# 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** May2016-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