Catherine Chamberlain

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EDUCATION

Harvard University — Cambridge, MA
Ph.D. in Organismic and Evolutionary Biology — Expected May 2021

Trinity College Dublin — Dublin, Ireland
M.S. in Biodiversity and Conservation — November, 2015

Michigan State University — East Lansing, MI
B.S. in Zoology, Concentration in Ecology Evolution and Organismal Biology — May, 2013
Minor in Spanish

RESEARCH EXPERIENCE

PhD Researcher — September 2016-Present
Department of Organismic and Evolutionary Biology, Harvard University — Cambridge, MA

- Use meta-analysis and gridded climate data to understand the effects of climate change on forest systems
- Run greenhouse experiments with 384 plants and assess forest and common garden phenology observations for 5 years
- Analyze results using Bayesian hierarchical models in R assist peers in statistical analysis leading to a publication in *Nature Climate Change* and *Tree Physiology*
- Collaborate with an international team of researchers

Data Scientist — November 2018-Present
The Nature Conservancy — Northampton, MA

- Provide volunteer support to develop a machine learning tool to identify camera trap images with a 12-member team
- Coordinate with camera trap users nationwide to implement a standardized output for collaboration

Data Scientist, Tree Spotters Citizen Science Project — May 2016-Present
Harvard University - Arnold Arboretum, through the National Phenology Network — Boston, MA

- Analyze data for 75 individuals across 15 tree species at the Arnold Arboretum with over 300,000 observations
- Prepare reports and deliver results to 5-member team and to 80 active volunteers

Consultant — May 2020-August 2020
The Nature Conservancy — Northampton, MA

- Drafted landowner a handbook for the New England *Family Forest Carbon Program*
- Edited and gathered information from primary and secondary literature

Research Technician — May 2016-August 2016
Harvard University - Arnold Arboretum — Boston, MA

- Developed linear and logistic Bayesian models using R and Stan to investigate the effects of climate change on temperate trees
- Assisted researchers survey tree diversity, richness and age across 30-50 sites at four forest field stations

Researcher — May 2015-August 2015
Gorongosa National Park — Goinha, Mozambique

- Assisted the research team with various vegetation surveys
- Aided other researchers with behavioral studies of antelope in the park
- Contributed samples to the herbarium

LEADERSHIP & TEACHING EXPERIENCE

Guest Lecturer July 2020
Harvard Summer School Cambridge, MA
International Environmental Governance, Policy, and Social Justice

- Delivered 3 hour virtual lecture entitled *Phenology, Citizen Science and Climate Change* to 30 students ranging from high schoolers to professionals
- Co-delivered 3 hour virtual lecture on *Conservation Management, Human-Wildlife Conflict and Foreign Affairs* with international colleague

Teaching Fellow Fall 2018-Present
Harvard University Cambridge, MA

- Guide 18 first year PhD students on time management, teaching, grant writing and public outreach
- Led weekly discussion section and laboratory sessions virtually to 16 students in topics on Introduction to Organismic and Evolutionary Biology
- Advised 15 students in laboratory sessions on topics in Biology of Plants
- Assisted in teaching 30 students in topics of evolution and the history of evolutionary theory
- Supervised students in final projects and reports, graded assignments and exams

Mentor May 2019-August 2019
Harvard University – Arnold Arboretum Boston, MA

- Mentored 2 students on different research projects through 2 different programs
- Met weekly to advise students on experimental design, literature reviews, statistical analyses and presenting results

Teaching Assistant April 2016
Trinity College Dublin Limpopo, South Africa

- Guided 16 Masters students in Field Skills in Conservation
- Instructed students how to use dichotomous keys, run field surveys and assess management techniques at 2 conservation reserves

PUBLICATIONS

Ettinger A. K., Buonaiuto D.M., **Chamberlain C. J.**, Morales-Castilla I. & Wolkovich E.M. 2020. Spatial and temporal shifts in photoperiod with climate change. *New Phytologist.*

Chamberlain C. J., Cook B. I., Morales-Castilla I. & Wolkovich E. M. 2020. Climate change reshapes the drivers of false spring risk across European trees. *New Phytologist*

Ettinger A. K., **Chamberlain C. J.,** Morales-Castilla I., Buonaiuto D. M., Flynn D. F. B., Savas T., Samaha J. A. & Wolkovich E. M. 2020. Chilling dominates spring phenological responses to warming. *Nature Climate Change*

Chamberlain C. J., Cook B. I., García de Cortázar-Atauri I. & Wolkovich E. M. 2019. Rethinking false spring risk. *Global Change Biology.*

Chamberlain C. J. & Wolkovich, E.M. *(in review)*. False springs coupled with warming winters alter temperate tree growth.

Wolkovich E. M., Auerbach J. L., **Chamberlain C. J.**, Buonauito D. M., Ettinger A. K. & Gelman A. *(in review)*. A simple explanation for declining temperature sensitivity with warming.

PRESENTATIONS

Ecological Society of America August 2020
False spring damage on temperate tree seedlings is amplified with warming winter temperatures
New Tools for Analyzing and Sharing Wildlife Camera Images: Machine Learning and Online Databases to Minimize Time and Maximize Impact

European Geosciences Union, Talk May 2020
Climate change reshapes the major drivers of false spring risk across European trees

Extreme Climate Event Symposium, Talk February 2020
Climate change reshapes the major drivers of false spring risk across European trees

Canadian Society for Ecology and Evolution, Poster May 2017
The effects of false spring events on foliate phenophases and the duration of vegetative risk

Public Lectures: May 2016-Present

12 public lectures in the Boston area

1 lecture series at the Arnold Arboretum, Boston, MA

SKILLS

Quantitative: Mixed-effects including Bayesian approaches, analysis of covariance, linear and logistic regression models, meta-analysis statistics, climate change analyses and model building

Computer languages: Git, LaTeX, R, Stan, Sweave, RMarkdown, Microsoft Office Suite, Machine Learning skills, basic Python and Shell skills

Field and Mapping skills: ArcGIS and QGIS, Trimble and Garmin GPS units, field surveys, ecological sampling methodologies, camera traps