

Win Cowger

Curriculum Vitae

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Education

Current PhD. Program in Environmental Science Soil and Water,
University of California at Riverside, Riverside, CA

2015 BS Environmental Science, Iowa State University; Ames, IA
(3.93GPA) & Honors Program Graduate

2013 Associate of Arts in Liberal Arts, Hawkeye Community College; Waterloo, IA
(4.0 GPA)

Employment Experience

Graduate Student Researcher, University of California at Riverside – Riverside, CA

Jul. 2017 – Current

I research plastic pollution, specifically source allocation of plastic pollution with an emphasis on stream monitoring and analysis. I collect field data, conduct lab experiments, write grants, orchestrate collaborations, present at conferences, and develop empirical models. I am partnering with the UCR Spatial Data Center and Let's Do It World in Estonia to develop and maintain my database, the largest mismanaged waste database in the world. See:
<https://opendata.letsdoitworld.org/#/>

Contract Data Scientist, 5 Gyres – Los Angeles, CA

June 2017 - Current

I analyze and compile large datasets to answer questions about mismanaged waste for 5 Gyres Institute. Some examples of questions are: What are the most common types of litter in the United States and Where are hotspot sources and sinks of plastic pollution to the marine environment in South East Asia?

Founding Member, Plant Prudent – Ames, IA

Feb 2017 – Aug 2018

I founded a small business focused on developing web based tools to help people grow plants wisely. Our beta tool is out now which helps Iowa land owners determine the most suitable species of trees to plant on their land based on soil type. See: <http://arcg.is/0y9nb>

Senior GIS Analyst, Prudenterra – Ames, IA

Feb 2016 – Current

I research the feasibility of utilizing advanced GIS functions for Prudenterra, a company that specializes in sustainable agriculture and conservation consulting. Promoted to Senior GIS Analyst on July 2017 and hours cut to 5 hours or less per week during graduate school. I lead a small team of GIS analysts.

Organic Farm Environmental Specialist, Cradle to Grave Farms, Sioux Falls, SD

Feb. 2016 – Dec. 2016

Provided technical GIS and environmental management planning assistance to an organic hop, barley, honey, chicken, and tomato farm. Directly managed hop and tomato fields and chickens.

Crew Leader, Conservation Corps of Minnesota and Iowa – Ames, IA

Feb. 2016 – Dec. 2016

I led a team of 5 conservation workers that traveled around the Midwest. We worked with professionals in Fish and Wild Life Service, The Nature Conservancy, National Parks Service, and various state and county conservation agencies. I coordinated projects, submitted time sheets, project reports, and expense reports. My crew controlled invasive plant species with power tools and herbicide, built board walks, maintained fences, and mapped work using GPS and GIS. I volunteered for a one-month disaster relief effort where I built a phone application for FEMA to quickly find resources for survivors.

Crew Member, Conservation Corps of Minnesota and Iowa -Polk County

May 2015 - Dec. 2015

Worked with the Polk County Conservation Board to upkeep parks by removing invasive species using power tools and/or herbicide, built trails and stairs, and harvested prairie seeds. I volunteered for a disaster relief effort for two weeks where I was the database manager for the volunteer reception center.

Research Assistant, Iowa State University, Dr. Soupir –ABE, Dr. Cademartiri –CBE

Jan. 2014 – May 2015

Worked with a similar freedom to a graduate student to develop a chemical assay for quantifying bacteria in water and developed a device to concentrate bacteria from fresh water sources. Worked in a biological lab doing colony counts, growth curves, and filtration. Worked in a chemical lab creating chemical combinations, testing pH, and working with enzymes.

ASC Tutor in Algebra, Geometry, and Calculus, Iowa State University

Sept. 2013-Dec. 2013

Tutored college and high school math courses in Algebra, Geometry, and Calculus to groups ranging from 1-5 people.

Professional Non-Employment Experience

Knowledge and IT Team Member, Let's Do It World, Estonia

Sept. 2017-Current

I provide guidance on data management, data collection, and emerging IT for Let's Do It World. I advised the creation of the World Waste Platform, a data sharing and visualization platform for all waste data worldwide.

Team Member, SCCWRP, Bight 2018 Trash Monitoring Team, Southern California

Sep. 2017-Current

I am helping in the planning and implementing of the regional trash monitoring in streams around Southern California. I will lead microplastic monitoring.

5 Gyres Ambassador, Riverside CA

Jan. 2017-Current

I collaborate with organizations and individuals on projects related to ending plastic pollution through science, policy, and the arts.

Undergraduate Thesis Project, The Bhagsu Clean Watershed Project, Himachal Pradesh, India

Nov. 2013-May 2015

From June-August 2014 in India I worked with an NGO, The Waste Warriors, to observe and quantify how differences in stream morphology and flow affected where anthropogenic litter collects in streams. Led 2-5 field workers to collect field data of garbage and stream morphology and developed and administered public surveys. Made an introductory video tutorial of QGIS for the NGO to learn to use the data collected and collect future data. Conducted public surveys.

President of the Soil and Water Conservation Club, Iowa State University

Dec. 2013- Dec. 2014

Led meetings, and planned activities and speakers. Presented with a ground water flow model to children and professionals to teach the basics of ground water flow.

Magazine Editorial Committee Member "Getting into Soil and Water"

Aug. 2013 – May 2014

Contacted authors, edited their submissions, and found sponsors.

CALS Ambassador Iowa State University

Sept. 2013 – May 2015

Led tours for the College of Agriculture and Life Sciences to prospective students. Planned training and social events for the Ambassador group.

TeamMates Mentor, Waterloo IA

Oct. 2012-May 2013

Mentored a fifth grader once a week to encourage him to be the best that he could be.

Working Groups

Marine Litter Hotspot Methodology Working Group, United Nations, China. 2018
Microplastics Methodology Working Group, SCCWRP and Horiba, Southern California. 2019
Trash Monitoring Work Group, Waterboards, California, 2019

Current Advisory Roles

Ocean Protection Council Research Adviser
5 Gyres Research Adviser
Let's Do It World Data Science and IT Adviser
The Longest Swim Methods Adviser
EPA Methods Adviser
National Cleanup Day

Computer Software Competencies

QGIS
Inkscape
ArcMap Advanced
ArcGIS Online and GeoApps
Agricultural Conservation Planning Framework (ACPF), USDA GIS Model
Microsoft Office Suite
Advanced Google Suite
Stella
R
Python
Basic knowledge of Visual Basic, HTML, CSS, and Java Script

Certificates

Lab Safety Training UCR, Aug. 2017
Commercial Herbicide Applicator, Feb. 2016
Wildland Fire Fighter Type II, Feb. 2016
General Lab Safety ISU, Jan. 2015
Defensive Driving Course, May 2015
FEMA Trainings ICS and NIMS, May 2015
Protecting Human Research Participants NIH Training, Feb. 2014
IOWATER Training, Nov. 2013

Awards

2nd place in poster competition, GIS Data, University of California Riverside, 2018
2nd place in poster presentation competition, Iowa Water Conference, 2015
3rd place, NACTA Soil Judging Competition, 2015
Highest Viewed Blog Post, Conservation Corps of Minnesota and Iowa, 2015

Presentations

AI For Good, 2019, Geneva Switzerland

Kristiina Kerg, Kris Haamer, Win Cowger, “WADE an AI Trash Detection Algorythm”.

Southern California SETAC Conference, 2019

Competed in oral presentation competition and presented, “Are Microplastic Methods Comparable and Do They Reflect Reality?”

Clean World Conference, 2019

Invited to present “Policy implications of waste data”.

American Geophysical Union, 2018

Competed in a platform presentation and presented “Are Microplastic Methods Comparable and Do They Reflect Reality?”

North America SETAC Conference, 2018

Competed in a platform presentation and presented “Are Microplastic Methods Comparable and Do They Reflect Reality?”

International Marine Debris Conference, 2018

Lead a session on big data in marine debris science that combined lectures with a panel discussion.

Presented in a session about the role of open data in marine debris with Let’s Do It World.

Wildland Urban Interface Conference UCR, 2018

Competed with a poster about environmental relevance in regard to plastic pollution and discussed what environmental relevance means to the people at the conference.

GIS Day Conference UCR, 2018

Competed with a poster about the R Clean Community and won second place.

Southern California SETAC Conference, 2018

Competed with a poster about environmental relevance in regard to plastic pollution and discussed what environmental relevance means to the people at the conference.

Clean World Conference, 2018

Lead a panel discussion about the development of the World Waste Platform.

GIS Day Conference UCR, 2017

Competed with a poster about the World Waste Platform.

Apps for Ag Hackathon, 2017

Developed and presented a suite of spatial tools and business model for a business that utilizes urban land for agriculture, pays landowners for underutilized land, beautifies neighborhoods, and combats food deserts.

Project AWARE, 2016

Presented: “Where did the trash you’ve cleaned up come from? A more productive future for stream cleanups”

Iowa Water Conference, 2015

Competed in poster presentation

Oklahoma State Student Water Conference, 2015

Competed in poster presentation

Other Conferences and Events Attended

Iowa Water Conference, 2016

Represented Prudenterra as their GIS Analyst

Iowa Water Conference, 2014

Represented the “Getting into Soil and Water” Magazine

Scholarships and Grants Received

Summer 2018 – Summer 2019

Microsoft Artificial Intelligence Development (\$40,000)

Microsoft AI for Earth Grant (\$16,776)

UC Riverside Undergraduate Summer Learn and Earn (\$1,960)

Let’s Do It World, Clean World Conference, Estonia (\$1,200)

United Nations Working Group, Hotspots of Marine Litter (\$1,500)

SETAC North America Competitive Travel Grant (\$500)

GSA Travel Grant (\$700)

Summer 2017- Summer 2018

National Science Foundation Graduate Research Fellowship (\$138,000)

Chancellors Distinguished Fellowship (\$40,000)

East China Normal University Plastic Hotspot Working Group, China (\$1,500)

Algalita Pacific Gyre Research Voyage (\$500)
Let's Do It World, Clean World Conference, Estonia (\$450)
CSIRO Research Travel Grant, Australia (\$500)
GSA Travel Grant (\$1,400)

Fall 2014 - Spring 2015

Oklahoma Student Water Conference Travel Scholarship (\$250)
Undergraduate Honors Program Grant (\$750)
Iowa Soil and Water Conservation Society Scholarship (\$500)
Phi Theta Kappa Scholarship (\$1000)
Fred Foreman Scholarship in Leadership Participation (\$1000)

Fall 2013 - Spring 2014

Iowa State Agronomy Travel Fellowship (\$1250)
Phi Theta Kappa Scholarship (\$1000)

Fall 2012 - Spring 2013

McElroy Minority Scholarship (\$2500)

Fall 2011-Spring 2012

McElroy Minority Scholarship (\$1250)

Publications

Publications

Cowger W, Schultz R, Bernstein N, Gray A, Anthropogenic Litter in Iowa Riparian Areas is Dependent on Near-Stream and Watershed Scale Land Use. Environmental Pollution 2019.

Zhao Z, Kang Y, Magdy A, Cowger W, Gray A. A Data-Driven Approach for Tracking Human Litter in Modern Cities. In: 2019 IEEE 35th International Conference on Data Engineering Workshops (ICDEW). 2019. p. 69–73.

Book Chapters

Cowger W, Gray A, Eriksen M, Theil M, Moore C. Evaluating Wastewater Effluent as a Source of Microplastics in Environmental Samples. Microplastics in Water and Wastewater. IWA. In press.

Working Papers

Cowger W, Eriksen M, Wilcox C, Gray A, Hardesty BD, The Source of Plastic is Land Based.

Cowger W, Eriksen M, Wilcox C, Barrows A, Big Data on Plastic Pollution from Citizen Science Surveys: Opportunities and Challenges. Submitted to Marine Pollution Bulletin on 07/2018. With Editor

Thesis

Cowger W, Schultz R. 2015. “The Bhagsu Clean Watershed Project”, Iowa State University, Honors Program, Honors Project Records, RS 3/3/3, Special Collections Department, Iowa State University Library.

Other Publications

World Cleanup Day 2018 Waste Report, Let’s Do It World. 2018.

https://www.letsdoitworld.org/wp-content/uploads/2019/01/WCD_2018_Waste_Report_FINAL_26.01.2019.pdf

BAN List 3.0, 5 Gyres et al., 2019

“A letter from the President” in Getting into Soil and Water Magazine, 2015

Conservation Corps Blogger, 2015

Acknowledgements in Publications

Kathryn Munster, An Analysis of Citizen Science and its Effects on Marine Plastic Pollution, 2019. Undergraduate Thesis, Syracuse University.

Coffin S, Dudley S, Taylor A, Wolf D, Wang J, Lee I, et al. Comparisons of analytical chemistry and biological activities of extracts from North Pacific gyre plastics with UV-treated and untreated plastics using in vitro and in vivo models. Environ Int. 2018 Dec 1;121:942–54.

BAN List 2.0, 5 Gyres et al., 2018

In the News

“Plastic waste pollution in the ocean: technology at the tipping point” 2018. Christine Evans Pughe. Engineering and Technology Magazine.

<https://eandt.theiet.org/content/articles/2018/05/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/>

“A voyage to humankind’s largest creation – the North Pacific Garbage Patch” 2018. Let’s Do It World.

“Monitoring for Clean Beaches.” 2019. NOAA MDP Blog.
https://blog.marinedebris.noaa.gov/monitoring-clean-beaches?utm_medium=email&utm_source=GovDelivery

“UNESCO prizewinner uses AI tool to detect and collect trash worldwide” 10 July 2019. UNESCO Press Release. <https://en.unesco.org/news/unesco-prizewinner-uses-ai-tool-detect-and-collect-trash-worldwide>