

SAMANTHA N. ATHEY

PhD Candidate

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EDUCATION



Present

DOCTOR OF PHILOSOPHY IN EARTH SCIENCES, SPECIALIZATION IN ENVIRONMENTAL STUDIES

Faculty of Arts and Sciences, Department of Earth Sciences

University of Toronto, Toronto, ON, Canada

Dissertation title: Domestic laundering as a conduit for microfibers and chemical contaminants to enter the outdoor environment



2018

MASTER OF SCIENCE IN MARINE SCIENCE

College of Arts and Sciences, Center for Marine Science

University of North Carolina Wilmington, Wilmington, NC, USA

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



2016

BACHELOR OF SCIENCE WITH HONORS IN MARINE BIOLOGY

College of Arts and Sciences, Department of Biology and Marine Biology

University of North Carolina Wilmington, Wilmington, NC, USA

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

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

2019 – The Charles Moore Achievement Award

2019 – Laurence and Theresa Curtis Scholarship Award

2020 – Laurence Curtis Teaching Assistant Award

PUBLICATIONS

Athey, S.N., Albotra, S., Gordon, C., Echevarria, Andrady, A., M., Monteleone, B., Seaton, S., Taylor, A., and Brander, S. 2020. The trophic transfer of microplastics from microzooplankton to larval fish. *Limnology and Oceanography Letters* 5(1), 154-162.

Rochman, C. M., Brookson, C., Bikker, J., Djuric, N., Earn, A., Bucci, K., **Athey, S.N.**, et al. 2019. Rethinking microplastics as a diverse contaminant suite. *Environmental Toxicology and Chemistry* 38(4), 703-711.

Grbic, J., Helm, P., **Athey, S.N.**, Rochman, C. 2020. Microplastics entering northwestern Lake Ontario are diverse and linked to urban sources. *Water Research* 174, 115623.

Cowger, W., Booth, A.M., Hamilton, B.M., Thaysen, C., Primpke, S., Munno, K., Lusher, A.L., Dehaut, A., Vaz, V.P., Liboiron, M., Devriese, L.I., Hermabessiere, L., Rochman, C., **Athey, S.N.**, et al. 2020. Reporting guidelines to increase the reproducibility and comparability of research on microplastics. *Applied Spectroscopy*, 000370282093029.

Athey, S.N., Adams, J.K., Erdle, L.M., Jantunen, L.M., Helm, P.A., Finkelstein, S.A., Diamond, M.L. 2020.

The widespread environmental footprint of indigo denim microfibers from blue jeans. *Environmental Science and Technology Letters*.

Adams, J.K., Dean, B., **Athey, S.N.**, Jantunen, L.M., Bernstein, S., Stern, G., Diamond, M.L., Finkelstein, S.A. 2020. Anthropogenic particles (including microfibers and microplastics) in marine sediments. (IN REVIEW). *Science of the Total Environment*.

Steinbarger, C.D., Joseph, J., **Athey, S.N.**, Monteleone, B., Andrady, A.L., Watanabe, W.O., Seaton, P., Taylor, A.R., Brander, S.M. Direct ingestion and trophic transfer of microplastics in early life stages of *Centropristis striata*, a commercially and recreationally-valuable fishery species. (IN REVIEW). *Environmental Toxicology & Chemistry*.

PRESENTATIONS

Athey, S., Mangiacapre, M., Seaton, P., Mead, R. (2014). *Ingested plastics as a transport medium for marine toxicants to enter the digestive tract of loggerhead sea turtles*. [Oral Presentation]. CAA Undergraduate Research Conference, Baltimore, PA.

Athey, S., Mangiacapre, M., Seaton, P., Mead, R. (2015). *Ingested plastics as a transport medium for marine toxicants to enter the digestive tract of loggerhead sea turtles*. [Poster]. Southeast Regional Sea Turtle Meeting, Jekyll Island, GA.

Athey, S., Mead, R., and Seaton, P. (2015). *Marine plastics as a source of harmful contaminants in loggerhead sea turtles (Caretta caretta)*. [Oral Presentation]. 2015 Carolina Society of Ecotoxicology and Chemistry Conference, Carolina Beach, NC.

Athey, S., Echevarria, M., Taylor, A., Andrady, A., Brander, S. (2016) *The effect of a microplastic-associated legacy pollutant on the feeding preferences of microzooplankton and their predators*. [Poster]. 2016 Carolina Society of Ecotoxicology and Chemistry Conference, Charleston, SC.

Athey, S. 2017. *Hope Spot: Hatteras: Empowering the Next Generation of Ocean Conservationists*. [Keynote Presentation]. 2017 North Carolina Youth Ocean Conservation Summit, Pine Knoll Shores, NC.

Athey, S., Echevarria, M., Taylor, A., Andrady, A., Brander, S. (2017). *Trophic transfer of microplastics and an associated legacy pollutant from microzooplankton to their predators*. [Poster]. Society of Ecotoxicology and Chemistry 39th Annual North America Meeting, Minneapolis, MN.

Athey, S., Albotra, S., Gordon, C., Echevarria, Andrady, A., M., Monteleone, B., Seaton, S., Taylor, A., and Brander, S. (2018). *The trophic transfer of microplastics from microzooplankton to larval fish*. [Poster]. International Association of Great Lakes Research IAGLR 61st Annual Conference on Great Lakes Research, Scarborough, ON.

Athey, S., Albotra, S., Gordon, C. A., Echevarria, M., Monteleone, B., Seaton, P., Andrady, A., Taylor, A., Brander, S. (2018). *Effects of a sorbed pollutant on the trophic transfer of microplastics in an estuarine model system*. [Talk]. Society of Ecotoxicology and Chemistry 40th Annual North America Meeting, Sacramento, CA.

Athey, S. N., Adams, J. K., Erdle, L., Helm, P., Jantunen, L., Rochman, C., Finklestein, S. A., and Diamond, M. (2019) *From your laundry to the lake: Blue jeans as a sources of anthropogenic microfibers to the aquatic environment* [Poster]. Advances in Earth Sciences Research Conference, Toronto, ON. **Best Student Poster Presentation**.

Athey, S., Helm, P., De Silva, A., Jantunen, L., Rochman, C., and Diamond, M. (2019) *Wastewater treatment plants as conduits for microfibrils and other contaminants to enter Lake Ontario* [Poster]. 9th International Symposium on Flame Retardants, Montreal, QB.

Athey, S., Helm, P., De Silva, A., Jantunen, L., Rochman, C., and Diamond, M. (2019) *Wastewater treatment plants as conduits for microfibrils and other contaminants to enter Lake Ontario* [Poster]. International Association of Great Lakes Research IAGLR 62nd Annual Conference on Great Lakes Research, Brockport, NY.

Athey, S. N., Adams, J. K., Erdle, L., Helm, P., Jantunen, L., Rochman, C., Finklestein, S. A., and Diamond, M. (2019) *From your laundry to the lake: Blue jeans as a sources of anthropogenic microfibers to the aquatic environment* [Poster]. Society of Ecotoxicology and Chemistry 29th Annual Europe Meeting, Helsinki, Finland.

- Athey, S., Urik, J., Vrana, B., and Diamond, M. (2019) T-shirt in a Sandwich: A novel passive sampling approach for analyzing SVOC release from clothing during laundering [Poster]. Society of Ecotoxicology and Chemistry 29th Annual Europe Meeting, Helsinki, Finland.
- Athey, S. N., Adams, J. K., Erdle, L., Helm, P., Jantunen, L., Rochman, C., Finklestein, S. A., and Diamond, M. (2019) *From your laundry to the lake: Blue jeans as a sources of anthropogenic microfibers to the aquatic environment* [Poster]. Society of Ecotoxicology and Chemistry 40th Annual North America Meeting, Toronto, ON.
- Athey, S. N., Rochman, C. M., Brookson, C., Bikker, J., Djuric, N., Earn, A., Bucci, K., 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. *Rethinking Microplastics as a Diverse Contaminant Suite* [Talk]. Society of Ecotoxicology and Chemistry 40th Annual North America Meeting, Toronto, ON.
- Athey, S., Adams, J. K., Erdle, L., Helm, P., Jantunen, L., Rochman, C., Finklestein, S. A., and Diamond, M. The global environmental footprint of indigo denim microfibers from blue jeans [Poster Spotlight]. SETAC SciCon.
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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 spectroscopy, and FT-IR spectroscopy, animal husbandry of microzooplankton and larval fish, microscopy (polarizing light, confocal, brightfield), microplastic collection extraction from environmental media.

Research Experience

- 2013-2014 – Work study lab assistant. The changing amount of precipitation of terrestrial origin in Wilmington, North Carolina. Supervised by Dr. Joan Willey.
- 2014-2015 – Intern/Research assistant, South African Shark Conservancy.
- 2014-2015 – Undergraduate research assistant. Supervised by Dr. Pamela Seaton.
- 2015-2016 – Undergraduate honors research student. Marine plastics as a source of harmful contaminants in loggerhead sea turtles (*Caretta caretta*). Supervised by Dr. Pamela Seaton.
- 2016-2018 – 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.
- 2017-2018 – Research assistant. Microplastic ingestion by the black sea bass, *Centropristric striata*: An assessment of potential impacts on health of an Atlantic commercial fish species. Supervised by Dr. Susanne Brander.
- 2018-present – PhD research. Domestic laundering as a conduit for microfibers and chemical contaminants to enter the outdoor environment. Supervised by Dr. Miriam Diamond and Dr. Chelsea Rochman.
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TEACHING EXPERIENCE

University Courses

- 2015 – Lecture TA, 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 tutorial TA, 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 TA, 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.

2019 – Invited panelist. A Plastic Ocean film discussion panel. Atlantic Healthy Oceans Initiative.

2019 – Marking TA, one term *Public Issues in Geology* (University of Toronto)

2019 – Dept. of Earth Sciences Lead Writing TA, Writing Integrated Teaching (WIT) program (University of Toronto)

2020 – Dept. of Earth Sciences Lead Writing TA, WIT program (University of Toronto)

2020 – Marking TA, one term *Our Home Planet* (University of Toronto)

2020 – Guest lecturer *Indigenous Studies* (University of Toronto), lecture on the widespread environmental impact of microfibers from clothing. Professor: Dr. Melanie Jeffrey.

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 Flannagan Martin*, Katy Nickel*, Brooke Faulkner*, Elizabeth Chason+, Rebekah James+, Siti Muhammed*, Veronica McKelvey+

Other Teaching Experience

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

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

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 & Founder, 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/Social Media Coordinator, SETAC Microplastics Interest Group

2018-2019 – Rockfest Seminar Series Coordinator, Association of Graduate Students in Earth Sciences (AGESS)

2019-2020 – Mental Health & Wellness Coordinator, AGESS

2018-present – Social Media Coordinator, UofT Trash Team (Rochman Lab)

2019-present – Vice President, AGESS

Selected Media

CBC. [Your denim could be destroying some of the world's most precious water bodies, new study finds.](#) September 2, 2020.

Smithsonian Magazine. [Microfibers From Blue Jeans Are Polluting Arctic Oceans.](#) September 4, 2020.

ZME Science. [Blue jeans' microfiber footprint extends all the way to the Arctic.](#) September 2, 2020.

Gizmodo. [Your Blue Jeans Are Polluting the Arctic.](#) September 2, 2020.

NewScientist. [Blue jeans pollute water by releasing 50,000 microfibres per wash.](#) September 2, 2020.

Wired Magazine. [Your Beloved Blue Jeans Are Polluting the Ocean – Big Time.](#) September 2, 2020.

SETAC TV. [SETAC 2019 Community Engagement Event.](#) November 4, 2019.

500 Queer Scientists. [Scientist highlight.](#) October 2019.

The Washington Post. ['The Energy 202: Trump does not get the point of plastic straw bans. Pollution experts explain.'](#) July 23, 2019.

Chatelaine. ['Everything You Should Know About Microplastics—And One Small Thing You Can Do To Help.'](#) August 20, 2019.

Ontario Nature Magazine. ['Drowning in Plastic.'](#) April 2019.

CTV News. [UofT researchers look at what types of garbage head into Lake Ontario.](#) August 3, 2018.

Eater Upsell Podcast. [Do we actually need to talk about plastic straws.](#) July 2018.

New York Times. [Starbucks to Stop Using Disposable Plastic Straws by 2020.](#) July 18, 2018.

Waste360. [North Carolina Scientists and Students Work to Combat Ocean Plastics.](#) May 3, 2018.

Brunswick County Magazine. [UNCW's Plastic Ocean Project: Reducing the amount of plastic in the world's oceans.](#) September 3, 2016.

Lumina News. [UNCW Student is 2015 Lumina News Person of the Year.](#) January 20, 2016.