

Matthew H. H. Fischel

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6 Thornberry Lane
Hockessin, DE 19707

EDUCATION

University of Delaware. Newark, DE. 2013 - *present*. Ph.D. candidate

Environmental Chemistry, Advisor: Donald Sparks. [GPA: 3.985/4.0]

University of Delaware. Newark, DE. *May 2012, Summa Cum Laude*, General Honors Degree

Dual Bachelors of Science in *Environmental Soil Science & Natural Resources* [GPA: 3.95/4.0]

PROFESSIONAL EXPERIENCES

University of Delaware Graduate Research— 2013 – present

Quantifying the impact of sea level rise on the fate and mobility of legacy arsenic contamination in wetland flora. Raised *Phragmites* and *Spartina* in controlled growth chambers hydroponically and in native soils. Plant tissue was analyzed for arsenic with inductively coupled plasma optical emission spectrometry. Micro X-ray absorption near edge structure and micro X-ray fluorescence spectroscopy was performed on the samples at national synchrotron laboratories.

University of Delaware Plant and Soil Chemistry - NSF EPSCoR Grant – 2008 – 2011, 2013

Investigated synthesis techniques for biogenic, synthetic, and nano manganese-oxides (Mn-oxide). Conducted detailed analysis of these Mn-oxide species to measure surface area and crystallinity. Quantified Mn-oxide reactivity through the kinetics of arsenite oxidation.

Cliff Island Invasive Species Program Manager— 2013

Coordinated an Island wide effort to restore native vegetation. Conducted floral diversity surveys and developed and implemented an invasive plant species eradication plan. Managed an assistant and groups of volunteers. Featured speaker at the Oceanside Conservation Trust of Casco Bay Annual Meeting.

NovaFlora Intern Plant Breeder— 2012

Created novel plant varieties and mastered advanced tissue culture techniques. Conducted pollination, seed collection, and plant selection. Developed in-vitro pollen germination media.

FELLOWSHIPS

Delaware Environmental Institute Fellowship – 2017-2019

Donald L. and Joy G. Sparks Graduate Fellowship in Soil Science – 2017

National Science Foundation Graduate Research Fellowship Program – 2014-2017

HONORS & AWARDS

2016-Goldschmidt Conference Student Grant Recipient

2016-Third Place Poster Presentation at the CANR Research Symposium

2014-Wilford Gardner World Congress of Soil Science Travel Award

2011-Interdisciplinary Research in Sustainability Award

2011-National Federation of Garden Club Scholarship

2009-Panel of Scholars award for the highest GPA

PEER REVIEWED PUBLICATIONS

Fischel, M.H.H., Fischel, J.S., Lafferty B.J., & Sparks D.L. (2015). The influence of environmental conditions on kinetics of arsenite oxidation by manganese-oxides. *Geochemical Transactions*, 16 (15).

Fischel, J.S., Fischel M.H., & Sparks, D.L. (2015). Advances in Understanding Reactivity of Manganese Oxides with Arsenic and Chromium in Environmental Systems. *Advances in the Environmental and*

Biogeochemistry of Manganese Oxides. American Chemical Society Symposium Series, 1197 (1), 1-27.

PRESENTATIONS

Fischel, M.H., Clarke C., Sparks D.L. (2018). Impact of Climate on the Mighty Manganese Soils of Graskop. World Congress of Soil Science, Rio de Janeiro, Brazil, August 12-17. Oral Presentation.

Fischel, M. H. (2018). Hedonic Haworthia and other Succulent Gems. Cabell County Master Gardeners, West Virginia. November 13. Invited Speaker.

Fischel, M.H., Clarke C., Sparks D.L. (2018). Arsenic oxidation by the mighty manganese soils of Graskop. *American Chemical Society National Meeting & Exposition*, New Orleans, LA, March 18-22. Oral presentation.

Fischel, M.H., Clarke C., Sparks D.L. (2018). Arsenic oxidation by the mighty manganese soils of Graskop. *American Chemical Society National Meeting & Exposition*, New Orleans, LA, March 18-22. Oral presentation.

Fischel, M.H., Clarke C., Sparks D.L. (2017). Arsenic Oxidation by the Mighty Manganese Soils of Graskop. *Goldschmidt*, Paris, France, August 13-18. Poster presentation.

Fischel, M.H., Clarke C., Sparks D.L. (2017). Arsenic oxidation by the mighty manganese soils of Graskop. *American Chemical Society National Meeting & Exposition*, San Francisco, CA, April 2- 6. Poster presentation.

Fischel, M.H. & Sparks D.L. (2016). Sea Level Rise Alters Arsenic Speciation in Wetland Plants and Soils, *ASA, CSSA & SSSA International Annual Meeting*, Phoenix, AZ, November 6-9. Poster presentation.

Fischel, M.H. & Sparks D.L. (2016). The Impact of Sea Level Rise on Arsenic Speciation in Wetland Flora. *Goldschmidt Conference*, Yokohama, Japan, June 26 - July 1. Poster presentation.

Fischel, M.H. & Sparks D.L. (2016). Impact Of Sea Level Rise On Arsenic Speciation In *Phragmites australis* and *Spartina alterniflora*. *251st American Chemical Society National Meeting & Exposition*, San Diego, CA, March 13-17. Oral presentation.

Fischel, M.H., Sparks, D.L. (2015). The Impact of Sea Level Rise on Arsenic Sorption in *Phragmites Australis* Root Plaques. *DENIN Graduate Student Research Symposium*, Newark, DE, October 7th. Poster presentation.

Fischel, M.H., & Sparks, D.L. (2015). The Impact of Sea Level Rise on Arsenic and Chromium Sorption in *Phragmites Australis* Root Plaques. *249th American Chemical Society National Meeting*, Denver, Colorado, March 22-26. Oral presentation.

Fischel, M.H., Sparks D.L., Bais H. P., & Tappero R. (2014). The Impact of Sea Level Rise on Arsenic Sorption in *Phragmites Australis* Root Plaques. *Soil Science Society of America (SSSA) International Annual Meeting*, Long Beach, CA, November 2-5. Oral presentation.

Fischel, M.H. & Fischel, J.S. (2014) Two Brothers' Insight into becoming a NSF Graduate Research Fellow. *University of Delaware Plant and Soil Science Seminar*, Newark, DE. Oral Presentation.

Fischel, M.H., Fischel, J.S., & Sparks, D.L. (2014). Kinetics of Arsenic Oxidation by Manganese Oxide Minerals: The Influence of Origin and Structure on Reactivity. *20th World Congress of Soil Science*, Jeju, Korea, June 8-13. Poster presentation.

Fischel, M.H., Fischel J.S., Lafferty B.J., & Sparks D.L. (2011). Kinetics of Arsenite Oxidation by Manganese Oxide Minerals. *National Science Foundation EPSCoR Annual Meeting*, Newark, DE. Poster presentation.

VOLUNTEER & LEADERSHIP ACTIVITIES**Delaware Nature Society – 2005-2016**

Over 767 hours volunteered instructing and assisting with environmental programs.

North American Canon Envirothon Competition. Team Captain. Flagstaff, AZ. – 2008

Largest environmental competition in North America. Team awarded 1st place overall.
1st place in individual Wildlife event.

STUDY ABROAD**Tanzania – Winter Session 2012**

Comprehensive experience with community based conservation of wildlife by living with aboriginal people. Quantified ecosystem diversity by recording all observed invertebrates. In-depth exploration of future threats to African wildlife and strategies to abate loss of diversity.

Costa Rica – Winter Session 2011

Intensive field experience elucidating the fundamentals of tropical biodiversity conservation and threats to tropical ecosystems. Additional focus on the anthropogenic use of the Earth's resources and philosophical issues surrounding conservation and human exploitation of the environment.