Andrew T. **Burchill**

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Education

Ph.D. + M.S. Complex Adaptive Systems Science and in Animal Behavior — *Tempe, Arizona*

2022 - Arizona State University — *4.0 GPA*

National Science Foundation's Graduate Research Fellow ($105k)

B.S. in Biological Sciences, specialization in Ecology and Evolution — *Chicago, Illinois*

2014 - University of Chicago — *3.7 GPA*

Graduated with General Honors, Dean's List each year, University Scholar recipient ($40k)

Skills & Awards

Programming: R, Python, data visualization (ggplot2, plotly, Tableau, etc), PHP, UNIX shell, Java

Data & web management: Git, computing clusters, SQL, Drupal, Latex, Jekyll, CSS

Statistics: Generalized linear mixed models (GLMM) & regression, Bayesian modeling, time series analysis, survival analysis, ordination methods (PCA, NMDS, LDA, etc), machine learning, forecasting

Select awards: Endeavour Fellowship ($24k), NSF Graduate Research Opportunities Worldwide ($5k), EntSoc 2019 Best Graduate Presentation, USAID Global Development Fellowship ($7k), IUSSI Best Paper of 2016 ($1k), total awarded personal grants exceed $217,500, Congressional Service Award (highest civilian honor given by U.S. Congress)

Experience

Machine Learning Engineer & Scientist in Parks Research Fellow — *Houghton, MI*

National Park Service + Great Lakes Inventory and Monitoring Network — *May - Aug 2021*

- Designed a user-friendly **Bayesian analysis pipeline** for species community monitoring, from proposal to production (full-stack)
- Successfully led & coordinated an inter-agency team: federal NPS ecologists, I&M staff, local university ornithologists
- **Advised C-level executives** from 9 national parks, leading to management decisions averting an unnecessary, costly ($500k) project
- Implemented self-directed QA/QC measures to bring decades of unstructured, volunteer-collected survey data up research-quality standards

Website and Personnel Manager — *@askabiologist.com*

Ask a Biologist! — *Oct 2015 - Present*

- Managed science education website used by over 7,000 classrooms, visited from every country in the world (excluding North Korea)
- Recruited & directed 200+ volunteer scientists producing educational content, & answering 1,330+ student-submitted questions/year
- Implemented SEO strategies, helping **increase yearly views from 11.2 million** in 2016 **to 47 million** in 2021
- Edited & debugged new 360 virtual reality biome tours

Research Analyst — *Tempe, AZ*

Social Insect Research Group, Arizona State University — *Aug 2015 - Aug 2022*

- Designed an automated micro-RFID tagging system for ants (including **R and Python** analysis) from hardware to production
- Led 4 separate international research teams, coordinating successful projects across continents (Australia, Panama, Japan, Turkey) and across academic disciplines (biologists, engineers, psychologists, mathematicians, archaeologists)
- Designed the world's most accurate dermatoglyphic classifier using Bayesian mixture modeling with **R** and **JAGS**
- Guided signal processing engineers to design an optimal method for animal identification schemes (also an **R package)**
- Used wavelet analysis and ordination methods to analyze/characterize complex time series data

Additional Leadership and Communication Experience

- Presented research at 28 scientific conferences (9 invited talks, 12 international), 7 panels, and in 6 peer-reviewed publications with 2 **R packages**
- Extensively trained & mentored 12 laboratory assistants, 600+ college students, and 200+ K-12 students in scientific methods, analysis, and critical thinking
- Independently led & supervised fieldwork teams in rugged, remote locales for multiple weeks: Australian outback, Panamanian rain forest, Chiricahua Mountains, Mozambique, and the Navajo Nation

Relevant Coursework

Advanced Linear Regression, Bayesian Statistics: Theory and Practice, Software Carpentry, Distributed Methods for Decision-Making in Engineering, Quantitative Modeling in Biology, Science Communication, Introduction to Complex Networks, Computational Biology, Noise and Function: Random Algorithms in Animal Behavior, Ecological Modeling, Optimal Foraging Theory, Linear Algebra for Ecologists, Fundamentals of Complex Adaptive Systems Science