# EMILY L. NORTON

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## EDUCATION

**PhD**     **Johns Hopkins University, Bloomberg School of Public Health**     May 2027
            PhD Candidate in Biostatistics (GPA 4.00)                           (anticipated)
            Advisor: Dr. Nilanjan Chatterjee

**MS**      **University of Hawai'i at Mānoa (UHM)**                            August 2013
            Oceanography (GPA 3.90)
            Advisor: Dr. Erica Goetze

**BA**      **Bowdoin College**                                                May 2010
            Biology major, Mathematics minor, *Summa cum laude*
            Advisor: Dr. Amy Johnson

## PROFESSIONAL EXPERIENCE

**Johns Hopkins University**
**Graduate Student Research Assistant** | Baltimore, MD | August 2022 – present
As a PhD candidate in the Biostatistics Department in the Bloomberg School of Public Health at Johns Hopkins University, I develop and apply new risk prediction models on big, diverse data, to advance equitable cancer risk prediction. I am currently working to develop and validate a multicancer risk prediction model that will summarize an individual's risk for the top ~14 most common cancers. My thesis will also focus on improving breast cancer risk prediction in diverse populations and evaluating the efficiency of various missing data approaches including parametric methods (e.g. mean imputation, multivariate imputation by chained equations) and semi-parametric methods (e.g. doubly-robust, inverse probability weighted, and generalized method of moments estimators). (40 hrs/wk)

**Johns Hopkins University**
**Graduate Student Teaching Assistant** | Baltimore, MD | School years 2023/24, 2024/25
As a lead teaching assistant for the 620 series, I conducted laboratory sessions for up to ~50 students, during which I introduced new statistical concepts and reviewed topics previously covered in lecture. I made my lectures as participatory as possible, often asking and answering questions throughout my presentation. As a teaching assistant, I held office hours (up to 5 hours per week). I also graded and provided feedback on students' homework. See full course list below.

**Private Tutor** | Baltimore, MD | October 2024 – present
I provide one-on-one support for master's and PhD students enrolled in statistics courses at the Bloomberg School of Public Health.

**University of Washington (UW)**
**Cooperative Institute for Climate, Ocean, and Ecosystem Studies (CICOES) /**
**Joint Institute for the Study of the Ocean and Atmosphere (JISAO)**
**Research Scientist** | Seattle, WA | May 2017 - September 2022

- Forecast ocean conditions for the Pacific Northwest shelf waters on seasonal timescales to help inform decision-making by managers in the Dungeness crab, sardine, and hake fisheries.
- Explore the relationships between environmental conditions and habitat patterns for larval and adult Dungeness crab.
- Investigate plankton community structure with genetic metabarcoding.
- Provide technical support for collaborative projects by writing programs in R, Matlab, Python, Fortran, and Bash. (40 hrs/wk)

**Brown University**
**Research Assistant** | Providence, RI | June 2016 - May 2017
- Investigated the evolutionary diversity of the reproduction pathways in *Candida spp.* using the CRISPR/Cas9 system.
- Automated the identification of and ranked potential CRISPR/Cas9 engineered constructs through the development of concise and efficient scripts in R. (40 hrs/wk)

**Maine Coastal Program (Maine Department of Agriculture, Conservation and Forestry)**
**Senior Planner** | Augusta, ME | July 2015 - May 2016
**NOAA Coastal Management Fellow** | Augusta, ME | July 2013 - July 2015
- As project manager for the Maine Coastal Mapping Initiative, a hydrographic data collection program for the State of Maine, I oversaw six contractors, assisted with data collection and quality checking, wrote technical reports summarizing the data processing methods and results, conducted outreach including maintaining the project website, acquired external grant funding, and managed the ~$300,000 annual budget.
- Collaborated with state and federal agencies and private and non-profit partners to improve the sustainable management of marine species and habitats by integrating them into the 2015 State Wildlife Action Plan; served on the Steering Committee as a marine science expert.
- Organized stakeholder engagement meetings and public workshops on ocean acidification, invasive species, and regional ocean planning. (40 hrs/wk)

**University of Hawai'i at Mānoa**
**Graduate Research Assistant** | Honolulu, HI | August 2010 - July 2013
- Conducted biophysical numerical modeling in Matlab and genetic population structure analyses to evaluate the relative importance of physical and biological forces driving connectivity in a circumglobal copepod species. (20 hrs/wk)
- Thesis: *Empirical and bio-physical modeling studies of dispersal barriers for marine plankton*

**University of Hawai'i at Mānoa**
**Teaching Assistant** | Honolulu, HI | August - December 2011
- Taught two recitations per week and corrected weekly assignments for ~20 undergraduate and graduate students enrolled in an applied mathematics course (Geomathematics, OCN312), which covered topics including basic coding in Matlab, ordinary and partial differential equations, complex analysis, linear algebra, and vector calculus. (20 hrs/wk)

**Bowdoin College**
**Calculus Tutor** | Brunswick, ME | Jan-May 2008, 2009; Sep 2009-May 2010

● Tutored undergraduate students enrolled in the calculus series (4 hrs/wk)

**Bowdoin College**
**Grader** | Brunswick, ME | September - December 2007
● Graded weekly homework assignments and quizzes for ~20 undergraduate students enrolled in Biomathematics (MATH204; 4 hrs/wk)


## SELECTED PUBLICATIONS AND PRESENTATIONS

**Norton, E.L.,** Ahearn, T., Mukopadhyay, S., Balasubramanian, J., Kim, E., Pal Choudhury, P., Garcia-Closas, M., and Chatterjee, N. Modular and interpretable multicancer risk prediction of the 14 most common cancers in the U.S. to identify high-risk individuals missed by current age-based screening guidelines. inHealth Precision Medicine Symposium, Baltimore, MD. May 2025. Poster presentation.

Brantley, K.D., Ahearn T., **Norton, E.L.**, Palmer, J., Zirpoli, G., Neuhouser, M.L., Barnett, M., Teras, L., Hodge, J., Rohan, T., Milne, R., Eliassen, A.H., Huang, H., Chen, Y., O'Brien, K., Kitahara, C., Anderson, G., Lee, I, Chatterjee, N., Garcia-Closas, M., Kraft, P., on behalf of Breast Cancer Risk Prediction Project. Performance of common general-population breast cancer risk prediction models in 15 cohorts. American Association for Cancer Research (AACR) Annual Meeting, Chicago, IL. April 2025. Poster presentation: Abstract #1325.

**Norton, E.L.,** and Chatterjee, N. (in preparation) A practical estimator to implement generalized meta-analysis across studies with disparate covariates.

Kim, E., **Norton, E.L.,** and Chatterjee, N. (in preparation) Refining colorectal cancer screening strategies using polygenic risk scores and classical risk factors.

Kim, E., **Norton, E.L.,** Parmar, H., and Chatterjee, N. (in preparation) The relationship between air quality and dermatological disorders in the UK Biobank cohort.

**Norton, E.L.,** Kaplan, I., Siedlecki, S., Hermann, A., Alin, S.R., Newton, J., Corbett, K., Ayres, D., Schumacker, J., Bond, N., Richerson, K., and Alexander, M. 2023. Seasonal ocean forecasts to improve predictions of Dungeness crab catch rates, co-developed with state and tribal fishery managers. ICES Journal of Marine Science, fsad010. https://doi.org/10.1093/icesjms/fsad010

**Norton, E.L.** Math that drives oceanography: A case study of statistical modeling of Dungeness crab catch rates to support fisheries management. Fitchburg State Math Department Seminar Series. November 2021. Invited speaker.

Hermann, A., and **Norton, E.L.** Enhanced dynamical downscaling of global climate projections to regional scales using machine learning. PICES Annual Meeting, Online. Oct 2021. Oral presentation: 15112.

Schroeder, I. D., Leising, A., Bograd, S., deWitt, L., Garfield, N., Hazen, E.L., Robinson, D., Rudnick, D.L., Jacox, M., Santora, J., Fisher, J., Jacobson, K., **Norton, E.L.**, Siedlecki, S., Kaplan, I., Greene, C., and Munsch, S. "Ecosystem Status Report of the California Current for 2020–21: A Summary of Ecosystem Indicators Compiled by the California Current Integrated Ecosystem Assessment Team (CCIEA)." *Climate and Ocean Drivers,* issue of *U.S. Department of Commerce, NOAA Technical Memorandum,* edited by Harvey, C.J., Garfield, N., Williams, G.D., and Tolimieri, N., vol. NMFS-NWFSC-170, 2021, pp. 8-28. https://doi.org/10.25923/x4ge-hn11.

Berger, H., Siedlecki, S.A., Matassa, C., Alin, S.R., Kaplan, I.C., Hodgson, E., Pilcher, D., **Norton, E.L.**, and Newton, J. 2021. Seasonality and life history complexity determine vulnerability of Dungeness crab to multiple climate stressors. *AGU Advances* 2 e2021AV000456. https://doi.org/10.1029/2021AV000456.

Siedlecki, S.A., Pilcher, D., Howard, E.M., Deutsch, C., MacCready, P., **Norton, E.L.**, Frenzel, H., Newton, J., Feely, R.A., Alin, S.R., and Klinger, T. 2021. Coastal processes modify projections of some climate-driven stressors in the California Current System. *Biogeosciences* 18(9):2871-2890. https://doi.org/10.5194/bg-18-2871-2021.

Malick, M.J., Siedlecki, S.A., **Norton, E.L.**, Kaplan, I.C., Haltuch, M.A., Hunsicker, M.E., Parker-Stetter, S.L., Marshall, K.N., Berger, A.M., Hermann, A.J., Bond, N.A., and Gauthier, S. 2020. Environmentally driven seasonal forecasts of Pacific hake distribution. Frontiers in Marine Science 7:578490. https://doi.org/10.3389/fmars.2020.578490.

**Norton, E.L.,** Siedlecki, S., Officer, S., Kaplan, I., Fisher, J., Morgan, C., Hermann, A., Alin, S.A., Feely, R.A., Saenger, C., Newton, J., and Bednarsek, N. 2020. The importance of environmental exposure history in forecasting Dungeness crab megalopae distribution using J-SCOPE, a high-resolution model for the US Pacific Northwest. *Frontiers in Marine Science, 7*, 102. https://doi.org/10.3389/fmars.2020.00102.

Bednarsek, N., Feely, R.A., Beck, M.W., Alin, S.R., Siedlecki, S.A., Calosi, P., **Norton, E.L.**, Saenger, C., Strus, J., Greeley, D., Nezlin, N.P., Roethler, M., and Spicer, J.I. 2020. Exoskeleton dissolution with mechanoreceptor damage in larval Dungeness crab related to severity of present-day ocean acidification vertical gradients. *Science of the Total Environment* 716: 136610. https://doi.org/10.1016/j.scitotenv.2020.136610.

Litzow, M.A., Hunsicker, M.E., Bond, N.A., Burke, B.J., Cunningham, C., Gosselin, J.L., **Norton, E.L.**, Ward, E.J., and Zador, S. 2020. The changing physical and ecological meanings of North Pacific Ocean climate indices. *Proceedings of the National Academy of Sciences* 117 (14): 7665-7671. https://doi.org/10.1073/pnas.1921266117.

**Norton, E.L.,** Sherwood, R.K., and R.J. Bennett. 2017. Development of a CRISPR-Cas9 system for efficient genome editing of *Candida lusitaniae*. mSphere 2:e00217-17. https://doi.org/10.1128/mSphere.00217-17.

Goetze, E., Andrews, K.R., Peijnenburg, K.T.C.A., Portner, E., and **E.L. Norton**. 2015. Temporal stability of genetic structure in a mesopelagic copepod. PLoS ONE 10(8): e0136087. https://doi.org/10.1371/journal.pone.0136087.

Andrews, K. R., **Norton, E. L.,** Fernandez-Silva, I., Portner, E., and Goetze, E. 2014. Multilocus evidence for globally distributed cryptic species and distinct populations across ocean gyres in a mesopelagic copepod. *Molecular Ecology* 23: 5462-5479. https://doi.org/10.1111/mec.12950

**Norton, E. L.,** and Goetze, E. 2013. Equatorial dispersal barriers and limited connectivity among oceans in a planktonic copepod. *Limnology and Oceanography* 58: 1581-1596. https://doi.org/10.4319/lo.2013.58.5.1581.

**TEACHING**
**Lead Teaching Assistant**

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|---|---|
| 140.621 Statistical Methods in Public Health I | August – October, 2024 |
| 140.623 Statistical Methods in Public Health III | January – March, 2025 |

**Teaching Assistant**

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| 140.622 Statistical Methods in Public Health II | October – December, 2023 |
| 140.623 Statistical Methods in Public Health III | January – March, 2024 |
| 140.624 Statistical Methods in Public Health IV | March – May, 2024 |
| 140.776 Statistical Computing | August – October, 2023 |
| 140.614 Data Analysis Workshop II | June, 2023 |

## SERVICE & LEADERSHIP

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|---|---|
| Biostatistics Student Organization (BSO) Mentorship Committee Co-Lead | March 2025 - Present |
| Biostatistics Department Retreat Social Committee & Activity Lead | September - October 2024 |
| BSO PhD Student Representative | August 2024 - Present |
| Biostatistics Department TA Training Planning Committee | June - August 2024, 2025 |
| ENAR Fostering Diversity in Biostatistics Workshop | March 2024 |
| BSO Peer Mentor | August 2023 - Present |

## SELECTED AWARDS AND HONORS

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|---|---|
| Carol Eliasberg Martin Scholarship | July 2025 – June 2026 |
| Innovation for Cancer Informatics Grant | June 2025 – June 2026 |
| Science Communication Fellow (Pacific Science Center) | Spring 2019 |
| NOAA Coastal Management Fellowship | July 2013 – June 2015 |
| Travel Award (UHM Graduate Student Organization) | October 2012 |
| Sarah and James Bowdoin Scholar (Bowdoin College) | 2006 - 2010 |
| Charles Caroll Everett Scholarship (Bowdoin College) | May 2010 |
| Donald and Harriet S. Macomber Prize in Biology (Bowdoin College) | May 2010 |
| INBRE Academic Year Supply Award (Bowdoin College) | September 2009 |
| Doherty Coastal Studies Research Fellowship (Bowdoin College) | May – August 2009 |
| Phi Beta Kappa | May 2009 |
| Abraxas Award (Bowdoin College) | May 2007 |
| National Merit Scholar | May 2006 |

## PROFESSIONAL DEVELOPMENT

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| Summer Institute in Statistical Genetics (Georgia Institute of Technology) | June 2024 |
| Writing for the General Public workshop (UW) | May 2019 |
| Software Carpentry workshop (eScience Institute, UW) | January 2019 |
| Data Carpentry workshop (eScience Institute, UW) | September 2018 |
| C-MORE Virtual Workshop on Science Writing (UHM) | October 2012 |

## SKILLS

Proficient in R, RShiny, bash, Matlab.
Familiar with Python, Stata, SAS.