

Ian D. Buller

National Cancer Institute
 Division of Cancer Epidemiology and Genetics
 Occupational and Environmental Epidemiology Branch
 9609 Medical Center Drive, 6E124
 Rockville, MD 20850
<https://idbl.rbind.io>

EDUCATION

- 2013 B.A./M.A., Ecology and Evolutionary Biology, University of Colorado – Boulder
 Thesis: *Nationwide distributional determinants for a wildlife and human parasite*
- 2019 Ph.D., Environmental Health Sciences, Emory University
 Dissertation: *On estimating the spatial distribution of enzootic Yersinia pestis in the United States using a wide-ranging sentinel species and spatial statistics with sampling considerations*

PROFESSIONAL EXPERIENCE

- 2008-2013 Student Assistant (I & II), University of Colorado – Boulder (CU-Boulder), Boulder, CO
- 2012-2013 Research Assistant, Wedge Communications L.L.C., Golden, CO
- 2013 Visiting Research Assistant, Instituto Leônidas e Maria Deane – Fiocruz Amazônia, Manaus, Brazil
- 2019-Pres Cancer Prevention Fellow, Cancer Prevention Fellowship Program (CPFP), Division of Cancer Prevention (DCP), National Cancer Institute (NCI), National Institutes of Health (NIH), Rockville, MD working in the Occupational and Environmental Epidemiology Branch, Division of Cancer Epidemiology and Genetics (DCEG), NCI, NIH

OTHER TRAINING

- 2012 Graduate Summer Session in Epidemiology, University of Michigan, Ann Arbor, MI
- 2015 Adult Mosquito Identification Certification, East Georgia State College, Swainsboro, GA
- 2017 Bayesian and INLA Disease Mapping Curriculum, Medical University of South Carolina, Charleston, SC
- 2017 Graduate Workshop on Environmental Data Analytics, National Center for Atmospheric Research, Boulder, CO
- 2019 Principles and Practice of Cancer Prevention and Control course, NCI, Rockville, MD
- 2019 Molecular Cancer Prevention course, NCI, Rockville, MD
- 2020 Linux for Biomedical Researchers, Foundation for Advanced Education in the Sciences (FAES) at NIH (*virtual*)
- 2020 Creating Plots, Graphs, and Maps Using R, FAES at NIH (*virtual*)
- 2021 The Brothers Bayes' Boisterous Bootcamp. Epidemiology in Occupational Health (EPICOH) Workshop (*virtual*)

SOFTWARE SKILLS

R, LaTeX, Git, Shell, markdown, SAS, ArcGIS, MS Office Suite

COMPETITIVE RESEARCH FUNDING

- 2014 Graduate Research Fellowship
Agency: Graduate Research Fellowship Program, National Science Foundation (NSF)
Amount: \$135,000
Duration: 5 years (2014-2019)
Role: Principal Investigator (PI)
Title: Modeling vector occurrence under imperfect detection: an improved analytical framework
Award Number: DGE-1444932
- 2017 Graduate Research Internship
Agency: Graduate Research Internship Program, NSF
Amount: \$5,000
Duration: 1 year (2017-2018)
Role: PI
Location: U.S. Department of Agriculture, Animal and Plant Health Inspection Service, National Wildlife Disease Program
Award Number: DGE-1444932 (same as above)
- 2020 DCEG Informatics Tool Challenge Award
Agency: DCEG, NCI
Amount: \$20,000
Duration: 1 year (2020-2021)
Role: Co-PI with Dr. Derek Brown
Title: sparrpowR: A flexible R package and webtool to estimate statistical power of a spatial cluster detection technique
- 2020 William G. Coleman Jr., Ph.D., Minority and Health Disparities Research Innovation Award
Agency: National Institute of Minority Health and Health Disparities (NIMHD)
Amount: \$15,000
Duration: 1 year (2020-2021)
Role: Co-PI with Drs. Jacqueline Vo, Naoise Synnott, and Derek Brown
Title: HDoCS in PLCO: Health Disparities of Cancer Survivors in the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial
- 2021 Trans-Fellowship Research Award Supplement
Agency: CFPF, DCP, NCI
Amount: \$17,000
Duration: 1 year (2021-2022)
Role: Co-PI with Dr. Derek Brown
Title: Improvements to Spatial Power: advanced features for usability and visualization
- 2022 Career Development Award
Agency: NCI Director's Intramural Innovation Award Program, NCI
Amount: \$15,000
Duration: 1 year (2022-2023)
Role: PI
Title: A new paradigm for environmental exposure assessment involving multiple chemicals: incorporating spatial components into mixture models for investigations of associated cancer risks

AWARDS, SCHOLARSHIPS, HONORS

- 2006 Eagle Scout Rank, Boy Scouts of America
- 2008 Summer Undergraduate Research Experience, CU-Boulder
- 2008-2013 Presidential Leadership Class, CU-Boulder
- 2010 Alvin G. Flanagan/Walker Family Scholarship, CU-Boulder
- 2011 Barry M. Goldwater Scholarship, Barry M. Goldwater Scholarship and Excellence in Education Foundation
- 2013 Graduate Research Fellowship Program, NSF (honorable mention)
- 2014 Student Photography Contest, Emory Global Health Institute (honorable mention)
- 2017 New Thinkers/New Leaders Award, Emory University
- 2018 Student Section Travel Award, Ecological Society of America Annual Meeting
- 2018 Young Investigator Award, American Society of Tropical Medicine and Hygiene (first-tier mention)
- 2020 DCEG Fellows Award for Research Excellence, DCEG, NCI
- 2021 CFPF Merit Award, DCP, NCI
- 2021 NCI Director's Award for Emerging Leader, Office of the Director, NCI (shared with 2019-2020 CFPF Fellows Advisory Board, DCP, NCI)

ACADEMIC APPOINTMENTS/ MENTORING EXPERIENCE

- 2011 Undergraduate Teaching Assistant, Ecology and Evolutionary Biology, CU-Boulder
- 2010-2011 First Year Class Advisor, Presidents Leadership Class, CU-Boulder
- 2011-2013 Academic Affairs Fellow, Presidents Leadership Class, CU-Boulder
- 2014-2017 Teaching Assistant, Rollins School of Public Health, Emory University
- 2017-2018 Laboratory Instructor, College of Arts and Sciences, Emory University
- 2017-2018 Symposium Research Mentor, Undergraduate Research Program, Emory University
- 2020-2022 Peer Mentor, CFPF, DCP, NCI (Drs. Kimberley Clevenger and Percy Guzman)
- 2022 NIH Summer Research Program, NIH (Inam Ghulamhussain, Master of Public Health Student at George Washington University Milken Institute School of Public Health Department of Epidemiology)

PROFESSIONAL CONTRIBUTIONS AND AFFILIATIONS**Professional Societies and Memberships**

- 2010-2013 American Society of Parasitologists (ASP)
- 2011 Phi Beta Kappa
- 2011-2018 Ecological Society of America (ESA)
- 2013-Pres Society for Epidemiologic Research (SER)
- 2016-2017 Georgia Public Health Association

- 2017-2018 American Public Health Association (APHA)
- 2018-2020 American Society of Tropical Medicine and Hygiene (ASTMH)
- 2018-Pres American Statistical Association
- 2019-Pres American Association for Cancer Research (Affiliate member)
- 2019-Pres National Postdoctoral Association (Affiliate member)
- 2020-2021 American Association of Geographers (AAG)
- 2020-Pres International Society for Environmental Epidemiology (ISEE)

Committees, Review Panels, and Editorial Boards

- 2015-2018 Co-Founder, President, and Treasurer, Public Health Doctoral Students in Environmental Health, Emory University
- 2016-2018 Team Lead, Emory Climate Analysis and Solutions Team, Emory University
- 2017 Judge, Science Fair, Fernbank Elementary School, Decatur, GA
- 2017-2018 Judge, Undergraduate Research Symposium, Emory University
- 2018-2019 Judge, American Statistical Society DataFest at Emory University, Emory University
- 2020-2021 Co-Chair, Method and Training Committee, Fellows Advisory Board, DCP, NCI
- 2020-Pres Co-Editor-in-Chief, DCEG Fellows Editorial Board, DCEG, NCI
- 2022 Reviewer, Abstracts for the 2022 SER Annual Meeting

Reviewer for Refereed Journals

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| <i>Cancer Causes & Control</i> | <i>Cancer Epidemiology, Biomarkers & Prevention</i> |
| <i>Methods in Ecology and Evolution</i> | <i>International Journal of Environmental Research and Public Health</i> |
| <i>PLoS – Neglected Tropical Diseases</i> | <i>International Journal of Health Geographics</i> |
| <i>Scientific Reports</i> | <i>Journal of the Georgia Public Health Association</i> |

MEETINGS AND PRESENTATIONS (presenting author only)

Oral Presentations

- 2010 A loaded toad: parasite communities of juvenile Western Toads (*Anaxyrus boreas*) from California and Oregon. ASP Annual Meeting, Colorado Springs, CO.
- 2011 Parasite communities of juvenile Western Toads (*Anaxyrus boreas*) from California and Oregon, USA. Rocky Mountain Conference of Parasitologists Annual Meeting, Ogallala, NE.
- 2012 Factors related to the distribution and abundance of the four-host trematode parasite *Alaria* spp. in amphibians in the San Francisco Bay Area. ESA Annual Meeting, Portland, OR.
- 2015 A solution to the problem of separation in site-occupancy models. ESA Annual Meeting, Baltimore, MD.
- 2021 Geographic variation in the oral microbiome of NIH-AARP Diet and Health Study participants. NIEHS Microbiome Workshop entitled “Impact of Environmental Exposures on the Microbiome and Human Health.” (virtual)
- 2021 Roadway Proximity and Lung Cancer in NIH-AARP Diet and Health Study Participants. ISEE Annual Meeting, New York, New York. (virtual)

Invited Presentations

- 2017 Panelist, Dean's council meeting: climate and health, Emory University, Rollins School of Public Health, Atlanta, GA.
- 2018 Spatial distribution of *Yersinia pestis* found in *Canis latrans* across North America, United States Department of Agriculture, Animal & Plant Health Inspection Services, Wildlife Disease Program, Fort Collins, CO.
- 2018 Spatial distribution of *Yersinia pestis* found in a sentinel species across the United States while accounting for sampling uncertainty, Lancaster University, Lancaster, United Kingdom.
- 2018 Climate and the plague. The Emory Climate Analysis and Solutions Team, Climate@Emory, Emory University, Atlanta, GA.
- 2019 On examining spatial patterns in principal component space to identify suitable habitat for *Yersinia pestis* transmission in the western United States, DCEG Geographic Analysis Working Group (GAWG), NCI, Rockville, MD.
- 2019 On examining spatial patterns in principal component space to identify suitable habitat for *Yersinia pestis* transmission in the western United States, Geospatial Interest Group, Federal Committee on Statistical Methods, Washington, DC.
- 2019 The geographic distribution of *Yersinia pestis* in California: a spatial analysis of carnivore-based spatial disease surveillance, Vector-Borne Disease Section, California Department of Public Health, Sacramento, CA.
- 2020 Zoonotic surveillance of plague via point processes in geographic and principal component space, Department of Biostatistics and Bioinformatics Seminar, Emory University, Atlanta, GA.
- 2020 A place for spatial analysis in the Cancer Control Continuum, DCP, NCI, Rockville, MD. (virtual)
- 2020 Introduction to R. DCP, NCI, Rockville, MD. (virtual)
- 2021 Spatial Power: a new webtool to calculate power for spatial cluster detection techniques, DCEG GAWG, NCI, Rockville, MD. (virtual)
- 2021 Estimating environmental mixtures in a geospatial context, symposium entitled "Implementing geolocation-based exposure assessments," SER Annual Meeting, San Diego, CA. (virtual)
- 2021 Putting cancer into (geo)spatial context, DCP, NCI, Rockville, MD. (virtual)
- 2021 Spatial epidemiology of noncommunicable diseases (cancer), guest lecture for a course entitled "Epidemiology of Disease," Oregon Health Sciences University – Portland State University School of Public Health, Portland, OR. (virtual)
- 2022 Putting cancer and environmental exposures in (geo)spatial perspective, Center for Science and Technology, Radiation Protection Division, Office of Air and Radiation, U.S. Environmental Protection Agency, Washington, DC. (virtual)
- 2022 Roadway Exposure and Lung Cancer Risk in NIH-AARP Diet and Health Study Participants, DCEG GAWG, NCI, Rockville, MD. (virtual)

Poster Presentations

- 2013 Nationwide distributional determinants of an amphibian and human parasite. ESA Annual Meeting, Minneapolis, MN.
- 2017 Spatial distribution of *Yersinia pestis* in wildlife in California while accounting for sampling effort. Ecology and Evolution of Infectious Disease Annual Meeting, Santa Barbara, CA.

- 2017 Assessing public health co-benefits of the City of Atlanta's Climate Action Plan. APHA Annual Meeting, Atlanta, GA.
- 2018 Spatial distribution of *Yersinia pestis* found in a sentinel species across the United States while accounting for sampling uncertainty. Ecology and Evolution of Infectious Disease Annual Meeting, Glasgow, United Kingdom.
- 2018 Spatial distribution of *Yersinia pestis* found in a sentinel species across the United States while accounting for sampling uncertainty. ESA Annual Meeting, New Orleans, LA.
- 2018 Spatial distribution of *Yersinia pestis* found in a sentinel species across the United States while accounting for sampling uncertainty. ASTMH Annual Meeting, New Orleans, LA.
- 2020 Geographic variation in the oral microbiome of Agricultural Health Study applicators. AAG Annual Meeting, Denver, CO. (accepted but cancelled due to SARS-CoV-2 pandemic)
- 2020 Geographic variation in the oral microbiome of Agricultural Health Study applicators. SER Annual Meeting, Boston, MA. (virtual)
- 2020 Geographic variation in the oral microbiome of NIH-AARP Diet and Health Study participants. ISEE Annual Meeting, Washington, DC. (virtual)
- 2021 Geographic variation in the oral microbiome of NIH-AARP Diet and Health Study participants. FDA-NIH-NIST-USDA Joint Agency Microbiome Symposium. (virtual)

BIBLIOGRAPHY

Peer-reviewed Publications

1. Johnson PTJ, **Buller ID**. Parasite competition hidden by correlated coinfection: Using surveys and experiments to understand parasite interactions. *Ecology* 92(3): 535-541; 2011. PMID:21608460
2. Fisher JA, Spaur M (co-first), **Buller ID**, Flory AR, Beane-Freeman LE, Hofmann JN, Giangrande M, Jones RR, Ward MH. Spatial heterogeneity in positional errors: a comparison of two residential geocoding efforts in the Agricultural Health Study. *Int. J. Environ. Res. Public Health* 18(4): 1687; 2021. PMID:33572119
3. **Buller ID**, Brown DW (co-first), Myers TA, Jones RR, Machiela MJ. sparrpowR: a flexible R package to estimate statistical power to identify spatial clustering of two groups. *Int. J. Health Geogr.* 20(1): 13; 2021. PMID:33736677
4. **Buller ID**, Patel DM, Weyer PJ, Prizment A, Jones RR, Ward MH. Ingestion of nitrate and nitrite and risk of stomach and other digestive system cancers in the Iowa Women's Health Study. *Int. J. Environ. Res. Public Health* 18(13):6822; 2021. PMID:34202037
5. DelNero PF, **Buller ID** (co-first), Jones RR, Tatalovich ZP, Vanderpool RC, Ciolino HP, Croyle RT. A National Map of NCI-Designated Cancer Center Catchment Areas on the 50th Anniversary of the Cancer Centers Program. *Cancer Epidemiol. Biomark. Prev.* 31(5): 965-971; 2022. PMID:35101903
6. Etemadi A, **Buller ID**, Hashemian M, Roshandel G, Poustchi H, Blount B, Keshavarzi B, Flory AR, Nasser-Moghaddam S, Dawsey SM, Freedman ND, Abnet CC, Malekzadeh R, Ward MH. Urinary nitrate and sodium in a high-risk area for upper gastrointestinal cancers: Golestan Cohort Study. *Environ. Res.* 214(20):113906; 2022. PMID:35863453
7. Shreves AH, **Buller ID**, Chase E, Creutzfeldt H, Fisher JA, Graubard BI, Hoover RN, Silverman DT, Devesa SS, Jones RR. Geographic Patterns in U.S. Lung Cancer Mortality and Cigarette Smoking. *Cancer Epidemiol. Biomark. Prev.* (In press)

Commentaries, Letter, and Non-Peer Reviewed Publication(s)

8. **Buller ID**, Jones RR. Invited Commentary: Predicting incidence rates of rare cancers: adding epidemiologic and spatial contexts. *Am. J. Epidemiol.* 191(3):499-502; 2022. PMID:34875003

Software Packages (Authorship)

9. **Buller ID**, Brown DW. sparrpowR: Power Analysis to Detect Spatial Relative Clusters. R package initial version 0.1.3; 2020. DOI:10.5281/zenodo.5347998. <https://CRAN.R-project.org/package=sparrpowR>
10. **Buller ID**. gateR: Flow/Mass Cytometry Gating via Spatial Kernel Density Estimation. R package initial version 0.1.2; 2020. DOI:10.5281/zenodo.5347893. <https://CRAN.R-project.org/package=gateR>
11. **Buller ID**. envi: Environmental Interpolation using Spatial Kernel Density Estimation. R package initial version 0.1.3; 2020. DOI:10.5281/zenodo.5347827. <https://CRAN.R-project.org/package=envi>
12. **Buller ID**. ndi: Neighborhood Deprivation Indices. R package initial version 0.10; 2022. DOI: 10.5281/zenodo.6989031. <https://CRAN.R-project.org/package=ndi>

Web Applications

13. **Buller ID**, Brown DW. Spatial Power. Division of Cancer Epidemiology and Genetics at the National Cancer Institute; 2021. <https://analysistools.cancer.gov/spatial-power>
14. **Buller ID**, DelNero PF (co-first), Vanderpool RC, Tatalovich ZP. Catchment Areas of NCI-Designated Cancer Centers. GIS Portal for Cancer Research at the National Cancer Institute; 2022. <https://gis.cancer.gov/ncicatchment>