

## Marissa Childs

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Emmett Interdisciplinary Program in Environment and Resources, Stanford University  
473 Via Ortega Road, Y2E2 Building Suite 226, Stanford, CA 94305

### EDUCATION:

**Whitman College** (Walla Walla, WA)

2012 – 2016

*Summa cum laude* (GPA: 3.93)

B.A. in Mathematics with honors

Thesis: Topological graph theory and graphs of positive combinatorial curvature

B.A. in Economics-Environmental Studies with honors

Thesis: In medias res: benefit-cost analysis of the Enterprise School District biomass thermal energy project

Scholarships: Alexander J. Anderson Merit Scholarship, National Merit Scholarship

**Budapest Semesters in Mathematics** (Budapest, Hungary)

Spring 2015

**Stanford University** (Palo Alto, CA)

2016 – present

PhD Student, Emmett Interdisciplinary Program in Environment and Resources

Illich-Sadowsky Interdisciplinary Graduate Fellow

Fields of Inquiry: Disease ecology and applied econometrics

Advisors: Erin Mordecai (Biology) and Marshal Burke (Earth System Science)

### PUBLICATIONS:

Huber, J.H., **M.L. Childs**, J.M. Caldwell, E.A. Mordecai. 2018. Seasonal temperature variation influences climate suitability for dengue, chikungunya, and Zika transmission. *PLoS Neglected Tropical Diseases* 12(5): e0006451.

<https://doi.org/10.1371/journal.pntd.0006451>.

**Childs, M.L.**, N. Nova, J. Colvin, E.A. Mordecai. 2019. Mosquito and primate ecology predict human risk of yellow fever virus spillover in Brazil. *Philosophical Transactions of the Royal Society B: Biological Sciences* 374, no. 1782: 20180335.

<https://doi.org/10.1098/rstb.2018.0335>.

Washburne, A.D., D.E. Crowley, D.J. Becker, K.R. Manlove, **M.L. Childs**, and R.K. Plowright. 2019. Percolation Models of Pathogen Spillover. *Philosophical Transactions of the Royal Society B: Biological Sciences* 374, no. 1782: 20180331.

<https://doi.org/10.1098/rstb.2018.0331>.

### MANUSCRIPTS IN REVIEW AND IN REVISION:

Nova, N., E.R. Deyle, M.S. Shocket, A.J. MacDonald, **M.L. Childs**, M. Rypdal, G. Sugihara, E.A. Mordecai (2019) Empirical dynamic modeling reveals ecological drivers of dengue dynamics. (under review) bioRxiv preprint. <https://doi.org/10.1101/2019.12.20.883363>

Shocket, M.S., C.B. Anderson, J.M. Caldwell, **M.L. Childs**, A.J. MacDonald, M.E. Howard, N. Nova, S. Han, M.J. Harris, and E.A. Mordecai. “Environmental Drivers of Vector-Borne Diseases” in *Population Biology of Vector-borne Diseases*.

## TECHNICAL REPORTS:

- Childs, M.L.,** T. Pulliam, and D. Jespersen. June 2014. "OVERFLOW Turbulence Model Resource Verification Results." *NAS Technical Report*: NAS-2014-03.  
<http://www.nas.nasa.gov/publications/reports/2014/2014.html>
- Jespersen, D., T. Pulliam, and **M.L. Childs.** August 2016. "OVERFLOW Turbulence Modeling Resource Validation Results." *NAS Technical Report*: NAS-2016-01.  
<https://www.nas.nasa.gov/publications/reports/2016/2016.html>

## HONORS AND AWARDS:

Academic Distinction, Whitman College	2012 – 2016
Jan Mejer Award for the Best Essays in Environmental Studies, Whitman College	2016
James F. Shepherd Award for Outstanding Economics Graduate, Whitman College	2016
Laura and John Hook Family Mathematics Award, Whitman College	2016
Phi beta kappa	2016
American Committee on Arthropod-Borne Viruses Travel Grant	2019

## ACADEMIC EXPERIENCE:

- Summer Mathematics Program for Women** (Carleton College) Summer 2014
- Studied Lie theory and topology over a four week period culminating in the presentation of a student-led group research project for both courses
  - Attended daily course lectures, biweekly colloquium lectures, and weekly group problem-solving sessions
- Semester in the West** (Whitman College) Fall 2014
- Engaged in an intensive semester-long field program studying environmental issues and public lands conservation through field work, presentations, and discussions with various scientists, writers, activists, ranchers, and public officials working in the interior American West
- Eco-System Informatics Summer Institute** (Oregon State University) Summer 2015
- Collected data in the H.J. Andrews Experimental Forest in Oregon for the long-term plant-pollinator data set
  - Analyzed data using the R programming language and summarized findings in a final report "Predicting plant-pollinator interactions using flower abundance" available at the program website [http://eco-informatics.engr.oregonstate.edu/previous/2015/Childs\\_final\\_paper.pdf](http://eco-informatics.engr.oregonstate.edu/previous/2015/Childs_final_paper.pdf)
- Summer Institute in Statistics and Modeling in Infectious Diseases** (University of Washington) 2017, 2018
- Attended modules entitled "Simulation-based Inference for Epidemiological Dynamics" and "Spatial Statistics in Epidemiology and Public Health"
- Spillover Workshop** (Bozeman, MT) 2018
- Participated in working group on spillover prediction funded by DARPA and hosted by Raina Plowright at Montana State University

## PROFESSIONAL EXPERIENCE:

- NASA Ames Research Center** (Mountain View, CA) 2013 – 2014, 2016
- Ran turbulence model verification cases on the computation fluid dynamics solver OVERFLOW with the use of programs and scripts and utilized LaTeX to compile the results into a reports published as two NAS technical papers

- Implemented method of manufactured solutions for the computation fluid dynamics solver EDDY using the C programming language to verify solver implementation, and presented results at a poster session

**Whitman College** (Walla Walla, WA)

2013 – 2016

- Writing Fellow: Collaborated with a professor to design and implement writing workshops to help students refine their understanding of texts and improve their analytic writing skills
- Economics Tutor: Conducted twice weekly macroeconomics tutoring sessions to serve as a resource for students with questions or desiring extra practice with concepts outside of macroeconomics class
- Math Department Tutor: Tutored students desiring additional support in a math class with the goal of increasing students' understanding of mathematical concepts and confidence in their mathematical abilities

## **BROADER IMPACTS**

**Campus Climate Challenge**

2012 – 2016

- Led the planning, funding, and advertising for movies, speakers, and college events as a part of an organization focused on relevant environmental issues on campus, in the greater Washington area and nationally

**Cool the Schools**

2013-2016

- Developed a climate change curriculum in coordination with local teachers and other students and taught the material to 7<sup>th</sup> graders in the Walla Walla, WA area

**Classroom Connections**

2015-2016

- Interacted with high school students to provide weekly tutoring support and discuss college opportunities