

**Daniel Rath, M.Sc.**  
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University of California at Davis  
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## EDUCATION

- 2016**      **Ph.D Student, Soils and Biogeochemistry**, University of California, Davis, CA  
Area of Research: Microbial community ecology in soil aggregate fractions  
Academic Advisors: Dr. Kate Scow and Dr. Sanjai Parikh  
Degree Anticipated: June 2021
- 2015**      **M.Sc., Soils and Sustainability**, University of Edinburgh, Edinburgh, UK. (Distinction)  
Dissertation Title: Root growth responses of barley varieties to protist grazing  
Academic Advisor: Bryan Griffiths
- 2010**      **B.A., Biology**, Carleton College, Minnesota, USA. (Magna cum Laude)  
Dissertation Title: Cases of male phenotypic plasticity in polyandrous mating systems  
Academic Advisor: Mark Mckone
- 2007**      **A.S., Environmental Science, Computer Science and Mathematics**, Ecumenical Junior College, Dangriga, Belize. (Valedictorian)
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## RESEARCH EXPERIENCE

**Graduate Student Researcher**, Soil Microbial Ecology and Soil Chemistry Labs, Department of Land, Air and Water Resources, University of California, Davis, August 2016- Present  
Advisors: Dr. Kate M. Scow, Dr. Sanjai J. Parikh

- Evaluated the effect of deficit irrigation and cover crop presence on aggregation in Mediterranean climate
- Characterized extracellular polymeric substances (EPS) extracted from soil aggregates
- Investigated the impact of microbial community structure on rates of aggregate formation and infiltration in agricultural soils

**Graduate Student Researcher**, Agricultural Sustainability Institute, University of California, Davis, June 2017-September 2017  
Advisor: Dr. Sonja Brodt

- Determined knowledge gaps in soil health and soil biology of Central Valley farmers through interviews; organized a training workshop on soil health to address these knowledge gaps

**Graduate Student Researcher**, University of Edinburgh, Edinburgh, Scotland, August 2014- August 2015  
Advisor: Dr. Bryan Griffiths

- Analyzed the effect of protist presence on root growth in various barley (*Hordeum vulgare*) cultivars and landraces
- Evaluated seasonal change in greenhouse gas emissions from a long term rainfed bog monitoring site
- Monitored seasonal zinc and lead levels in vegetation and soils near several French lead mining sites

**Volunteer Botanical Researcher**, Ya'axche Conservation Trust, Toledo, Belize, Summer 2013

Advisor: Dr. Steven W. Brewer

- Performed a survey of native plant species to document botanical diversity in the Bladen nature reserve in Southern Belize.

**Undergraduate Research Assistant**, The Echinacea Project, Kensington, MN, Summer 2009

Advisor: Dr. Stuart Wagenius

- Evaluated the impact of aphid and ant presence on propagation of native *Echinacea angustifolia* plants
- Surveyed native prairie plant populations to determine viability of Minnesota prairie restoration efforts

**Undergraduate Research Assistant**, Carleton College Environmental Studies Department, Tarangire National Park, Tanzania, Winter 2008

Advisor: Dr. Tsegaye Nega

- Determined economic and lifestyle impacts of lion predation on Maasai cattle herds through interviews and statistical analysis
- Used data to develop a model for the "hidden cost" of national parks located next to densely populated agricultural areas.

## TEACHING EXPERIENCE

**Substitute Teacher**, Integrated Science, Ecumenical High School, Dangriga, Belize, June-July 2013

- Lectured on plant reproduction and growth for 200 students in the sophomore year of high school

**Naturalist**, Aullwood Audubon Nature Center and Farm, Dayton OH, August 2010- January 2011

- Led student groups (pre-K to 5th grade) on nature hikes through a nearby nature reserve
- Lectured on Ohio flora and fauna to visiting senior groups

## PROFESSIONAL AND POSTER PRESENTATIONS

**Rath, D**; Brodt S, (2017) "Soil Biology and Carbon Cycling", Talk presented at the 2017 Soil Health Workshop at Russell Ranch Sustainable Agricultural Facility, Agricultural Sustainability Institute, UC Davis, October 2017

**Rath, D** (2017) "What the Soil Can Teach Us", Invited speaker at the biennial TEDx Belize Conference in Belmopan, Belize, September 2017

**Rath, D;** Scow, K.M. (2017) “Soil Microbes and Soil Aggregates”, Talk presented at the 2017 Soil Biology Workshop at Russell Ranch Sustainable Agricultural Facility, Agricultural Sustainability Institute, UC Davis, June 2017

Wang, D; Arenas, C.F.; Griffin, D.E.; **Rath, D;** Fogg, G.E; Scow, K.M. (2017) Application of Innovative Technologies for Estimating Water Use in Irrigated Row Crops for Water Resources Management and Planning. Poster Presentation at UC WATER Security and Sustainability Research Initiative Meeting, October 2017.

**Rath, D;** Griffiths, B (2015) “Comparison of Plant Growth in Barley Landraces and Cultivars in Response to Protist Grazing”, Poster presentation at Master of Science Dissertation Presentation, University of Edinburgh, UK, June 2015.

**Rath, D;** Wagenius, S (2009) “Aphid-Ant Interactions on Echinacea angustifolia host plants in isolated prairie fragments”, Poster presentation at Sigma Xi Math and Science Research Session, Carleton College, Minnesota, November 2009.

**Rath, D;** Pedtke, P (2008) “Quantifying Lion Predation: A model for determining economic loss of lion predation on Maasai livestock herds”, Presented at Biodiversity and Conservation in Africa Research Session, Carleton College, Minnesota, April 2008.

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## **GRANTS AND FELLOWSHIPS**

**Henry A. Jastro Research Award**, Soils and Biogeochemistry Graduate Group, UC Davis, 2017-2018

**Soils and Biogeochemistry Graduate Program Fellowship**, 2016-2017

**Diversity Advancement Pipeline Graduate Fellowship**, Oregon State University, Corvallis, Oregon, 2016 (Declined)

**Graduate School Fellowship**, University of Florida, Gainesville, Florida, 2014 (Declined)

**Stann Creek Valedictory Scholarship**, Dean’s Office, Stann Creek Ecumenical Junior College, 2005-2007

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## **AWARDS AND HONORS**

**Excellence in Soil Science Award**, British Society of Soil Science, Edinburgh, Scotland, June 2015

**Best Dissertation Award**, Soils and Sustainability, Department of Geosciences, University of Edinburgh, June 2015

**Caribbean Advanced Proficiency Exam Award for Outstanding Performance**, Belmopan, Belize, June 2007

**2<sup>nd</sup> Place (2<sup>nd</sup> Highest Scoring Student, Belize)** in Environmental Science, Computer Science, Communication Studies, Mathematics, and Information Technology, Caribbean Advanced Proficiency Exam Subject Awards, Belmopan, Belize, 2007

**Caribbean Examinations Council Exam Award for Outstanding Performance**, Belmopan, Belize, June 2005

**1<sup>st</sup> Place (Highest Scoring Student, Belize)** in Biology, Agriculture, Chemistry, Physics and English Literature, Caribbean Examinations Council Subject Awards, Belmopan, Belize, June 2005

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## **INTERNATIONAL DEVELOPMENT EXPERIENCE**

### **Project Coordinator, January 2011-July 2012**

Mana Organics Pvt. Ltd., Kolkata, India.

- Co-founded a company to promote organic farming strategies and small farmers in Northeast India (Assam region)
  - Responsible for overseeing a team of 10 local workers in planting and maintaining several vegetable varieties (corn, tomatoes, bell peppers, etc.) in a 560 sq. m. greenhouse and in several small farmer plots throughout the Assam area.
  - Provided consultation services for several farming cooperatives and tea estates in soil management practices and organic certification.
  - Coordinated equipment purchases with overseas vendors in China and Taiwan, and worked with international certification agency (SGS Pvt. Ltd.) to obtain organic certification for local farmers.
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## **SELECTED LEADERSHIP, OUTREACH AND VOLUNTEER ACTIVITIES**

- Led a tour of the Russell Ranch Sustainable Agricultural Facility for Agricultural Chemistry graduate students, October 2017
  - Organized and led activities for undergraduates and children for the Soil and Biogeochemistry Picnic Day, April 2017
  - Presented on “The Living Earth” at the Drew School’s “Awareness into Action” Day, San Francisco, April 2017
  - Led tours for the 2017 Russell Ranch Sustainable Agricultural Facility Field Day, Agricultural Sustainability Institute, UC Davis, 2017
  - Part of a team of 3 graduate students that met with members of the US Congress to promote soil science and agricultural research and organized the “Soils, Vines, and Wines” event co-sponsored by the SSSA and UC Davis, November 2016
  - Graduate Student Representative for the Soils and Sustainability Program, August 2014-August 2015
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## **TRAININGS**

- **“Foundations in Teaching” workshop series**, Center for Educational Effectiveness, UC Davis, Fall 2016

- **Fieldwork First Aid Certification**, Department of Geosciences, University of Edinburgh, December 2014
  - **Management and Leadership Workshop**, Fire Management Consultants, Belize, June 2013
  - **Botanical Identification Workshop**, Yaaxche Conservation Trust, Belize, March 2013
  - **Teaching Skills Certification**, Stann Creek Ecumenical Junior College, Belize, October 2012
  - **Fundamentals of Biodynamic Agriculture**, EcoPro Agricultural Consulting, India, March 2011
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#### **PROFESSIONAL SOCIETY MEMBERSHIPS**

- Member of the British Society of Soil Science
- Member of the Soil Science Society of America