

Shelby M. Scott

CONTACT INFORMATION	Department of Ecology & Evolutionary Biology University of Tennessee, Knoxville 569 Dabney Hall Knoxville, TN 37996 USA	<i>Web:</i> shelbymscott.github.io <i>Cell Phone:</i> 205-908-0996 <i>E-mail:</i> sscott41@vols.utk.edu
RESEARCH INTERESTS	Biomathematics & computational biology, public policy, agent-based modeling, cellular automata modeling, gun violence and gun crime, spatial disease ecology, theoretical control and optimization, Bayesian statistics, Geographic Information Systems	
EDUCATION	University of Tennessee , Knoxville, TN USA PhD Candidate, Ecology and Evolutionary Biology, August 2015 - May 2021 (pending) M.S. Candidate Interdepartmental Graduate Statistics Program, August 2015 - May 2021 (pending) <ul style="list-style-type: none">- Dissertation Topic: Control of Cellular Automata Models Using the Gun Violence Epidemic of Chicago, Illinois, as a Case Study- Advisor: Louis J. Gross- Committee Members: Suzanne Lenhart, Nina Fefferman, Sergey Gavrilets- Areas of Study: cellular automata, gun violence and gun crime, spatial disease ecology, statistics, theoretical control and optimization, Bayesian statistics, Geographic Information Systems Rhodes College , Memphis, TN USA B.S., Biomathematics, May 2015 <ul style="list-style-type: none">- Senior Thesis: <i>An Agent-Based Model of Golden Eagle Predation on the Santa Cruz Island Fox</i>- Advisor: Erin N. Bodine- Areas of Study: applied mathematics, population dynamics, discrete and continuous mathematical modeling, agent-based modeling	
REFEREED PUBLICATIONS	Scott, Shelby M. and Gross, Louis J.. COVID-19 and Crime: Analysis of Crime Dynamics Amidst Social Distancing Protocols. <i>PLOS One</i> , 2021. <i>In review</i> . Scott, Shelby M. and Gross, Louis J. The Mathematics Underlying Gun Violence. <i>SIAM News</i> , 2020. Scott, Shelby. A Report from the NIMBioS/DySoC Investigative Workshop on the Mathematics of Gun Violence. <i>SocArXiv</i> , 2020. Scott, Shelby M. , Middleton, Casey E., and Bodine, Erin N. An Agent-Based Model of the Spatial Distribution & Density of the Santa Cruz Island Fox: The Effects of Golden Eagle Predation & Island Fox Recovery. <i>Integrative Population Biology and Modeling Part B</i> , 40: 3 - 32, 2019. Chen, Miranda M., Scott, S.M. , and Stevens, Jessica D. Technology as a tool in teaching quantitative biology at the secondary and undergraduate levels: a review. <i>Letters in Biomathematics</i> , 5(1): 30 - 48, 2017. Scott, S.M. , Yust, A. and Bodine, E.N. An Agent-Based Model of Santa Cruz Island Foxes (<i>Urocyon littoralis santacruzae</i>) which Exhibits an Allee Effect. Published in: <ul style="list-style-type: none">- <i>Proceedings of the 6th Symposium of Biomathematics and Ecology: Education and Research</i>, 2014.- <i>Letters in Biomathematics</i>, 2014; 1(1): 97-109.	
GRANTS AND AWARDED FELLOWSHIPS	2017: <i>NDSEG Fellowship</i> , University of Tennessee, Knoxville, TN. This is a highly competitive, portable fellowship that is awarded to U.S. citizens and nationals who intend to pursue a doctoral degree. It funds students for three years and pays full tuition, mandatory fees, and a monthly stipend. (\$153,600)	

2015: *PEER Fellowship*, University of Tennessee, Knoxville, TN.

This grant funds doctoral students who are underrepresented in their field for the first two years of study. Along with providing salaries, the program also offers professional development, ambitious research and dynamic mentoring opportunities. (\$74,000)

2014: *Robert Allen Scott Award for Mathematics*, Rhodes College, Memphis, TN.

Funding for the continuation of research for the summer of 2014. Allowed for a weekly stipend for living expenses and the funds to travel to the 2014 Symposium on BEER (Biomathematics and Ecology: Education and Research). (\$4,500)

PROFESSIONAL
EXPERIENCE

- 2017 - present *National Defense Science and Engineering Graduate Fellow (NDSEG)*
Department of Ecology & Evolutionary Biology, University of Tennessee, Knoxville, TN
- 2015 - 2017 *Program for Excellence and Equity in Research (PEER) Graduate Research Assistant*
Department of Ecology & Evolutionary Biology, University of Tennessee, Knoxville, TN
- 2012 - 2015 *Departmental Assistant*
Department of Mathematics & Computer Science, Rhodes College, Memphis, TN
- 2013 *Student Research Assistant*
Department of Mathematics & Computer Science, Rhodes College, Memphis, TN
- 2014 *Student Curriculum Advisor*
Department of Mathematics & Computer Science, Rhodes College, Memphis, TN

TALKS &
PRESENTATIONS

- 2021 January 5: *Panel: Collaborating Across Disciplines*. AMS Short Course: Mathematical and Computational Methods for Complex Social Systems. Virtual. *Invited Speaker*
- 2020 August 18: *Handguns and Hotspots: Spatio-temporal Models of Gun Crime in Chicago, IL*. Annual Meeting for the Society of Mathematical Biology. Virtual. *Poster Presentation*.
- 2020 January 15: *Handguns and Hotspots: Cellular Automata Models of Gun Crime in Chicago, Illinois*. Joint Mathematics Meeting Special Session on Women in Mathematical Biology. Denver, CO. *Invited Speaker*
- 2019 November 7: *Handguns and Hotspots: Spatio-Temporal Models for Gun Crime in Chicago, IL*. Bates College Digital and Computational Studies Seminar Series. Lewiston, ME. *Invited Speaker*
- 2019 August 6: *Handguns and Hotspots: Cellular Automata Models of Gun Crime in Chicago*. 1st Annual NDSEG Conference. San Diego, CA. Poster Presentation.
- 2019 July 23: *Handguns and Hotspots: Cellular Automata Models of Gun Crime in Chicago*. Annual Meeting for the Society of Mathematical Biology. Montreal, QC, Canada. Poster Presentation.
- 2019 May 1: *Handguns and Hotspots: Cellular Automata Models of Gun Crime in Chicago*. NIMBioS Investigative Workshop: Mathematics of Gun Violence. Knoxville, TN. Poster Presentation.
- 2019 April 2: *Handguns and Hotspots: Spatio-Temporal Modeling of Gun Crime in Chicago*. Transylvania University Department of Mathematics Seminar Series. Lexington, KY. *Invited Speaker*.
- 2019 March 27: *Intelligent Intervention: Assessing Gun Violence Reduction Programs with Quantitative Methods*. College of Social Work Departmental Seminar Series. Knoxville, TN. *Invited Speaker*.
- 2019 February 22: *Handguns and Hotspots: Spatio-Temporal Modeling of Gun Crime in Chicago*. Recruitment Weekend Lightning Talks. Knoxville, TN.
- 2018 October 22: *Handguns and Hotspots: Spatio-Temporal Modeling of Gun Crime in Chicago*. International Meeting for Law Enforcement and Public Health, Toronto, ON, Canada. *Invited Speaker*.
- 2018 July 12: *Zombies, Foxes, and Murder: Experiences in learning and teaching quantitative biology using technology*. Annual Meeting for the Society of Mathematical Biology, Sydney, NSW, Australia. *Invited Speaker*.

- 2018 March 1: *Handguns and Hotspots: Spatio-Temporal Models for Gun Violence in Chicago, IL*. 2018 Women in STEM Research Symposium, Knoxville, TN.
- 2017 December 1: *Handguns and Hotspots: Spatio-Temporal Models for Gun Violence in Chicago, IL*. 2017 Rhodes College Departmental Seminar Series, Memphis, TN. *Invited Speaker*.
- 2017 October 7: *Handguns and Hotspots: Spatio-Temporal Models for Gun Violence in Chicago, IL*. 2017 Symposium on Biomathematics and Ecology: Education and Research, Normal, IL.
- 2017 July 17: *Using Cellular Automata to Model the Gun Violence Epidemic in Chicago, IL*. Annual Meeting of the Society of Mathematical Biology, Salt Lake City, UT.
- 2017 March 3: *Using Cellular Automata to Model the Gun Violence Epidemic in Chicago, IL*. Cynthia B. Peterson Poster Competition, Knoxville, TN.
- 2017 February 24: *Using Cellular Automata to Model the Gun Violence Epidemic in Chicago, IL*. UTK Graduate Recruitment Weekend Lightning Talk Seminar, Knoxville, TN.
- 2016 October 16: *Using Cellular Automata to Model the Gun Violence Epidemic in Chicago, IL*. 2016 Symposium on Biomathematics and Ecology: Education and Research, Charleston, SC.
- 2016 March 4: *An Agent-Based Model of Golden Eagle Predation on the Santa Cruz Island Fox*. Cynthia B. Peterson Poster Competition, Knoxville, TN.
- 2015 October 10: *An Agent-Based Model of Golden Eagle Predation on the Santa Cruz Island Fox*. 2015 Symposium on Biomathematics and Ecology: Education and Research, Normal, IL. *Invited Speaker*.
- 2015 July 1: *An Agent-Based Model of Golden Eagle Predation on the Santa Cruz Island Fox*. 2015 Society of Mathematical Biology Annual Meeting, Atlanta, GA.
- 2014 November 15: *An Agent-Based Model of Golden Eagle Predation of the Santa Cruz Island Fox*. 2014 Southeastern Conference for Undergraduate Women in Mathematics, Clemson, SC.
- 2014 October 12: *An Agent-Based Model of Golden Eagle Predation of the Santa Cruz Island Fox*. 2014 Symposium on Biomathematics and Ecology: Education and Research, Claremont, CA.
- 2014 April 5: *Genetic-Based Allee Effects in Island Foxes on Santa Cruz Island*. Hendrix-Rhodes-Sewanee Mathematical Symposium, Memphis, TN.
- 2013 October 13: *Genetic-Based Allee Effects in Island Foxes on Santa Cruz Island*. 2013 Symposium on Biomathematics and Ecology: Education and Research, Arlington, VA.
- 2012 November 11: *A Model of Multi-Drug Resistant Tuberculosis with Fast and Slow Latent States*. 2012 Symposium on Biomathematics and Ecology: Education and Research, St. Louis, MO.

AWARDS	2018	<i>Travel Grant for International Conference on Law Enforcement and Public Health (\$610)</i> Graduate Student Senate, Knoxville, TN
	2018	<i>Travel Grant for Society of Mathematical Biology Annual Meeting (\$700)</i> Graduate Student Senate, Knoxville, TN
	2018	<i>Travel Grant for Society of Mathematical Biology Annual Meeting (\$500)</i> Society of Mathematical Biology Education Subgroup, Sydney, Australia
	2018	<i>Anne Mayhew Travel Award (\$500)</i> University of Tennessee, Knoxville, Knoxville, TN
	2015 - 2019	<i>Chancellor's Award (\$20,000)</i> University of Tennessee, Knoxville, Knoxville, TN
	2015	<i>Jack U. Russell Award for Outstanding Senior Work in Mathematics (\$250)</i> Rhodes College, Memphis, TN
	2015	<i>Honorable Mention Award</i> Mathematical Competition in Modeling
	2014	<i>Travel Grant for Southeastern Conference for Undergraduate Women in Mathematics (\$250)</i> Rhodes College, Memphis, TN
	2014	<i>Travel Grant for Symposium on Biomathematics and Ecology: Education and Research (\$500)</i> Pomona College, Claremont, CA
	2014	<i>Robert Allen Scott Award for Mathematics (\$4,500)</i> Rhodes College, Memphis, TN
	2013	<i>Travel Grant for Symposium on Biomathematics and Ecology: Education and Research (\$250)</i> Rhodes College, Memphis, TN
	2013	<i>Rhodes Fellow</i> Rhodes College, Memphis, TN
	2013	<i>Rhodes College Biomathematics Research Experience for Undergraduates Participant</i> Rhodes College, Memphis, TN
	2013	<i>Meritorious Award</i> Mathematical Competition in Modeling
	2012	<i>Intermediate Spanish Award for Excellence</i> Rhodes College, Memphis, TN
	2011	<i>Presidential Scholarship (\$128,000)</i> Rhodes College, Memphis, TN

SERVICE

Service at University of Tennessee

- *Co-Organizer: NIMBioS/DySoC Investigative Workshop: Mathematics of Gun Violence*
- *Society for Mathematical Biology Education Subgroup Communications Officer*
- *Technical Session Organizer: 2017 Symposium on Biomathematics and Ecology: Education and Research*
- *Society for Mathematical Biology Mentor*
- *Society for Mathematical Biology Conference Volunteer*
- *West High School IB Biology Statistics Consultant*
- *EEB Mentor for Undergraduates*
- *Founding Member of Engaging Knoxville in Ecology and Evolution (EKEE), President*
- *TLSAMP Poster Presentation Judge*
- *Kids U Instructor, Curriculum Developer*
- *Darwin Day Volunteer*
- *Science Olympiad Fast Facts Judge*
- *EURECA Poster Competition Judge*

Service at Rhodes College

- *Habitat for Humanity Leadership Team*
- *Baptist Memorial Hospital ER Volunteer*

- *Relay for Life Committee Head, Event Chairman*
- *Rhodes College Kappa Delta Community Service Committee Member*

REFeree AND REVIEWER EXPERIENCE	<p>2020 <i>Letters in Biomathematics</i></p> <p>2020 <i>PLOS One</i></p> <p>2019-2020 <i>Foundations for Undergraduate Research in Mathematics: An Introduction to Undergraduate Research in Computational and Mathematical Biology: From Disease Dynamics to Big Data</i></p> <p>2019 <i>PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies</i></p>
SHORT COURSES, WORKSHOPS, AND TRAINING	<p>2021 January 3-5: <i>Mathematical and Computational Methods for Complex Social Systems</i>, Virtual</p> <p>2019 July 21 <i>Early Career Workshop</i>, Montral, QC, Canada</p> <p>2019 May 1-3: <i>NIMBioS Investigative Workshop: Mathematics of Gun Violence</i>, Co-Organizer, Knoxville, TN</p> <p>2018 October 13-14: <i>Scientific Computing for Biologists</i>, Knoxville, TN</p> <p>2018 July 8: <i>Early Career Workshop</i>, Sydney, Australia</p> <p>2017 March 25: <i>Taking Charge of Your Career</i>, Knoxville, TN</p> <p>2016 October 8: <i>Self Assessment Workshop</i>, Knoxville, TN</p> <p>2016 January 11: <i>Plan It, Own It, Work It</i>, Knoxville, TN</p> <p>2016 January 5-8: <i>Effective College Teaching</i>, Knoxville, TN</p>
ACTIVITIES AND HONORS	<p>Department of Defense NDSEG Fellow (2017-present)</p> <p>UTK GREBE Secretary (2017-2018)</p> <p>UTK PEER Fellow (2015-2017)</p> <p>Society of Mathematical Biology Education Subgroup - Communications Officer (2019-present)</p> <p>QUBES Ambassador (2018-present)</p> <p>Society of Mathematical Biology Top Tweeter Award (2018)</p> <p>Engaging Knoxville in Ecology and Evolution (EKEE) Member - President (2018-2019)</p> <p>UTK EEB Graduate Student Affairs Committee - Student Representative</p> <p>Crisis Text Line Volunteer (2020)</p> <p>Rhodes College Track and Field Member</p>
RELEVANT SKILLS	<p><i>Use in Undergraduate Courses:</i> C++, Python</p> <p><i>Use in Graduate Courses:</i> SPSS, Stata, xppaut</p> <p><i>Statistical Modeling:</i> R, Matlab, Mathematica</p> <p><i>Use in Research:</i> GitHub (including GitHub Pages)</p> <p><i>Mathematical Modeling:</i> Matlab, Netlogo, QGIS, Mathematica</p> <p><i>Word Processing:</i> LaTeX</p>

SELECTED
COURSEWORK

Mathematical Ecology I and II
Advanced Mathematical Ecology I and II
Probability and Mathematical Statistics
Bayesian Modeling and Computations
Advanced Epidemiology
Bayesian Methods in GIS
Statistics for Research I and II
Nonlinear Optimization
Scientific Computing for Biologists

INFORMAL
WRITING AND
MEDIA
APPEARANCES

Forthcoming: *Society of Mathematical Biology Education Subgroup: Meeting Summary*. Society of Mathematical Biology Autumn 2020 Newsletter.

2019 July 31: *Society of Mathematical Biology Education Subgroup: Meeting Summary*. Society of Mathematical Biology Autumn 2019 Newsletter.
https://www.smb.org/wp-content/uploads/2019/09/SMB2019_EducationMeetingReport.pdf

2019 April 15: *UT to Host Workshop to Study Gun Violence through Mathematical Analysis*. University of Tennessee Knoxville News. Author: Andrea Schneibel <https://news.utk.edu/2019/04/15/ut-to-host-workshop-to-study-gun-violence-through-mathematical-analysis/>

2018 October 30: *NIMBioS/DySOC Investigative Workshop: Mathematics of Gun Violence*. QUBESHub Blog. *Guest Writer*. <https://qubeshub.org/news/blog/2018/10/nimbiosdysoc-investigative-workshop-mathematics-of-gun-violence>.

2018 November 16: *Graduate Student Spotlight: Shelby Scott*. University of Tennessee Office of Research & Engagement. Author: Raphael Rosalin. <https://research.utk.edu/graduate-student-spotlight-shelby-scott/#more-7877>

Last Updated: 3 January 2021