6th International Marine Debris Symposium (San Diego, CA).
- 2018 – Brander, S., and **S. Athey**. Microplastic ingestion by the black sea bass, *Centropristic striata*: An assessment of potential impacts on health of an Atlantic commercial fish species [Poster]. 6th International Marine Debris Symposium (San Diego, CA).
- 2018 – **Athey, S.**, Albotra, S., Gordon, C., Echevarria, Andrady, A., M., Monteleone, B., Seaton, S., Taylor, A., and Brander, S. Trophic transfer of microplastics and an associated legacy pollutant from microzooplankton to their predators [Poster]. International Association of Great Lakes Research IAGLR 61st Annual Conference on Great Lakes Research, Scarborough, ON.
- 2019 – **Athey, S.**, Helm, P., De Silva, A., Jantunen, L., Rochman, C., and Diamond, M. Wastewater treatment plants as conduits for microfibers and other contaminants to enter Lake Ontario [Poster]. International Association of Great Lakes Research IAGLR 62nd Annual Conference on Great Lakes Research, Brockport, NY.
- 2019 – **Athey, S.**, Adams, J., Erdle, L., Helm, P., Jantunen, L., Rochman, C., Finkelstein, S., and Diamond, M. From your laundry to the lake: Blue jeans as a source of microfibers to the aquatic environment [Poster]. Advances in Earth Science Research Conference, Toronto, ON. **Won best student poster award.**
- 2019 – **Athey, S.**, Adams, J., Erdle, L., Helm, P., Jantunen, L., Rochman, C., Finkelstein, S., and Diamond, M. From your laundry to the lake: Blue jeans as a source of microfibers to the aquatic environment [Poster]. SETAC Europe, Helsinki, Finland.
- 2019 – **Athey, S.**, Urik, J., Vrana, B., and Diamond, M. T-shirt in a Sandwich: A novel passive sampling approach for analyzing SVOC release from clothing during laundering [Poster]. SETAC Europe, Helsinki, Finland.
- 2019 – **Athey, S.**, Helm, P., De Silva, A., Jantunen, L., Rochman, C., and Diamond, M. Wastewater treatment plants as conduits for microfibers and other contaminants to enter Lake Ontario [Poster]. 9th International Symposium on Flame Retardants, Montreal, QB.

HONORS & AWARDS

- 2014 – CSURF/ETeal SURCA Funding, \$3,000
- 2015 – NC SeaGrant 2014 Minigrant program, \$5,000
- 2015 – CSURF/ETeal SURCA Funding, \$3,000
- 2015 – Lumina News Person of the Year
- 2015 – Skiba Undergraduate Research Fellowship Award, \$2,500
- 2015 – CSURF Distinguished Undergraduate Research Scholar
- 2016 – Departmental Honors in Marine Biology & Chemistry
- 2018 – Plastic Ocean Project Member of the Year Award
- 2019 – Advances in Earth Science Research Conference (AESRC) Best Student Poster Presentation